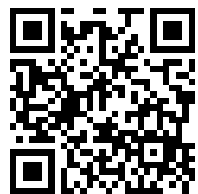


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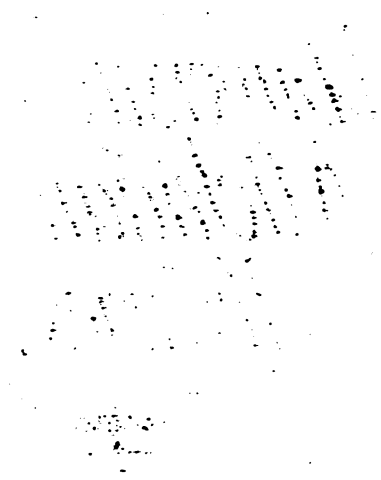
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# THE CONTROL OF RAW MATERIALS

BY

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*LONDON: 1953*

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NOTE :—STATISTICAL SYMBOLS.

*The following symbols have been used in tables and appendices throughout this volume.*

- .. = not available
- = nil or negligible





## PREFACE

**T**HE number of materials which sooner or later came under some form of government control during the Second World War ran into many hundreds, and no single volume, or indeed series of volumes, could fully set out the history of these controls. None the less some narrative of them had to be written before the principles extending over the whole field of control could be discovered and analysed. So while I was engaged in writing a 'policy' volume, I was also preparing, or having prepared under my direction, a series of studies of all the important, and many of the unimportant, materials. Upon these studies I have drawn in places in this book. They exist, a series of volumes in embryo, and are in use by civil servants. In due course they will, I hope, be made available to research workers of a later generation upon whom perhaps time, paper and money will impose less austere conditions than those under which we labour.

The present volume does not, therefore, tell the story of how each material responded to the impact of war, although I have, where it seemed appropriate, selected certain materials to exemplify a general principle at work. I have also endeavoured not to interrupt the argument with too frequent excursions into specialised fields, however tempting they might be; and I have preferred to relegate much of the supporting data to the appendices at the end of the book.

The first four chapters of this volume survey the scene in the two decades between the wars: the peace-time policies worked out by the trades themselves and the planning of policy by the Government to meet a future emergency. The next five consider how the Government faced the problem of determining the demand for raw materials both for its own needs and for the needs of the export and domestic markets. Chapter X deals with the mechanism for controlling imports, and Chapter XI with the changing sources of overseas supplies. The next group of chapters considers import policy and the effects of currency and shipping problems upon it. A chapter is then inserted on Anglo-French relations in the early months of the war, not solely because they were important in themselves but because they foreshadowed the larger issues of Anglo-American relations, which call for three chapters specially devoted to them. The next two deal with Britain, not in the familiar role of an importer of raw materials but as her own supplier; and here, and in the following chapter on conservation, I have tried to draw attention to the remarkable story of how Britain helped herself. This section ends with a short account of the price and costing policy applied to raw materials. The last part of the volume is devoted to the machinery of control and here I

have drawn together much of the argument which runs through the book as a whole.

I have endeavoured to compress within some five hundred pages the unique experience of the British people and Government, in the field of raw materials, during six instructive years of war. In the course of writing, much interesting and valuable material has therefore had to be discarded, and in one or two places a year's research and a good deal of thought and discussion have been reduced to a mere chapter. For the same reason I have felt myself free to deal more briefly than I would have otherwise done with currency problems, Anglo-American relations and costs and prices, especially as they are treated in separate volumes by my colleagues in this series.

Many minds go to the making of one book; and an author's indebtedness is never adequately conveyed in his preface and foot-notes. This book, in particular, owes much to the numerous government officials, from controllers to the most modest clerks, and to workers in industry of all grades, who have generously made available to me their hospitality, their time, their experience and their papers. If I mentioned the many who helped it would be a formidable list; and even so memory and records could not call up all those to whom this book stands in debt. But by a wise convention of this series, which rests on an older tradition of our government service, no officials are mentioned by name in these prefaces. Though I can only thank them here in general terms, I hope that they will see, in those places where I may have succeeded in conveying an authentic picture of raw material control, some slight return for all that they have done.

To my fellow historians in this series I owe also a very great deal; while my wife, herself a former civil servant in the Ministry of Supply, helped in interpreting unfamiliar personalities and procedures, and in many other ways. I was, in addition, fortunate in having as research assistants two young graduates in economics, who gave me their unreserved help throughout the book. Miss Margaret Jenkins (now Mrs. Dodgson) helped most with Chapters XII, XIV, XX, XXI and XXIII and with her special knowledge of the light metals industry, Mrs. Barbara Miller with Chapters X, XI, XIV, XIX and XXI and with her valuable study of flax. She also compiled the index and gave me indispensable assistance in seeing the volume through the press. To the secretarial work of the indefatigable Miss Winifred Smith (now Mrs. Wood) I am also much indebted. For the conclusions presented in this volume I, of course, am alone responsible.

J. HURSTFIELD

*London, June 1952.*

# LIST OF ABBREVIATIONS

<b>B.I.S.F.</b>	<b>British Iron and Steel Federation.</b>
<b>B.P.C.</b>	<b>British Purchasing Commission.</b>
<b>B.R.M.M.</b>	<b>British Raw Materials Mission.</b>
<b>B.S.C.</b>	<b>British Supply Council.</b>
<b>B.T.S.O.</b>	<b>Board of Trade Supply Organisation.</b>
<b>C.I.D.</b>	<b>Committee of Imperial Defence.</b>
<b>C.O.S.</b>	<b>Chiefs of Staff.</b>
<b>C.P.R.B.</b>	<b>Combined Production and Resources Board.</b>
<b>C.R.M.B.</b>	<b>Combined Raw Materials Board.</b>
<b>D.G.R.M.</b>	<b>Director General of Raw Materials (Ministry of Supply).</b>
<b>E.C.H.</b>	<b>Empire Clearing House.</b>
<b>F.E.A.</b>	<b>Foreign Economic Administration (United States).</b>
<b>I.D.A.C.</b>	<b>Import Duties Advisory Committee.</b>
<b>I.R.R.C.</b>	<b>International Rubber Regulation Committee.</b>
<b>J.W.P.S.</b>	<b>Joint War Production Staff.</b>
<b>M.A.P.</b>	<b>Ministry of Aircraft Production.</b>
<b>M.E.A.L.</b>	<b>Mission for Economic Affairs in London (United States).</b>
<b>N.A.S.</b>	<b>North American Supply.</b>
<b>O.F.E.C.</b>	<b>Office of Foreign Economic Co-ordination (United States).</b>
<b>O.L.L.A.</b>	<b>Office of Lend-Lease Administration (United States).</b>
<b>O.P.M.</b>	<b>Office of Production Management (United States).</b>
<b>P.S.O.</b>	<b>Principal Supply Officers.</b>
<b>R.M.D.</b>	<b>Raw Materials Department of the Ministry of Supply.</b>
<b>R.M.F.</b>	<b>Raw Materials Finance Department of the Ministry of Supply.</b>
<b>U.N.R.R.A.</b>	<b>United Nations Relief and Rehabilitation Administration.</b>
<b>W.P.B.</b>	<b>War Production Board (United States).</b>



PART I

---

Preparations for the Supply  
of Raw Materials in  
Time of War



## CHAPTER I

# THE CONTROL OF BRITISH RAW MATERIAL SUPPLIES, 1919-39<sup>1</sup>

**T**HE dominant feature of British commercial life on the eve of the First World War was free trade. But in the space of four years the Government was obliged to create piecemeal, and under the stress of war, control policy and control machinery diametrically opposed to the traditional methods and organisation of British trade. In the holocaust of controls during the post-war years a brief attempt was made to return to the unregulated distribution of supplies, an attempt which was quickly abandoned under the impact of the economic depressions of the period. For this reason the interval between the two wars did not, in general, witness the resuscitation of free trade principles and methods. On the contrary, it saw the constantly renewed efforts and experiments on the part of the trades themselves to regulate the production and sale of their commodities. Thus trade at the end of the inter-war period was not conducted on a 'free' basis but was the subject of the most extensive, though not always co-ordinated, control instituted by either producers, distributors or consumers. The growth of these conditions of imperfect competition and the machinery devised for the purpose vastly influenced our preparedness and power to wage war. In this chapter we must first examine the character of the raw material controls which were built up between the wars; secondly, their influence upon the revived governmental control necessitated by the outbreak of the Second World War.

### CONTROLS IN THE FIRST WORLD WAR

The measures of control imposed during the First World War were not the results of any general planning of requirements and supply, but were born of scarcity and improvisation. The progressive tightening of control was the direct result of shortages which in the first place were met by the treatment of isolated difficulties, but which ultimately called for the general direction of supply, distribution and use. The earliest measure in most instances was the restriction of export which, in the case of certain materials for explosives, was imposed within the first week of war. From this simple and crude attempt to conserve supplies it was a logical step to requisition

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<sup>1</sup> This chapter is based upon an article by the present writer in the *Economic History Review*, XIV, pp. 1-31. The author is grateful to the editors for permission to reprint it here,



stocks, the Government assuming the necessary powers over *toluol* as early as November 1914. From that the Government moved towards official purchase overseas. Government purchases, however, could not seriously modify either supply or price difficulties abroad while they were in competition with purchases by British nationals; but this uneasy partnership was allowed to continue until 1916 and later before it gave way to centralised purchasing by government authority and the establishment of an import licensing system. The Government was thus obliged willy-nilly to assume responsibility for supply both at home and abroad and to control prices through the various stages of production, since the danger of inflation threatened not only supplies but the war effort as a whole. Many of these principles had been partially or fully worked out between the outbreak of war and the establishment of the Ministry of Munitions in May 1915, but the setting up of that body, and the increased powers obtained by the Army Contracts Department of the War Office, gave an impetus to the expansion of control.

The final step (in the words of an official study) was to assume responsibility for all visible supplies, to control all private importation and distribute material to non-munitions as well as munitions trades, thereby virtually bringing all the industries connected with munitions supply, and all the industries using munition materials, including private as well as munitions trading, under the control of the department.

Viewed in perspective, the irresistible logic of the supply situation drove the Government along the road to full control, but its advance was, in fact, disputed and delayed until urgent individual problems called for immediate action, or until, as Mr. E. M. H. Lloyd has pointed out, it was made psychologically acceptable by some disaster or impending danger.<sup>1</sup> In all cases general policy and administration lagged behind the pragmatic treatment of particular issues. In other words, practice was always several stages ahead of theory. The counterpart of the *laissez-faire* outlook in peace was the 'business as usual' concept in war, which inhibited until the final stages of the conflict the centralised planning of supply. As a result the priority machinery, when it *was* set up, was cumbersome and only partially effective.<sup>2</sup> These and other defects of the supply organisation made it an easy target for destructive criticism, and it was generally argued that, in the new age of plenty, the economic life of the country should be emancipated from the restrictive influence of governmental organisation.

---

<sup>1</sup> E. M. H. Lloyd, *Experiments in State Control* (1924), p. 268.

<sup>2</sup> 'It is not surprising that the necessity for state intervention was only gradually admitted by Ministers who had spent the greater part of their political careers in exploding the fallacies of Protectionism on the one hand and Socialism on the other.' (*Ibid.*, p. 22.)

The history of the changing character of the control of raw materials in the inter-war period falls into three main divisions, coinciding roughly with the main economic trends of the age.<sup>1</sup> There was, first, the period which extended from the armistice until 1922 when commercial and industrial developments were dominated by post-war dislocations, in which the effects of boom and slump combined to overthrow what was left of the war-time structure of state control. There followed the period from 1922 until 1931 when the effects of two serious depressions, separated only by a minor and comparatively brief improvement of trade, stimulated serious though largely abortive efforts on the part of British trade to reorganise and strengthen itself to meet the combined effects of over-capitalisation and world competition. This period ended with the establishment of the National Government in 1931, and now the state collaborated with industry in a manner unparalleled in peace-time to meet the effects of the depression. In the process it introduced major modifications in Britain's industrial and commercial framework. It cannot be sufficiently emphasised, however, that none of the three periods possessed economic features exclusively its own and that the landmarks are chosen for the broad purposes they serve rather than on the basis of chronological exactitude.

#### THE PROCESS OF DECONTROL

The first phase, lasting from the armistice until 1922, saw the withdrawal, with certain exceptions, of the Government's emergency powers over raw materials and, by the close of the period, attempts at the revival of commercial control to meet the first consequences of over-production. In the early post-war years the work of reconstruction was limited in two ways: first, there was no historic parallel or signpost which could indicate the real nature of the problems facing a world recovering from the greatest upheaval it had experienced for centuries; and secondly, the belief survived that nothing which had happened in the special conditions of war could be said to lessen the validity of free-trade principles as the basis for Britain's commercial relations with the rest of the world. Against this background of innocence tempered with optimism the newly liberated leaders of industry and trade proceeded to re-establish the pre-war framework of economic society, in so far as its nature had been revealed to them. The general causes of this policy have been set out by Professor Tawney and others.<sup>2</sup> Many war-time controls had been created for

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<sup>1</sup> For a valuable short survey of the main industrial trends of this inter-war period see G. C. Allen, *British Industries and their Organisation* (1951), Chapter II.

<sup>2</sup> R. H. Tawney, 'The Abolition of Economic Controls, 1918-1921', *Economic History Review*, XIII, 1-30; A. C. Pigou, *The Transition from War to Peace* (Oxford Pamphlets on Home Affairs, No. H. 3, 1943); H. D. Henderson, *The Cotton Control Board* (1922); J. A. Salter, *Allied Shipping Control* (1921), etc.

the duration of the war and a limited period thereafter: to have pleaded for their extension would have required prophetic powers and a political outlook entirely out of keeping with the easy hopes of the time. Apart from this, the unemployment problem loomed large as the demands of war and war industry receded, and it was held that an industrial control based upon scarcity was wholly inadequate to create and meet the anticipated expansion of civilian demand. It was regarded as axiomatic that if the unemployed were to be absorbed trade must be free.<sup>1</sup>

The first reaction to the expansion of demand was the perhaps not unnatural assumption that that expansion would go unchecked for a very considerable period. Both in the renewal and extension of capital equipment and in the fulfilment of long-suppressed civilian demand it was felt that the call for raw materials would be enormous. In a few cases, notably wool and tin, there was some anxiety on account of the accumulated war-time stocks. Indeed, the fear that the wool surplus which the British Government had been unable to ship might on its release have a devastating effect upon the market produced the proposal that a million bales should be dumped into the sea.<sup>2</sup> The fear proved in fact entirely ill-founded: the organised release of the stock in a period of slightly over three years was completed without any deleterious effect upon the price level except during the year 1922, when, in any case, other causes were operative. Yet even during the period of low prices a warning was uttered against the prospect of a serious wool *shortage* rather than glut.<sup>3</sup> In the case of tin, lead and copper, however, the accumulated stocks presented greater difficulties.

It followed also that if trade should be free in time of boom this was even more necessary in time of slump: freedom to compete both in the home and the world market could alone ensure that the fittest should survive. Hence freedom from control was just as insistently demanded during the post-war slump which lasted from the armistice to the spring of 1919, during the boom which extended over the next twelve months and during the slump which followed. Finally, the rapid disintegration of the various international schemes of government control seemed to emphasise the anachronistic character of centralised control on a national basis.

The belief that freedom from control would pave the way for full employment proved, in fact, too shallow a thesis. British economic policy from 1921 or earlier, and almost until the end of the inter-

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<sup>1</sup> The oft-quoted Lord Incheape declared categorically: 'Given freedom from government control, and its irritating and wasteful interference, the energy, the industry, the resource and the initiative of the people will enable us to recover'. (*The Economist*, 28th December 1918, p. 875.)

<sup>2</sup> See *The Times*, 4th September 1943.

<sup>3</sup> League of Nations, *Report on the Problem of Raw Materials and Foodstuffs* (Geneva, 1922), by C. Gini, p. 129.

war period, was faced with the problem of over-production: recession in total demand and fundamental changes in demand. An analysis of the first of these problems lies outside the scope of this chapter and is bound up with general economic causes such as the growth of tariff walls, the restriction of credit facilities and the development by certain countries of productive capacity of their own during the war period or their discovery of alternative sources of supply to overcome their dependence upon the British Empire. This was particularly true of steel manufactures and textiles. The difficulties of over-capacity at home, built up to fulfil increased war demands, were, therefore, exacerbated by declining demands from abroad. Changes in demand were widespread, of which the falling consumption of pig iron in favour of scrap in steelmaking, the general decline in the use of forge and foundry iron in favour of steel, and the decreased overseas demand for the better, as against the cheaper, textiles were outstanding examples. The solution which was advocated with consistent fervour was restriction.

There were two instances, however, in which restrictionist policies were applied for strategic rather than economic reasons: oil, to which further reference will be made, and certain colonial supplies. The memories of war-time shortages of critical materials were still fresh. The discriminatory export duty on palm kernels from British West Africa to monopolise their export to this country, effective from 1919, was thus designed to ensure adequate supplies to the United Kingdom; but this duty was dropped in 1922. The export duty on tin ore from the Straits Settlements, which had been introduced in 1903 to safeguard the virtual monopoly in smelting enjoyed by the British, was now extended to tin ore exports from Nigeria.<sup>1</sup> But in their general effect these duties were of slight significance and compare favourably with the similar ones imposed by Portugal and France.<sup>2</sup> A League of Nations committee came to the conclusion in 1937 that there were only three raw materials derived from colonial territories alone, namely rubber, palm oil and copra, and that all colonial areas provided only three per cent. of total world production of commercially important materials.<sup>3</sup> It was admitted, of course, that certain materials such as rubber and tin might have an international importance far in excess of their value or of their percentage of world supplies of raw materials. Into this new strategic emphasis in British imperial relations there fitted also the beginning of imperial preference,

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<sup>1</sup> Royal Institute of International Affairs, Information Department Paper No. 18A, *Raw Materials* (1939), p. 53.

<sup>2</sup> B. B. Wallace and L. R. Edminster, *International Control of Raw Materials* (Washington, 1930), p. 238.

<sup>3</sup> League of Nations, *Report of the Committee for the Study of the Problem of Raw Materials* (Geneva, 1937), (A.27,1937, IIB), p. 10.

introduced in 1919, by which countries in the British Empire were given tariff preferences to the extent of one-sixth of all revenue duties, except those on wines and spirits, and one-third of the McKenna duties.<sup>1</sup> The special question of tariffs did not, however, play any prominent part in raw materials relations at this stage. The Dyestuffs Act of 1920 and the Safeguarding of Industries Act of 1921 were concerned with the restriction of imports of finished products, not raw materials, and Britain as a consumer was, like most industrial countries, concerned with ensuring that raw materials were available rather than restricting their import.<sup>2</sup>

While these matters were being settled on an internal and imperial basis, they were also being considered internationally through the Economic Section of the League of Nations. The American, British and French Governments had considered informally during the war suggestions for the equalisation of access to raw materials, but no such plan was raised officially at the Peace Conference.<sup>3</sup> A proposal for allied control of the exportable surpluses of raw materials as a means of enforcing the fulfilment of the peace terms by the Central Powers likewise fell on stony ground.<sup>4</sup> The recommendation of the Supreme Economic Council that artificial economic barriers should be removed proved little more than the formulation of a pious hope and the stimulus for similar expressions of piety on the part of the various international conferences in the years which followed.<sup>5</sup> The reluctance of the United States to permit what would have amounted to an inter-allied supervision of her indigenous sources of supply, and the general unwillingness of other nations to tolerate what they regarded as infringements of their sovereign rights, prevented the emergence of any effective measure to continue war-time collaboration beyond the peace. As one of the chief protagonists in this post-war debate euphemistically observed later on, the world trade in raw materials reverted, in the main, 'to the system of automatic distribution under the principle of relative economic attractive power'.<sup>6</sup>

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<sup>1</sup> For proposing such a measure the Prime Minister had already been sternly taken to task during the first week of peace by *The Economist* for dancing on a political tight-rope (16th November 1918, p. 675).

<sup>2</sup> In the case of dyestuffs, the Government gave its support to the establishment of the British Dyestuffs Corporation in the hope that it would be able, amongst other things, to compete successfully in the home and world markets with the powerful organisations of Germany, Switzerland and the United States (W. S. Culbertson, *International Economic Policies* (New York, 1929), p. 424).

<sup>3</sup> C. K. Leith, *Minerals in the Peace Settlement* (Geological Society of America, 1940), p. 3.

<sup>4</sup> *Ibid.*, p. 7; F. E. Lawley, *The Growth of Collective Economy* (1928), II, 19-20.

<sup>5</sup> See Wallace and Edminster, *op. cit.*, Chapter XII.

<sup>6</sup> Article by Mr. Bernard M. Baruch on 'Raw Materials' in the *Encyclopædia Britannica* (14th ed.), XVIII, p. 1002. Mr. Baruch was of the opinion, however, that 'if the war had continued, a system of international control of many of the principal war industries might have resulted' (*American Industry in the War*, quoted in F. E. Lawley, *op. cit.*, Vol. II, p. xv).

The special provisions made by the League to prevent the selfish exploitation by mandatory powers of their newly acquired territories affected only a very small proportion of the total raw materials supply.

#### THE REVIVAL OF COMMERCIAL CONTROL

But as control passed from the combined organisations of the allies it did not leave behind a complete vacuum. The relinquishment by the allied governments of their central directing authority was followed by the return of the commercial organisations to assume some of these discarded functions and, if necessary, create specific machinery for new needs, with or without the help of their governments. Within a short space of time control was being applied in numerous cases, including camphor, coffee, sisal, silk, cotton, quebracho, Chile nitrate, potash and quinine.<sup>1</sup> But the United Kingdom has never been more or less dependent for its economic welfare upon a single material, and there has never been any direct governmental intervention comparable to the well-known actions of the Brazilian, Chilean and Egyptian Governments in the case of coffee, nitrates and cotton respectively. To exemplify the general control tendency as it affected British interests it is necessary briefly to consider three materials: rubber, tin and oil.

Rubber in the First World War did not occupy the significant and critical position it came to occupy in the Second, and even in 1918 supplies were more than adequate for essential needs. The severe drop in prices which began in 1920 was due to over-production, which the rubber growers tried to tackle first by voluntary restriction and, after failure, by enlisting government support. In response to the request from the rubber growers the Secretary of State for the Colonies appointed the Stevenson Committee, on whose recommendation the first official restriction scheme of November 1922 was introduced. As far as tin was concerned the suppliers were not faced with long-term problems of production but simply with that of the organised release of stocks. The Government in this case intervened directly and, by an agreement between the Malayan and the Netherlands East Indies Governments, supplies were withheld sufficiently long to overcome the effects of the post-war slump.<sup>2</sup> But while, in general, the renewal of commercial control was at first the product of spontaneous and largely haphazard action by individual trades, the story of oil presented the important and exceptional case of planned control by the trade and governmental intervention at an early stage for military reasons. British, Dutch and American interests had already by 1914 built up powerful integrated concerns

<sup>1</sup> There is a useful, though necessarily incomplete, 'Chronology of the development of control of exports of raw materials' in Wallace and Edminster, *op. cit.*, pp. 347-64.

<sup>2</sup> P. Lamartine Yates, *Commodity Control* (1943), p. 145.

experienced in the methods of regulating markets and prices. By that date also an intimate relationship had grown up between the British Government and importers, a relationship based on the increasing dependence of the Navy upon oil for fuel; as a result the Government itself had bought more than 50 per cent. of the shares of the Anglo-Persian Oil Company in 1914.<sup>1</sup> In the post-war period the British Government, whose direct intervention in the oil industry was much greater than that of either the American or Dutch Governments,<sup>2</sup> became involved in diplomatic negotiations with the United States, France, Rumania and Near Eastern and other countries in furtherance of its policy; in the case of no other material were political and commercial needs so closely interwoven and so consistently pressed. The story of oil in the inter-war period provided the classic instance of the nation-state, whether it be England, the United States or Germany, striving to acquire for strategic reasons effective control of the most essential war material.

The period 1918-22 was, then, a formative period in the new economic age in Britain. Commercial interests were beginning to re-establish their control powers which had been suspended or modified during the world conflict. The state was on the whole gladly renouncing the authority it had been obliged to assume, but at the same time was retaining certain vestiges of this economic power for specific reasons, largely of strategy. In general the period did not conform to or reveal the basic conditions of the new era. By 1922, however, the world had emerged from the abnormal conditions of the reconstruction period to feel the full effects of an intensified trade cycle. In the two main periods which followed, drastic changes were made in the whole concept of the object and structure of control whether by the state or the trade.

#### 1922-31: EXPERIMENTS IN RESTRICTIONISM

The nine years 1922-31 might be described as the experimental period in control history, when the existence side by side of the habits of free trade and the practices of control resulted in confused and sometimes misdirected attempts to change the basis of our trade policy. During the eighty years which had elapsed since the repeal of the Corn Laws free trade had been accepted, although with diminishing enthusiasm, as the way of life most suited to British needs; but the almost unrelieved depression which marked these concluding years settled the fate of the whole free-trade system. Britain was suffering from major defects in her industrial and commercial system, accentuated by financial conditions arising from the high value at which sterling had been stabilised. This was confirmed not

<sup>1</sup> *Ibid.*, p. 198.

<sup>2</sup> See W. S. Culbertson, *op. cit.*, pp. 326-27.

solely by her record unemployment figures but by the fact that, while she felt the depression as intensely as other countries, she failed to share to any appreciable extent in the trade revival between 1924 and 1929.

The general condition of the world supply of raw materials was maldistribution, over-production at the source with the concomitant effect of a falling price level, and under-consumption in the industrial countries for a variety of general and individual reasons. The word over-production, however, necessarily masks its fundamental cause: under-consumption. The world could have easily consumed all the available supply of most materials, including cotton, rubber and steel, if it had the power to purchase it. In the case of timber, on the other hand, in spite of the general supply crisis of this period, the world was in fact consuming not less but more than the natural growth.<sup>1</sup>

The response to the general economic crisis was the time-honoured panacea, restriction, and the attempted rationalisation of supply. The most controversial story was provided by rubber. The Stevenson Scheme was devised to balance supply with demand in such a manner as to prevent further disastrous falls in price; so the act embodying it, which came into force in November 1922, determined colonial exports according to variations in the price of rubber in London. The policy of the Stevenson Scheme, which lasted from 1922 until 1928, was a price policy pure and simple. If its object was to raise prices it succeeded, at least for a while; if it aimed at stabilising prices, it failed. The average quarterly prices for the period 1923-30 are shown in Table 1.

Table 1. *The price of rubber per pound, 1923-30 (standard ribbed sheet in London)*

	1923	1924	1925	1926	1927	1928	1929	1930
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
1st quarter	14·3	14·2	18·0	46·7	19·3	19·0	9·0	7·9
2nd quarter	16·9	12·9	19·4	28·0	19·7	12·6	11·4	7·6
3rd quarter	14·2	11·0	38·5	21·0	18·2	9·2	10·8	6·2
4th quarter	15·0	14·6	43·3	20·2	16·6	8·9	10·1	4·3

Source: *Studies in the Artificial Control of Raw Material Supplies, No. 2, Rubber (1931)*, by J. W. F. Rowe, Tables 5 and 6, *London and Cambridge Economic Service, Special Memorandum No. 34.*

It is not necessary here to enter into a detailed estimate of what might have happened in the face of increased world demand for rubber had no control scheme been introduced, while it is no less important to avoid the pitfalls of *post hoc ergo propter hoc* conclusions.

<sup>1</sup> H. R. G. Greaves, *Raw Materials and International Control* (1936), p. 97



The facts were that prices rose rapidly, as the table shows, until once again the diminution of demand coupled with expanded supply from the non-restricted areas wrecked the scheme. This first attempt at restriction proved in the end a disaster. The Achilles heel of all restriction schemes is the expansion of production by non-members, the development of new sources, or the provision of alternative materials. The scheme had been built on a purely local basis. It failed to bring in the non-British producers, who therefore expanded their production and gained a larger proportion of the total trade at the expense of the British, as is shown by Table 2.

Table 2. Rubber production in the main producing areas, 1920-30

Thousand metric tons

Country	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Africa <sup>1</sup>	6	4	3	4	4	6	8	8	6	6	3
South America	33	22	24	25	26	32	30	35	26	24	14
British Borneo	6	5	8	10	12	15	17	19	19	18	18
Ceylon	40	39	47	38	38	46	60	57	57	82	77
British Malaya	174	151	216	278	251	281	320	342	319	458 <sup>2</sup>	449
British India and Burma	6	5	5	7	7	9	10	12	12	13	11
Netherlands East Indies	79	68	89	118	147	191	201	231	232	263	245
Indo-China	3	4	5	6	7	8	9	9	10	10	10
Siam	..	..	..	..	2	3	5	7	7	8	5
TOTAL	347	298	397	486	494	591	660	720	688	882	832

Source: *League of Nations' Statistical Year Books* for the years 1929, 1930-31 and 1932-33  
<sup>1</sup> Estimated. <sup>2</sup> Exports.

A final criticism of the scheme is that it was a purely producers' instrument, with no representation whatsoever of the consumer interests. One consequence of this last characteristic was the bitter hostility of the American consumers and their immediate attempt to obtain alternative supplies, mainly through the use of reclaim rubber (of which the percentage consumption of the total rose in the United States from 19.1 per cent. in 1922 to 51 per cent. in 1928);<sup>1</sup> they pressed on also with the development and expansion of Liberian and Brazilian sources.<sup>2</sup> Meanwhile, one further development arising out of the control of rubber should be noted. The need to administer such a scheme, crude and shortsighted as it was, stimulated closer collaboration amongst the suppliers themselves: not the producers in Malaya, but the distributors in London.

<sup>1</sup> G. Rae, 'The Statistics of the Rubber Industry', *Journal of the Royal Statistical Society*, 1938, CI, p. 364.

<sup>2</sup> An American attempt to gain concessions in Sarawak was, apparently, discountenanced by the British Government (J. C. Lawrence, *The World's Struggle with Rubber*, p. 63, quoted in E. V. Francis, *Britain's Economic Strategy* (1939), p. 129).

Compared with these developments, the growth of the control of non-ferrous metals, especially tin, was more effective and extensive.<sup>1</sup> These industries started with the initial advantage of being more closely associated from the time of the armistice. The British Metal Corporation, a British cartel with direct government representation, was created primarily to eliminate German influence over imperial sources of supply, but its functions soon shifted in emphasis from politics to commerce, i.e. a co-ordinated price policy. By 1926, it had joined a loosely organised though none the less effective international copper cartel, in association with American, Belgian and other producers. Here, too, it is instructive to recall that this organisation tried to pursue the same policy internationally that the rubber committee had applied during the period 1922-28, and stabilised prices at much too high a level; as a result other sources, especially in Rhodesia, were expanded and the association itself broke up in 1930.<sup>2</sup> Meanwhile in 1929 a new British concern, Amalgamated Metals Corporation Ltd., had absorbed the copper and lead sections of the British Metal Corporation and had acquired interests also in German and Belgian firms.<sup>3</sup> In the case of nickel a greater measure of centralisation occurred: two large monopoly organisations were built up, one in England and the other in the United States. They amalgamated in 1928 and obtained virtual control of world sources. In the case of tin the concentration of smelters made considerable progress soon after the armistice, and by 1929 three major groups had emerged, controlled mainly by British, South American and Dutch finance respectively. In 1931 representatives of the countries interested joined to form a syndicate, in which their governments directly participated, with the specific object of maintaining a stable price level. The lessons of the Stevenson rubber scheme had been learned and applied, namely that restriction to be successful must be international and must not openly flaunt the interests of consumers.<sup>4</sup> The price level showed none of the startling features of the rubber price level of the period, but it nevertheless stimulated a marked expansion of production in those non-restricted areas which could not be brought within the scheme.

In the domestic field it was the producers of the 'new' raw materials, unencumbered with traditional methods of production and

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<sup>1</sup> For a useful discussion of the relationship between national and international regulation as revealed in the non-ferrous metals cartels, see *International Control in the Non-Ferrous Metals* (New York, 1937), Chapters 1 and 2 (by W. Y. Elliott) and Chapter 3 (by J. W. F. Rowe). For other and more general aspects of this problem see E. Staley, *Raw Materials in Peace and War* (Council on Foreign Relations, New York, 1937).

<sup>2</sup> J. W. F. Rowe, *Markets and Men* (1936), pp. 192-93.

<sup>3</sup> Greaves, *op. cit.*, p. 132.

<sup>4</sup> It has been pointed out that the tin *consuming* interests were in any case not sufficiently concentrated (as was the case in the tyre industry) to oppose the Pool (Greaves, *op. cit.*, p. 121).

distribution, who were most able to reorganise themselves to endure the vicissitudes of the period. The contrast between the new and the old is perhaps most clearly borne out in a comparison between the home production of chemicals on the one hand and iron and steel on the other.

The central position in the development of the modern chemical industry was occupied by Brunner Mond and Company, which had increased its power enormously during the war and had used the period from 1918 to 1926 to strengthen and extend its interests throughout and beyond the alkali industry. By 1926 this firm and the United Alkali Company were in virtual control of the industry as a whole.<sup>1</sup> Meanwhile, the dyestuff industry, sheltered by a protective act in 1920, had progressed along similar lines to pass for a time under the virtually monopolistic control of the British Dyestuffs Corporation; and in a comparable fashion Nobel Industries had built up its paramountcy in the field of explosives.<sup>2</sup> The consummation of these developments was the merging of the four vast concerns at the end of 1926 into one even vaster organisation, Imperial Chemical Industries Ltd., which inherited also the important understanding between Brunner Mond and the only great British combine comparable with it, Lever Brothers.<sup>3</sup> In the words of its principal architect, Sir Alfred Mond, one of the objects of the creation of I.C.I. was to obtain the power 'to deal with similar large groups in other countries on terms of equality'.<sup>4</sup> In furtherance of this an international agreement was negotiated with I.G. Farbenindustrie and other European concerns early in 1932.<sup>5</sup> The consequences of all these developments cannot be examined here, but the words of *The Economist* in 1927 in another connection provided perhaps the best analysis of them: 'Chemical production (it observed) is gradually making the economic system independent of the natural distribution of raw materials.'<sup>6</sup> If the statement had been made ten years later, to the words 'economic system' there might have been added 'and military and economic strategy'.

In steel the United Kingdom suffered all the consequences of the general decline in the export trade of iron and steel materials and finished products, and at the same time was unable fully to introduce the necessary large-scale technical modifications and general integration which in this industry have an enormous influence on costs. The result was that the effects of the European depression in the industry

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<sup>1</sup> P. Fitzgerald, *Industrial Combination in England* (1927), p. 80.

<sup>2</sup> *Ibid.*, pp. 90, 93.

<sup>3</sup> *Ibid.*, p. 81.

<sup>4</sup> *Ibid.*, p. 99.

<sup>5</sup> A. Plummer, *International Combines in Modern Industry* (1928), p. 117.

<sup>6</sup> *Economic Conference Supplement* (30th April 1927), p. 10.

were felt with added emphasis in this country; in addition, the rising world tariffs against the exports of heavy industry turned Britain into the only remaining dumping ground for the products of her competitors. The request by the steelmakers for a protective tariff in 1925 came too soon after the expression of the electorate on the subject of free trade; the plea was rejected and the industry could not, therefore, afford to engage in large-scale technical re-equipment in view of the uncertainty of its markets. Nor was it sufficiently unified to negotiate with its continental competitors a *voluntary* division of the market by methods comparable to those of I.C.I. The combination movement both vertical and horizontal had been at work for some decades and the rate of combination had been greatly accelerated in the post-war period. But as late as 1928 the average weekly output of British blast furnaces was less than 1,000 tons, while nearly all American and many continental furnaces could produce that amount in a day; in the same year the twelve largest firms in Britain controlled only about forty-seven per cent. of the pig-iron capacity and about sixty per cent. of the steel capacity,<sup>1</sup> while in Germany a single concern, the Vereinigte Stahlwerke, founded in 1926, alone controlled about fifty per cent. of pig-iron and steel production.<sup>2</sup> It has been said of cotton, and it is also true of the iron and steel and other old-established industries, that one of the chief obstacles to reorganisation schemes came from 'the implacability of small but belligerent minorities who have, to a degree far in excess of their importance, been able to delay the process'.<sup>3</sup> The work of combination and absorption gathered momentum, but the acquisition of over-capitalised firms and obsolescent plant prevented the realisation of the full fruits of these activities. At the same time trade associations, though they had been in existence for a considerable period, remained extremely imperfect organisations with limited powers, while the National Federation of Iron and Steel Manufacturers itself lacked the authority and functions to give a forceful and unifying directive to industry or to speak on its behalf to the Government. The iron and steel industry, on which depended so much of Britain's commercial prosperity in time of peace and industrial power in time of war, presented in the year 1931 a disquieting picture of confusion and decay.

In the international sphere renewed attempts were made to use the League machinery for ensuring freedom of access to raw materials, but without effect. The problem was recognised, solutions were expounded, but all proposals foundered on the rocks of national sovereignty and unfulfilled promises. For example, the World

<sup>1</sup> A. F. Lucas, *Industrial Reconstruction and the Control of Competition* (1937), p. 36.

<sup>2</sup> S. B. Clough and C. W. Cole, *Economic History of Europe* (Boston, 1941), p. 771.

<sup>3</sup> H. Levy, *The New Industrial System* (1936), p. 188.

Economic Conference of 1927 was unable to accept a proposal for a new inter-state control of supplies or the supervision of international monopolistic schemes.<sup>1</sup> The Conference of 1927 may hold an important place in the history of free-trade theory as a major occasion on which about fifty nations solemnly reaffirmed their faith in the free interchange of commodities, and it did exercise temporarily a limiting effect upon the heightening of tariff walls. But the economic crisis which began with the Wall Street crash of 1929 obliterated all but the faintest memories of its deliberations.<sup>2</sup> Indeed, the disastrous effects of the acute crisis which began with that event finally destroyed any hope of the international control of trade on an equitable basis with full consideration of all consumers' needs. It is not without significance, however, that, concurrently with the failure of the League machinery, there emerged increasing tendencies towards international cartelisation of which the chemical combine and the non-ferrous metals agreements, already referred to, and the European steel cartel of 1926 are prominent examples. By 1928 'restriction schemes were being freely hatched';<sup>3</sup> and by 1930 international organisations had been established or were being organised in twenty-two branches of industry.<sup>4</sup> The record of failure, which we have observed, finally bore its bitter fruit in the international commercial developments of the period 1932-39, the transitional phase from peace to war.

#### DEPRESSION AND REARMAMENT: RE-ENTER THE STATE

The world depression, the effects of which began to be felt in England in 1930, shocked the people and Government of the country into the re-assumption of some of their controlling powers. When, however, the effects of the depression began to wane the need for control was reinforced by a new and powerful influence, the threat of war. It is possible to trace the growing impact of governmental intervention both in international and internal industry and trade; of this intervention the most important symbol in the international field was the Ottawa agreement of 1932.

The Cabinet which assumed office in the late summer of 1931 felt itself authorised to apply drastic means to deal with a critical situation. It accordingly took immediate steps to introduce as temporary protective measures the Abnormal Importations and the Horticultural Products Acts and the more permanent Import Duties Act of 1932. Equipped with these measures, and with the implied threat

<sup>1</sup> F. E. Lawley, *op. cit.*, II, 37.

<sup>2</sup> See H. Liepmann, *Tariff Levels and the Economic Unity of Europe* (1938), Chapter VII.

<sup>3</sup> J. W. F. Rowe, *op. cit.*, p. 16.

<sup>4</sup> F. E. Lawley, *op. cit.*, II, 38 (quoting Mr. H. B. Butler's address to the Manchester Statistical Society, 12th March 1930).

of more severe ones, it felt itself strong enough to meet other nations as equals, with its own competitive powers heightened by the depreciation of sterling. First, however, the Government set about converting the Empire into an economic unit. This was not an isolated incident in the political and economic history of Europe. It was begotten of the despair at the failure of the World Economic Conference of 1927 and the depression which followed; it was foreshadowed by the beginnings in 1931 of the preferential treaties between Germany and the states of south-eastern Europe and by the unsuccessful attempt at an Austro-German customs union.<sup>1</sup> It was, in fact, part and parcel of the new world policy of 'bilateralism', i.e. special preferential treaties between two countries, recommended by the Economic Conference of 1930 and designed, at least in theory, to achieve in a limited field what had proved impossible in the world as a whole. In effect, however, 'bilateralism' succeeded in aggravating the condition it was designed to alleviate. It subordinated the interests of all the other countries to those of the two contracting parties, especially as 'most favoured nation' treaties tended to become dead letters.<sup>2</sup> The logical culmination of 'bilateralism' was barter which, particularly in south-eastern Europe, tended to drive trade into artificial channels and ultimately to establish a system of economic servitude as far as the smaller states were concerned. Whereas in 1929 there were no barter or clearing agreements at all, by 1937 about twelve per cent. of the total trade of the world was governed by them.<sup>3</sup>

The countries of the Empire were primarily producers of raw materials and food and every preferential treatment accorded to them might be at the immediate cost of foreign exporters of these commodities and perhaps to the ultimate charge of the United Kingdom consumer and exporter of finished products, facing a raw material price rise. It was assumed that this charge would be partly counterbalanced by increased British exports of finished products to the Empire. It is significant, however, that tariffs against non-imperial imports of food and raw materials did not exceed ten per cent. while those on imports of finished products were as much as 33½ per cent. and in certain cases more than that.<sup>4</sup> One inescapable indirect consequence of the elevation of this new tariff wall must be recorded. The efforts of the dominions and the colonies to reciprocate the United Kingdom preference by their own preferential treatment of United Kingdom manufactures necessarily restricted the exports

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<sup>1</sup> H. Leipmann, *op. cit.*, p. 353.

<sup>2</sup> League of Nations, *Commercial Policy in the Inter-war Period* (Geneva, II, Economic and Financial, 1942, II, A.6), pp. 48-49.

<sup>3</sup> S. B. Clough and C. W. Cole, *op. cit.*, p. 797.

<sup>4</sup> National Institute of Economic and Social Research, *Trade Regulations and Commercial Policy of the United Kingdom* (1943), p. 8.

of non-British manufactured articles to the Empire. It may therefore have restricted the purchasing powers of foreign countries for imperial raw materials, and in its turn necessitated restriction upon the output of these materials. Table 3 sets out imports of raw materials from both imperial and foreign sources during the last ten years before the outbreak of war.

*Table 3. United Kingdom imports of raw materials from Empire and foreign sources, 1929-38*

Year	Raw material imports from British Empire		Raw material imports from foreign countries		Total raw material imports
	Value in £ sterling	% of total	Value in £ sterling	% of total	Value in £ sterling
1929	132,380,197	33·2	266,914,871	66·8	399,295,068
1930	96,738,252	31·3	211,805,440	68·7	308,543,692
1931	66,926,903	30·4	153,484,366	69·6	220,411,269
1932	65,066,177	34·1	125,782,558	65·9	190,848,735
1933	75,117,584	36·3	131,595,610	63·7	206,713,194
1934	94,632,332	38·4	151,876,879	61·6	246,509,211
1935	95,960,937	38·4	153,767,472	61·6	249,728,409
1936	114,150,612	38·7	180,897,156	61·3	295,047,768
1937	150,962,562	38·8	238,310,315	61·2	389,272,877
1938	122,153,591	40·9	176,346,574	59·1	298,500,165

Source: Based on *Annual Statement of the Trade of the United Kingdom*<sup>1</sup>

On a percentage basis it is clear that from 1932 imports of raw materials from the Empire were increased at the expense of other countries. Exports from non-British countries rose again in value a year later, but they never regained the proportion they had held in 1931. This shift from foreign to imperial sources had not been achieved without difficulties, particularly in the case of timber. British importers showed a marked preference for Russian and Baltic timber as compared with that from Canada; and Canadian proposals, made in 1933, that Russian imports into the United Kingdom should be prohibited on the grounds that they were 'dumped' goods were strenuously resisted by the British merchants.<sup>2</sup> In spite of this, timber imports from Canada expressed as a percentage of total timber imports rose from 5·2 per cent. in 1929 to 16 per cent. in 1938.<sup>3</sup> Similar difficulties were encountered over Wabana iron ore from Newfoundland, which was not accepted by British steel works as a suitable substitute for other ores. In general, however, a diversion to imperial sources was taking place but it cannot be sufficiently

<sup>1</sup> The figures for the years 1929-33 are obtained from the *Annual Statement* for 1933 Vol. IV, Classes II and III, while those for the years 1934-38 are obtained from the same publication for 1938, Vol. IV, Classes II and III.

<sup>2</sup> H. R. G. Greaves, *op. cit.*, pp. 95-96.

<sup>3</sup> *Annual Statement of the Trade of the United Kingdom* (1929 and 1938), Vols. II and IV.

emphasised that the diversion was economic not strategic. It was an attempt to prevent the worst effects of a new economic blizzard as far as the British Empire was concerned; it was not an effort to increase the supply of strategic materials from the Empire as a political unit. But its indirect effect was undoubtedly to increase the authority of the Government in the general control of raw materials and to help re-mould the Empire as an economic entity.<sup>1</sup>

In its international relations the British Government showed itself equally ready to intervene with decisive effect. In the last years of peace the United Kingdom made a number of bilateral treaties of which the most important was that concluded with the United States in November 1938. By March 1939, also, virtual agreement had been reached between British and German industrialists, supported by their governments, for the allocation of markets for coal and other industrial products, but as the result of the German entry into Prague in that month the agreement was never ratified.<sup>2</sup> The last serious attempt at international collaboration, made at the World Economic Conference in 1933, had failed. The raw materials enquiry undertaken by a League committee in 1936-37 established the truism that the only real solution to 'the problem of commercial access to raw materials is to be found in a restoration of international exchanges on the widest basis', but the League was itself impotent to convert this conclusion into reality.<sup>3</sup> Henceforth it was recognised that if the problems of industry and trade were to be tackled at all they would have to be dealt with on a piecemeal basis. Meanwhile the failures themselves had contributed towards the growth of neo-mercantilism in many countries, of which Germany and Italy provided the archetypes and of which the beginnings appeared in most states, including the democracies. The developments of greatest significance from the point of view of the United Kingdom were the direct participation of the Government in some international trade cartels and its indirect intervention in others.

The changed character of the cartel system is perhaps best brought out in connection with rubber and tin. The first serious attempt at rubber control, the Stevenson plan, broke down in 1928, partly because it failed to be fully international in character and was, therefore, ineffective in control, and partly because it was flagrantly in defiance of the interests of consumers. The withdrawal of control unloosed the worst effects of unplanned production, as was reflected in the violent fluctuations in rubber prices, which swung from 4s. 8d.

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<sup>1</sup> For a full discussion of the effects of the Ottawa Conference and its influence upon Britain's international economic relations see W. K. Hancock, *Survey of British Commonwealth Affairs* (1940), Vol. II, Part I, pp. 230-67.

<sup>2</sup> League of Nations, *Commercial Policy in the Inter-war Period* (Geneva, II, Economic and Financial, 1942, II, A.6), p. 89.

<sup>3</sup> *Ibid.*, pp. 77-78.



per pound in 1925 to 1½d. per pound in 1932.<sup>1</sup> The Netherlands East Indies producers, who had benefited as a result of the original British restriction scheme, now found themselves as hard hit in the new depression as their rivals and in April 1933, at their suggestion, new proposals for restriction were considered. A year later an agreement was reached between producers from all areas except South America and Liberia, which provided only a negligible proportion of the world output. This agreement was reinforced by a direct agreement on the part of the eight governments involved, who undertook to prevent the accumulation of excessive stocks.<sup>2</sup> It was thus possible to bring ninety-eight per cent. of the total production of rubber under control and, by intergovernmental support, to endow this control with a more permanent character. The average quarterly prices for the period 1932-38 are shown in Table 4.

Table 4. *The price of rubber per pound, 1932-38 (standard ribbed sheet in London)*<sup>1</sup>

	1932	1933	1934	1935	1936	1937	1938
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
1st quarter .	2·6	2·2	4·8	6·2	7·2	11·0	7·0
2nd quarter .	1·8	2·9	6·2	5·9	7·4	10·6	5·9
3rd quarter .	2·4	3·8	7·3	5·7	7·7	9·0	7·8
4th quarter .	2·5	4·0	6·5	6·3	8·7	7·4	8·2

Source: *I.R.R.C. Statistical Bulletins*

<sup>1</sup> The prices are the average of the monthly averages.

The scheme, which determined exports on a quota basis under the direction of the International Rubber Regulation Committee, remained in force until the outbreak of the Pacific War in December 1941.<sup>3</sup> The committee itself remained in existence until April 1944, after which plans were made for the creation of a new committee on a much wider basis.<sup>4</sup>

The rubber scheme, in spite of the setting up of a consumers' consultative committee, retained in their eyes some of the stigma of its

<sup>1</sup> G. Rae, *op. cit.*, p. 357.

<sup>2</sup> H. R. G. Greaves, *op. cit.*, p. 127; F. E. Lawley, *op. cit.*, II, 208-12.

<sup>3</sup> In attempting to evaluate the new plan it is of interest to recall that no less an authority than Mr. F. D. Ascoli said in February 1938: 'The Stevenson Scheme was based on entirely different principles, and in his opinion it was bad, whereas the present one was good, but the effect of both schemes on price was identical. Starting with a temporary rise, this was followed by a fall, then came stagnation, then a sudden rise, a sudden fall, a little stagnation, and then a further rise.' (G. Rae, *op. cit.*, p. 371.) This comment, however, fails to take into full consideration the effects of changed demand as well as the differences in price fluctuation in the two schemes.

<sup>4</sup> *The Economist, Commercial History and Review of 1943*, p. 12. See also *The Economist* for 3th May 1944, p. 657.

predecessor, whereas the tin scheme represented, at least from the consumers' point of view, an attempted improvement on it. Early efforts to build up an international tin cartel had, apart from the Bandoeing Pool of 1921, failed on account of conflicts between high cost and low cost producers and had in any case been rendered for a time superfluous because of the rapid increase of demand. But in 1929, when prices began to fall again, renewed attempts were made to adopt a restrictive policy on a voluntary basis. This attempt proved fruitless and was, therefore, followed by the intervention of the Governments of Malaya, the Netherlands East Indies, Bolivia and Nigeria, who created the quota scheme, already noted, under which production and export quotas were to be enforced by the governments themselves. To support the activities of the committee a buffer tin pool was created by private interests but with the official support of the signatory governments. The scheme started with membership covering ninety per cent. of total production, and by stages the independent producers were brought into it, with a few exceptions, of which the most important was China.<sup>1</sup> Meanwhile, two progressive features were introduced into the scheme: a Research and Development Council, taken over from the producers, was made responsible for assisting both the producing and consuming sides of the industry;<sup>2</sup> and a Consumers' Advisory Panel was created to assist the International Committee, although it was given no voting powers. The Council is of special interest as a pointer to changing policy since one of its functions was to develop new uses for tin. This was, in essence, a formal recognition by the producers that profits could be maintained not solely through supply restrictions but by expanding the volume of sales. The scheme had been favourably considered by a sub-committee of the World Economic Conference of 1933;<sup>3</sup> but its restrictionist policy was the subject of considerable public criticism in this country and the United States in 1935, criticism which contributed to an early increase in the production quotas. It remained inadequately representative of both manufacturing and final consumers,<sup>4</sup> but its general tendency in the years immediately before 1939 was to increase production to satisfy increased demand rather than penalise consumers through scarcity prices. This relaxation of restriction was taken to represent 'a better appreciation among producers that policies of pure deprecation are as injurious to producing interests in the long period as they are to consumers in the first instance'.<sup>5</sup> Similar policies were applied in the

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<sup>1</sup> P. Lamartine Yates, *op. cit.*, pp. 145-50.

<sup>2</sup> F. E. Lawley, *op. cit.*, II, 227.

<sup>3</sup> *Ibid.*, p. 91.

<sup>4</sup> *Ibid.*, p. 239.

<sup>5</sup> P.E.P., *Report on International Trade* (1937), p. 95.

case of copper, nickel and rayon.<sup>1</sup> It is noteworthy also that restriction policies tended more and more to impose restriction on exports rather than production, aiming thereby to avoid sudden distress amongst producers and workers, and unnecessary intervention in the home market. It was hoped also, through the creation of buffer stocks, to make it easier to even out wide and sudden variations in demand. But the initial *raison d'être* for control schemes was the maintenance of stable prices, and here, apart from specific cases like aluminium, they never reached their goal. As was shown by Lord Keynes, the average annual price range during the ten years 1928-38 in the case of four selected commodities, rubber, cotton, wheat and lead, was sixty-seven per cent. The average excess between the year's highest and lowest rubber prices during the period amounted to ninety-six per cent.<sup>2</sup>

The British Government's relations with the International Steel Cartel represent a special approach to a special problem. Here there arose the unusual situation of the Government pressing the industry to collaborate with an international cartel with the object of eliminating competition between continental and British producers and of making effective the planning of supplies. The agreement which was reached in 1935 was for the orderly arrangement of trade, not simply for its restriction, as was shown in 1937, when the British finishing industry sought imports in excess of the cartel quota.

One further special feature in connection with international cartels should be noted. Certain monopoly producers or groups of producers were able to exercise a considerable control over production and distribution by the very nature of their industrial structure, without needing to build up complicated and often transitory international cartels. This applied particularly to platinum, nickel, whale oil, wolfram, manganese ore, asbestos, camphor, quinine<sup>3</sup> and, to a certain extent, to oil. On the other hand, a number of important materials such as timber, wool and cotton were never brought under any effective international control, either commercial or governmental.

The further growth of large-scale industry in this country had important effects also upon its commercial structure, a field where considerable research remains to be done. The inter-war period witnessed the transfer of many of the functions of the merchanting organisations to trading branches of industrial firms, combines or

<sup>1</sup> *Ibid.*, pp. 95-97; see also A. Plummer, *Raw Materials or War Materials?* (1937), Chapter IV.

<sup>2</sup> J. M. Keynes, 'The Policy of Government Storage of Foodstuffs and Raw Materials', *Economic Journal*, XLVIII (1938), pp. 450-51. For further examples see League of Nations, *The Transition from War to Peace Economy* (Geneva, II, Economic and Financial, 1943, II.A.3), Part I, pp. 23-24.

<sup>3</sup> P.E.P., *op. cit.*, p. 123.

associations. The merchant with his knowledge of overseas markets and his experience of the different grades and qualities of particular commodities had acted as the unofficial co-ordinator of a whole group of small suppliers. When the suppliers merged they naturally tended to absorb these functions rather than have them performed through intermediaries. The most outstanding case during the period was that of the Iron and Steel Corporation, set up as a subsidiary to the Federation to handle the bulk purchase of imports and their distribution, as well as to provide centralised export where necessary.<sup>1</sup> It was established in 1935 with the Government's blessing, since it provided an essential instrument for the fulfilment of its policy *vis-à-vis* the continental cartel as well as for the general rationalisation of sales. It was hoped, however, that the merchants would co-operate with the Federation and that the industry would in that case be prepared to use their services 'so far as economically justifiable'.<sup>2</sup> Merchants on the whole were not greatly satisfied with this sort of qualified approval and viewed with alarm the Government's plans for the reorganisation of the cotton industry, published in 1939.<sup>3</sup>

There were other reasons also why merchants were losing a great deal of their influence in Britain's foreign trade. The general reduction in world trade necessarily reduced their scope and numbers, while the growth of bilateral trading, which required that at least the preliminary trading negotiations should be undertaken by government departments, made some of their work unnecessary. Barter and other causes greatly affected Britain's entrepôt trade, which fell from £110 millions in 1913 to £62 millions in 1938; the trade in raw materials fell still more steeply, namely from fifty-eight per cent. of the total in 1913 to forty-eight per cent. of the smaller total in 1938.<sup>4</sup>

The third important feature of this period was the development of control at home. When the Government was finally converted to a tariff policy in 1931 as a means of safeguarding British industry, it proposed to charge British industry a price for its tariffs. The price was reorganisation and modernisation; the instrument the Import Duties Advisory Committee. By the creation of such a body to advise it on tariff modifications the Government revealed that its gifts were conditional gifts. Its guiding principle was that if an industry wanted protection it must show itself worthy of protection. The relationship between I.D.A.C. and the iron and steel industry provides a useful

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<sup>1</sup> Cmd. 5507, paras. 113-23.

<sup>2</sup> *Ibid.*, para. 123.

<sup>3</sup> Cmd. 5935.

<sup>4</sup> See A. Shenfield, 'A Note on the Entrepôt Trade of the United Kingdom', *London and Cambridge Economic Service* (1939), XVII, 373-75. It is of interest that the principal commodities in the entrepôt trade in 1938 were wool, hides and skins, which were not the subject of any powerful restrictions scheme. Non-ferrous metals, which came next on the list, were controlled but not severely restricted.

illustration of its policy and procedure. The introduction of protective measures in 1932 had been coupled with the requirement that the industry should undertake 'a considerable measure of reorganisation';<sup>1</sup> but plans to do so were handicapped by the inherited structure of the industry. Various trade associations had been in existence for decades, and these had been partially and loosely held together by the National Federation of Iron and Steel Manufacturers; but the industry was, in general, characterised by 'the lack of organisation, the almost casual development and the competition largely unrestricted at home and almost wholly unrestricted from abroad'.<sup>2</sup> Dilatoriness and resistance were encountered from individual members and sections of the industry, but by 1935 the first stage of the reorganisation was complete. The British Iron and Steel Federation had been set up under a chairman (Sir Andrew Duncan) drawn from outside the industry, and the various trade associations affiliated to it had themselves been made stronger and more fully representative of their particular branches. The Federation was given power 'to support and co-ordinate the activities of the associations and to give effect to the will of the industry in matters of general policy'.<sup>3</sup> Gradually more trade associations were brought within the framework of the Federation, and by 1939 only two important groups, for foundry pig iron and tubes, remained outside, although they worked in close co-operation with the Federation. In the period from 1935 onwards its functions were extended and defined and on the eve of the war elaborate machinery had been devised for many aspects of the industry, including the control of production, prices, wages and foreign trade. All these duties were to be performed under the direct supervision of I.D.A.C., which felt itself empowered to safeguard alike the interests of producers, consumers and the nation as a whole.<sup>4</sup> By 1937 I.D.A.C. was claiming that the industry was advancing 'from the purely individualist standpoint to the conception of an ordered and co-operative industry acting with a full sense of its responsibility to the community'.<sup>5</sup> But compared with its competitors abroad, and particularly with the steel industries of Germany and the United States, the British iron and steel industry had still a long way to go both in the integration of its structure and in the application of the results of technical progress.

The iron and steel industry occupied a peculiar position in relation to the Government. It was an industry which had suffered much during the inter-war depressions and shared only slightly in improve-

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<sup>1</sup> Cmd. 4181.

<sup>2</sup> Cmd. 5507, para. 143.

<sup>3</sup> *Ibid.*, para. 27.

<sup>4</sup> Cmd. 4851, para. 9.

<sup>5</sup> Cmd. 5507, para. 144. For a more critical estimate of the Federation see D. L. Burn, *Economic History of Steel Making* (1940), pp. 495-515 and G. C. Allen, *op. cit.*, pp. 111-14.

ments in trade; the unemployment question in heavy industry presented a serious social problem which called for intervention; while it was no less clear that a degenerate steel industry would prove a severe incubus to the national effort in any future war. The Government could, therefore, hardly resist the demand of the industry for a protective tariff, while the industry could hardly resist the demand of the Government that it should modernise its methods and organisation. In certain other industries the process of organising and centralising made less progress. In the case of coal, in spite of a series of government measures, the industry remained technically backward in many spheres and controlled and organised according to local interests rather than national plans. The cotton industry also successfully resisted any fundamental modifications of its traditional organisation. On the other hand, some industries, which had in any case become virtual monopolies or been absorbed within the framework of two or three giant concerns, developed the full mechanism of integrated control and planned output. We see this particularly in the 'new' industries, as is witnessed by the growth of firms like Unilevers, Imperial Chemical Industries and the British Aluminium Company.

But whatever the nature of the industry or the measure of success which accompanied these reformist measures, the very fact that I.D.A.C. was obliged to negotiate with industries on the subject of tariffs tended to stimulate the growth of some sort of national organisation. The Government could not negotiate on these matters with individual firms, but only with the leaders of industry as elected through trade associations. These associations, therefore, became less and less debating societies of minor importance and acquired a dignity and sense of responsibility which went a long way towards preparing for industrial self-discipline and self-government. It was during these last years of peace also that the Board of Trade was confidentially consulting responsible members of each industry concerning the methods and machinery of control in time of war. The growth at the same time of technical and research bodies attached to individual industries further developed national as against parochial qualities. According to an American observer, the position at the end of the *first* decade of peace had been that 'industry after industry had revealed an almost total incapacity to meet the existing crisis under its existing organisation'.<sup>1</sup> The *second* decade was the transitional phase when British industry under the combined pressure of economic depression and government intervention began to shed some of its traditional characteristics and unify and reform its whole fabric.<sup>2</sup>

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<sup>1</sup> A. F. Lucas, *op. cit.*, p. 42.

<sup>2</sup> An estimate of control policies in general, made in 1934, remained, however, to a large extent true, namely that they 'are not co-ordinated with other parts of the nation's economic life . . . they are not policies at all, but crude compromises between vested group-interests' (W. L. Holland (ed.), *Commodity Control in the Pacific Area* (1935), p. 7).

The *third* decade brought war, and control in a fuller sense than had ever been experienced in this country.

The story of control in the inter-war period is, then, the story first of the abolition of war-time direction; then, after this first victory, of the struggle of the trade to restore control by its own means and, to a considerable extent, in its own interests; and finally of the emergence of collaboration between the Government and the trade to generalise control, originally in order to deal with the depression and ultimately to fulfil the demands of war. It remains to inquire what were the effects of these developments during the twenty years of peace upon the national capacity to wage war.

#### RAW MATERIALS AND THE THREAT OF WAR

What were the raw material conditions required by the state to enable it to deploy fully its military and industrial forces in time of war? It needed first of all reasonable stocks to help tide over the initial dislocation of supply, and, in the longer run, perhaps to replace valuable sources lost to it. It needed, secondly, adequate supplies from its usual sources, many of which were abroad; if these were inadequate or for any special reason diminished, alternative, although possibly more expensive, supplies from abroad or at home; and, if these too failed, substitute materials. It needed, thirdly, control machinery by which it could acquire, distribute and generally direct materials in the most efficient manner in the interests of war. Before examining this three-fold problem, however, it is necessary briefly to note one general issue which to a varying degree faced all nations in their efforts to prepare for and wage war.

It is clear that a fundamental matter which overshadowed all the preparatory work was the strategic hypothesis of a future war. To put the problem in its crudest terms: an aggressor nation would naturally choose the *optimum* moment for an initial act of war, i.e. a time when it and its allies were best prepared and its adversaries or potential adversaries least prepared. The aggressor, therefore, possessed a fairly clear military hypothesis, although he might be in some doubt concerning the number of allies which his victim could call to his aid. On the basis of this hypothesis he could, therefore, roughly calculate what his total needs would be, including his needs for raw materials; what alternate sources he must develop; what stocks he required and what control policy and machinery suited him best. He could not, of course, make any firm plans for a lengthy period because, once he had committed his fortunes to war, he was at the mercy of uncertain elements which might reduce his early plans to meaningless academic exercises. But if, on the other hand, a nation did not regard the existing world order as irremediable except by war, it would lack the type of information available to the aggressor.

It would not know when war would come and by whom the attack would be launched, although its military and diplomatic advisers might be able to make some shrewd guesses. It would not know what its demands were likely to be or how its supplies would be affected. In general, it had to work on an hypothesis or a series of hypotheses which would depend on so many imponderables that much of the work would be swiftly vitiated in war.

In Germany, soon after the advent of the Nazi Party to power, it became clear that her aspirations would probably not be fulfilled without some drastic modification in the whole European framework. We witnessed, therefore, the rapid, almost frantic, accumulation of reserves, the development of substitute materials at home and the redirection of the industrial machine upon a war basis. In other words it seemed that if you wanted a totalitarian war you could only efficiently prepare for it by a totalitarian peace structure. The United States, by contrast, was a 'satisfied' power with no need or desire to embark upon an act of war. In its plans, therefore, it could work on numerous assumptions or their permutations, but it had no firm programme similar to that available to the Germans. As a general precaution, the War Department was instructed to make plans 'on the basis that the United States has lost control of the sea'.<sup>1</sup> The instructions continued: 'The consequence of this would be the development of shortages of certain raw materials which are known as strategic'.<sup>2</sup> An estimate of these shortages was then to be co-ordinated with estimates of service requirements in time of war (which were likewise handicapped by the same uncertainties which hampered supply estimates); and, where a disparity emerged between requirements and supply, special measures such as the development of alternate sources were to be instituted. This work, which was the responsibility of the Commodities Division of the Planning Branch in the War Department, was necessarily of a highly secret nature, but part of it was made available to Mr. Brooks Emeny in the preparation of his book, *The Strategy of Raw Materials*, published in 1936. In it he tells us that a useful rough basis to work on as far as requirements were concerned was the annual average for the years 1925-29, the period of highest consumption.<sup>3</sup> In the United Kingdom similar duties to those of the Commodities Division were performed by the Principal Supply Officers Committee of the Committee of Imperial Defence, assisted by the Board of Trade. The uncertainties of the date and character of a future war were roughly similar to those encountered by the United States. The nature of the data upon which they worked is considered

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<sup>1</sup> Industrial Mobilisation Plan, 1933 (quoted in Brooks Emeny, *The Strategy of Raw Materials* (New York, 1936), p. 10).

<sup>2</sup> *Ibid.*, loc. cit.

<sup>3</sup> *Ibid.*, p. 9.



in the chapter which follows: but clearly, British officials were in no easier position than their American counterparts.

#### CONTROL POLICY ON THE EVE OF THE WAR

As far as the supply situation was concerned, Great Britain occupied an almost unique position in its access to a large number of essential materials. Table 5 sets out the percentages of world output produced in the British Empire, the United States, the Soviet Union and Germany in 1938, except where otherwise stated. In the case of petroleum, of which the Empire was not a large producer, British interests had, as already indicated, taken the precaution of obtaining control of foreign sources.

In 1936 it was estimated that of the twenty-five minerals and commodities 'essential for modern life' the British Empire had adequate supplies of eighteen, some supplies of two and none of the remaining five, whereas Germany had adequate supplies of four, some supplies of two and no supplies at all of nineteen.<sup>1</sup> Only two states were at all comparable to the British Empire: the United States and the Soviet Union. The British Empire and the United States exercised between them a dominant control of the total raw material supplies.<sup>2</sup>

It was clear then that reserves were plentiful. But restriction schemes, as such, could restrict present and potential supplies in their control of productive capacity. We have seen, for example, how the Stevenson Scheme led to a diminution in the proportionate output of rubber in the British Empire. Apart, however, from the effects of direct or total restriction, the general restrictionist policy, which to a large extent was concerned with maintaining the *status quo*, tended to safeguard the output of the high cost producer while holding up the legitimate expansion of the low cost producer. The net effect was first, that the average cost of production tended to be held at a higher level than it would have reached under freedom of output; secondly, the elimination of uneconomic producers was delayed or postponed indefinitely; and, thirdly, it was not easy to expand production during an emergency because of the absence of a reserve of low cost capacity. These consequences of restriction and control inevitably levied a charge upon the national effort in time of war. It has been argued that the later schemes in restricting exports rather than output left the home market free and did not exercise the same stringent

<sup>1</sup> H. of L. Deb., Vol. 100, Col. 234.

<sup>2</sup> In 1930 it was said that the 'British Commonwealth and the United States together possess about two-thirds and control three-quarters of the world's reserves of economic minerals' (F. E. Lawley, *op. cit.*, II, 160, quoting C. K. Leith). On the completion of the bilateral agreement between the two countries in 1938 a declaration was made which was of greater significance than either party could at the time have realised, namely, each Government undertook to 'give sympathetic consideration to any representations which the other may make with respect to questions concerning access to raw materials' (Royal Institute of International Affairs, *Survey of International Affairs* (1938), I, 25).

Table 5. Percentages of 1938 total world output of certain raw materials produced in the British Empire, the United States, the Soviet Union and Germany<sup>1</sup>

Material	British Empire	U.S.A. <sup>2</sup>	U.S.S.R.	Germany <sup>3</sup>
Antimony ore (metal content of ore mined)	2.1	1.6	—	4.1 <sup>4</sup>
Bauxite (crude ore)	15.6	7.7	6.1	2.3 <sup>4</sup>
Chrome ore (metal content)	37.6	3.6	17.3 <sup>4</sup>	—
Copper ore (metal content)	29.8	25.1	4.8	1.5
Iron ore (metal content)	12.9	20.2	19.5	6.1
Lead ore (metal content)	35.9	18.7	3.9	5.6
Magnesite (crude) <sup>5</sup>	7.4 <sup>4</sup>	16.1 <sup>4</sup>	..	42.6 <sup>4</sup>
Manganese ore (metal content)	36.1 <sup>4</sup>	0.8 <sup>4</sup>	41.3 <sup>4</sup>	8.3 <sup>4</sup>
Mercury	—	11.9	5.2 <sup>6</sup>	1.9 <sup>4</sup>
Molybdenum ore (metal content)	0.2	92.4	..	—
Nickel ore	87.9	0.4	2.3	..
Tin ore (metal content)	39.2	—	—	0.2
Tungsten ore (metal content)	25.2	7.8	..	—
Vanadium ore (metal content)	34.8	27.3	—	—
Zinc ore (metal content)	29.0	25.1	3.7	11.9
Coal	24.8	29.0	10.9	16.4
Petroleum (crude)	2.4	60.3	10.6	0.2
Phosphates (natural)	9.1	26.8	15.8 <sup>7</sup>	—
Potash <sup>8</sup>	0.1	9.6	4.1	62.2
Pyrites	8.9	5.4	..	4.2
Sulphur	—	78.5	—	—
Cotton (ginned)	17.0 <sup>9</sup>	41.7 <sup>9</sup>	13.5 <sup>9</sup>	5.1
Flax	0.6	—	68.0	5.1
Hemp (fibre) <sup>10</sup>	—	—	29.3 <sup>9</sup>	4.1 <sup>9</sup>
Jute	98.9	—	—	—
Rubber	51.9	—	—	—
Silk (raw)	0.1	—	3.6	—
Wool	45.7	11.5	7.6	1.2
Copra <sup>11</sup>	29.8	32.6	—	—
Cottonseed	19.6 <sup>9</sup>	38.1 <sup>9</sup>	14.5 <sup>9</sup>	—
Linseed	15.4 <sup>9</sup>	6.4 <sup>9</sup>	23.1 <sup>9</sup>	1.0 <sup>9</sup>
Palm oil and palm kernel oil	42.5	—	—	—

Source: Based on *World Production of Raw Materials* (R.I.I.A. Paper 18 B) (1941)

<sup>1</sup> In a number of cases figures are wholly or partially estimated. In certain cases where no reliable production figure is available the export figure has been used.

<sup>2</sup> Including the Philippines.

<sup>3</sup> Including Austria and Czecho-Slovakia.

<sup>4</sup> The figure for 1937.

<sup>5</sup> Excluding calcined and caustic, etc.

<sup>6</sup> The figure for 1934.

<sup>7</sup> Apatites only.

<sup>8</sup> In terms of K<sub>2</sub>O content or equivalent.

<sup>9</sup> The figure for 1938-39.

<sup>10</sup> Excluding Manila hemp.

<sup>11</sup> Net exports.

control as production schemes; but demands in the home markets, particularly in colonial areas, were neither highly elastic nor substantial and the ultimate effect of export restriction was found to be output reductions. Where, moreover, supply was inelastic (e.g. it took at least five years before a rubber tree came into production and two

years before steel works, such as those in Corby, reached full output) restriction necessarily limited productive capacity and therefore speedy expansion in war. Finally, restriction and control were exercised by the trade for the trade and, apart from cases such as oil and steel, the control had no direct relevance to the military and strategic needs of the nation. Against this, however, it has been urged that, in the absence of control, producing industries like rubber would have more or less perished under the devastating effects of wide variations in demand and price, and that the very existence of adequate supplies in time of war depended upon the maintenance of the general welfare of the trade in peace. It must be added also that, apart from any limitations imposed upon output by these schemes, further severe limitations were begotten of the autarchic tendencies of the second decade of the inter-war period which resulted in the serious decline in world trade.

Great Britain could, on the whole, feel legitimately secure with her existing raw material supplies, which she could only lose as the result of major defeats in theatres of operations affecting the chief sources, or through heavy losses at sea. Neither situation was seriously envisaged, as is reflected in the absence of large raw material stocks and of schemes to develop alternative sources at home. Here the contrast between Great Britain and Germany was most striking. Germany knew that on the outbreak of a war with the Western Powers she would lose the large bulk of her sea-borne supplies. On this assumption she adopted the twofold policy of building up close relations with her neighbouring states which in due course led to full control; and, secondly, of establishing an important series of industries for the production of substitutes.<sup>1</sup> While pursuing the latter course, Germany was obliged to re-orientate fundamentally her whole economic outlook, to control imports and consumption and to manufacture uneconomic and highly expensive alternative materials. These basic changes could only be achieved in an autocratic state which had assumed the fullest powers over the control of industry, finance, trade and, indeed, the social life of the nation. Britain, on the other hand, had large reserves of the natural materials within the Empire or in 'controlled' areas. Her problem throughout the twenty years had been a problem of plenty, not scarcity; it would have been difficult, for example, to justify the building up of a synthetic rubber industry at a time when the rubber industry was wrestling with the problem of surpluses. Her shipping industry was an integral but long-suffering feature of her economic existence, and to have developed substitute industries in the United Kingdom would have been, apart from its general wastefulness, a further blow at the shipping industry, already

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<sup>1</sup> It was claimed by the German Chancellor that this search was not 'a question of "substitute products"' but of entirely new materials' (F. E. Lawley, *op. cit.*, II, 161).

suffering the effects of Ottawa and the decline of world trade. It would have reduced the return on overseas investments, so important a part of our invisible exports, and would have required also the adoption of a semi-totalitarian policy, unthinkable save as the result of a political revolution or war.

In the United States a government investigation under the Secretary of Commerce (Mr. Herbert Hoover) had listed in 1924 a number of raw materials which were believed to be controlled by foreign combinations in restraint of trade, namely, sisal, nitrates, iodine, potash, rubber, quinine, tin, mercury, coffee and quebracho.<sup>1</sup> To safeguard supplies Mr. Hoover recommended conservation, the production of these, or substitute, materials at home and the search for other sources abroad.<sup>2</sup> A special example of this policy was the expansion of American reclaim rubber production during the first restriction scheme and the development of synthetic during the second. Similarly, British fear of too great reliance upon American cotton led to its increased growth in Egypt and the British Empire. In neither case did the governments instigate these policies, but they were introduced with their full support.

The British Government's attitude to the steel industry was much more clearly an example of its desire to ensure a healthy, stable industry at home capable of meeting the full impact of war; but time was short and circumstances unpropitious for a thorough reconstitution of the industry to lessen its reliance upon overseas sources. Efforts were made, such as the building of the Corby works, to increase the proportion of home ore consumed in steelmaking, but the industry was still very heavily dependent upon overseas sources for the richer ores, which in metal content represented about half the total consumption. It also lacked the 'balanced' structure of the German and American steel industries: its steelworks consumed more pig iron than its blast furnaces could produce, which meant that, to keep up its steel output, it would be necessary to continue, and perhaps increase, pig iron imports from abroad, which had amounted to 650,000 tons in 1937.<sup>3</sup> Government efforts to stimulate home-grown timber production were more directly applied, since the state was itself the largest landowner. Its policy during the first decade of the peace was largely governed by the desire to replace the losses arising from the heavy cutting during the war; in the second decade its efforts were increased mainly as an alleviatory measure for unemployment. By subsidy to private owners, by land purchase, by assistance in providing forest workers' holdings and by the encouragement of education and

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<sup>1</sup> W. S. Culbertson, *op. cit.*, footnote to pp. 316-17.

<sup>2</sup> Wallace and Edminster, *op. cit.*, footnote to pp. 298-99.

<sup>3</sup> B.I.S.F., *Statistics of the Iron and Steel Industries for the year 1937* (1938), Table 58.

research, the Government hoped to improve the available resources.<sup>1</sup> Of the total United Kingdom consumption of timber before the war, however, only about four per cent. was obtained from indigenous sources.<sup>2</sup> But timber policy, if it was to be effective, had inevitably to be a long-term policy, and it was not to be expected that the results would be immediately evident. By the end of 1939 the Forestry Commission had acquired 714,000 acres of plantable land of which 434,000 acres were under woodlands, while a further 126,000 acres had been planted on private land with the Commission's assistance. The government encouragement of the dyestuffs industry through the restriction of imports was consistently maintained throughout the whole period. Apart from these, and other measures of minor importance, the general supply position of the British Empire, as well as the political and economic conditions of the time, were not conducive to the large-scale development of native or substitute supplies. It is not without significance that the word *ersatz* as currently used acquired an entirely derogatory flavour. Similar considerations reduced to small proportions measures for the salvaging, the reclaiming and the general conservation of raw materials.

To sum up: during the twenty years between the wars control policy and structure had changed in form and emphasis from isolated efforts by the trade to regulate markets and prices to the fuller control of supply, distribution and use. The methods and machinery which had been devised were still open to criticism on the grounds of their ultimate objectives as well as their immediate activities; and the question whether control should be applied by restriction of output or expansion of consumption had not yet been brought to final issue. While it cannot be said that the British control system of the First World War was established in a moment of absence of mind it was certainly set up with a complete absence of plan. When the Second World War came there existed control machinery and programmes which the Government might accept or redirect, but whose character and effects it could not ignore. The last important control measure in the inter-war period was the setting up of the Ministry of Supply in July 1939, by which the Government announced its resumption of some of the powers it had discarded twenty years before. But this was by nature a war measure which finally closed the account of the peace-time direction of raw materials.

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<sup>1</sup> *Trade Regulations and Commercial Policy of the United Kingdom*, pp. 132-35 and Appendix I.

<sup>2</sup> Cmd. 6447, p. 7.

## CHAPTER II

# PLANNING THE REQUIREMENTS OF WAR

**W**E have been considering in the last chapter the manner in which the trade organisations had developed controls of their own and the effect these had upon the war plans which were germinating. We must now look at the period from another viewpoint: that of the central governmental organisation. What plans and what machinery was the Government itself evolving to supply and control raw materials in war?

Since 1919 one of the duties of the Committee of Imperial Defence had been to assess the situation which would arise, and the requirements of that situation, should Britain become involved in hostilities. In the process many questions came up for consideration, such as the military alliances which could be built up, the scale and character of the conflict, and the size and requirements of the armed forces. With these and comparable issues we are not concerned, but the central raw materials problems which faced the C.I.D. may be summarised in a sentence: what supplies of raw materials were required to fulfil the increased and changing service demands, and what measures were necessary to safeguard them in time of war?<sup>1</sup>

To advise the C.I.D. in these tasks, the Principal Supply Officers Committee<sup>2</sup> had been set up in 1924. Its functions were briefly defined as follows:—

to co-ordinate the war supply arrangements of the three Defence Services, to avoid the competition and delays that occurred in 1914, and to ensure that the most advantageous use should be made of British industry in an emergency.

Originally the members were the senior supply officers of the three defence Services; but the committee was reconstituted in 1927 with the President of the Board of Trade as chairman and with additional representatives from the Home Office, the Board of Trade and the Department of Scientific and Industrial Research. This change confirmed the breadth of the economic issues with which such a committee was bound to be concerned. The P.S.O. Committee in its new

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<sup>1</sup> For a discussion of some of the lessons to be learned from the First World War see Appendix 1.

<sup>2</sup> For the P.S.O. organisation see Appendix 2.

form dealt with major policy at its annual meeting, and received reports from the Supply Board. This was an inter-departmental committee which, through its special Supply Committees, investigated service requirements of finished stores and the capacity to manufacture them. The activities of the Supply Board are dealt with elsewhere in the history of war production; but we must note here that one of its special functions was to express these estimates of finished stores in terms of raw materials. The estimates were then passed to the Board of Trade Supply Organisation, a committee of Board of Trade officials, which was responsible for investigating the raw materials supply position.

But the problem of the increased service call upon raw materials in time of war could not, manifestly, be examined in isolation. This expansion of demand was bound to affect the availability of the materials to satisfy other non-service requirements. In general, then, the Organisation, as it was called, was charged with collating the requirements for the basic raw materials during the first year of war which were likely to be presented by the principal users, namely: the Services and civil defence; the dominions, colonies and allies; and civilian consumers and the export trade. On the basis of these estimated requirements the Organisation was made responsible for recommending to the P.S.O. Committee measures and machinery to safeguard the supply of raw materials in time of war and to control their distribution and use. In this chapter, we must examine the objects and achievements of the P.S.O. Committee in attempting to form estimates of national requirements of raw materials in the event of an emergency. In the following chapters we must consider the measures and machinery designed to meet such an emergency.

#### SERVICE ESTIMATES

The service departments were engaged in working out their requirements in terms of finished products, such as ships, aircraft, guns and shells, but both before and after these estimates had been broken down into terms of raw materials, a series of complications were encountered. The difficulties of producing any reliable and fairly constant service estimates arose from four principal considerations: changes in what was called the 'hypothetical contingency'; changes in the estimates of requirements by the departments themselves; the technical difficulties involved in making these calculations; and the shortage of staff.

In the early stages, the work of the P.S.O. Committee was not based upon a general strategic hypothesis, but upon estimates of expansion of each of the Services as provided by the service departments. Other volumes in this series are concerned with the scope and nature of these requirements and they are, therefore, not examined

in detail here. But one general feature dominated the period: the fact that these estimates did not and indeed could not remain constant. The first was presented in November 1924, but the P.S.O. Committee added: 'We consider that it is advisable to base our plans on an over-estimate rather than an under-estimate of requirements'. A year later the C.I.D. provided some details concerning the sizes of divisions, and added the important recommendation that: 'The basis of provision of articles should include six months' reserve'. In 1926 the P.S.O. Committee reported that all sub-committees had been instructed to work on the assumption that all three Services would undergo maximum expansion in time of war, but asked: 'What nations or groups of nations are we to assume as belligerents for the purposes of pursuing our enquiries?' and 'In the case of each hypothesis, which of the Services is to be assumed as the predominant partner?'<sup>1</sup> Just over a year later it was asking the Chiefs of Staff Sub-Committee of the C.I.D. for a more specific basis for estimates involving neither maximum nor 100 per cent. expansion. The C.O.S. Sub-Committee in reply stated: 'We cannot visualise any war which fulfils the conditions required'. It indicated also its assumption that the task of the P.S.O. Committee was very general in character:

It, therefore, appears to us that all that can be usefully done at this stage is to provide the Principal Supply Officers Committee, not with an actual war plan, but with an artificial hypothesis of such a type and on such a scale as will enable them to form a practical working estimate of the nature and extent of the demands which a great war is likely to make on industry. They would then be able to identify the factors which are the most likely to limit our industrial effort, and to contrive plans, of a general nature, for overcoming those limitations. The information and data thus collected could then be applied to any particular war contingency that may arise in the future.

The C.O.S. Sub-Committee, therefore, gave what it called an 'artificial hypothesis' for a war in an extra-European theatre and provided estimates which not only differed quantitatively from those provided in 1924 but were also more detailed. After Hitler's accession to power the researches of the Supply Organisation were complicated by a new problem. In November 1934 the C.I.D. put forward the recommendation that preparations should be completed on the assumption of a possible war with Germany within five years, while the hypothesis of an extra-European conflict should not be

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<sup>1</sup> In 1928 the Supply Board raised questions of an even more detailed character: 'Is it to be assumed that the terrain is mountainous or level? That it is well watered or waterless? That there are or are not railways and roads? That the climate is hot or cold?'



modified.<sup>1</sup> The Supply Board was thus obliged for the remainder of the pre-war period to work on two hypotheses at once.

Apart from the complications which arose originally from an uncertain hypothesis, and later from working upon two hypotheses at the same time, the Services themselves, as the result of research and military intelligence about developments in other countries, were frequently changing their views concerning the size and equipment of divisions or squadrons and rates of wastage. These changes modified the estimates of requirements of finished stores, and, therefore, of raw materials in time of war. The first estimates of service expansion, provided in 1924, did not remain unchanged for long, and when, in 1930, Air Force expansion estimates were altered for the third time, this decision evoked from the P.S.O. Committee the protest that 'changes in the hypothetical basis of our investigations tend to complicate an already complicated problem'. The committee asked that 'No further changes should be made unless absolutely vital.'<sup>2</sup> It was impossible, however, to keep these estimates static, and throughout 1935, after the issue of the new 'hypothetical contingency', the defence departments were engaged in working out new estimates on the basis of the two hypotheses. But from now on these estimates were speedily becoming out-of-date under the impact of the rearmament programme.<sup>3</sup> The Supply Board in its plans for war-time expansion had necessarily to start from certain fairly definite estimates of the size of the forces on the last day of peace. The incidence of the rearmament programme in peace-time was bound therefore to complicate the Board's calculations of the initial basis from which war-time expansion might be presumed to begin. The Board pointed out that:

It becomes a matter of considerable importance to arrive if possible at some estimate of the proportion which the 'war potential' to be created by the Deficiency Programme bears to the 'war potential' requisite under the hypothesis furnished to the Supply Board by the service departments.

In September 1936, the Supply Board stated that the new hypothesis

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<sup>1</sup> The Supply Board pointed out that the existence of two hypotheses complicated their work still more and led to duplication.

<sup>2</sup> It may be noted that a similar view was expressed three years after the outbreak of war, in a House of Lords Debate; '... The best and most economical use of raw materials is only possible if the Fighting Forces look ahead, plan what they will want and stick to their plans.' Lord Winster, H. of L. Deb., Vol. 124, col. 319, 10th September 1942.

<sup>3</sup> A P.S.O. memorandum of June 1935 stated, for example, that the figures contained in a paper 'were now somewhat out-of-date since the recent decision by the Government to increase materially the Air Force'. Another memorandum of February 1937 said, in reference to Admiralty changes, 'The revised statement shows an appreciable reduction in the number of vessels to be laid down; this has been found possible on account of the larger numbers of ships being built in peace in accordance with the rearmament programme.'

'involved a complete recalculation' and that much of the work already carried out had been rendered valueless, but the Board was reminded in 1937 that the War Office hypothesis 'was not to be regarded as a final decision'. Between 1937 and 1939 the service estimates continued to change and from the Munich crisis onwards the C.I.D. was aware that the estimates upon which it was working might at any moment be drastically altered. Those alterations came in the spring of 1939 after the German entry into Prague, and as was expected, the estimates, particularly of the Army and Air Force, were profoundly affected.

Even if the basic estimates had remained unchanged throughout the period, there would have arisen nevertheless *technical* problems which appeared virtually insoluble. The Supply Board was, in the early stages, engaged in what was described as a 'general investigation' of the supply position and these technical problems did not assume large proportions. By the time of the Imperial Conference of 1930 it was claimed that this general work was more or less complete, and that the more specialised work of definite planning was about to begin. It had so far been possible to identify those materials, such as aluminium, antimony, calcium carbide, copper, ferro-chrome, flax, magnesium, timber and toluol, which would require special attention, and to work out details about their normal sources of supply.

But it came to be increasingly recognised that technical questions rendered more obscure the problem of obtaining firm figures of the quantities of raw materials required. There were immense difficulties in the way of restating an item of military equipment, a tank, a gun or a ship, in terms of the total requirements of all the raw materials which went to make up that equipment. Moreover, the effect of military and scientific research, as well as the experience of events, frequently changed the patterns of munitions in use. This, in turn, often involved changes in the raw materials used; and requirements were also modified both by the search for improvements and by the exploration of substitutes on the grounds of economy. There were, for example, at least 2,000 varieties of timber, and there were lengthy discussions between the Supply Committees and the Board of Trade Supply Organisation concerning the exact quantities and qualities required. Accordingly the Organisation reported in 1933, that in view of the great variety in demand, it had not yet found it possible to formulate proposals for the conservation and maintenance of supplies of timber in time of war. Two years later the position had not improved. To these difficulties in forming estimates was added that of trying to estimate the indirect requirements of raw materials by the Services. For example, the total service requirements for abrasives appeared in 1932 to be extremely small, but their use in connection with munitions plant was found later to be considerable.

Because productive capacity was used for many purposes, of which service needs only formed a part, a further element of uncertainty was introduced. Thus, in connection with stainless steel the Organisation reported, in 1934, that they were:

unable . . . to make any recommendations as to the conservation and maintenance of supplies as it was found that the furnaces and rolling mills used for stainless steel were also used in the production of other special steels.

These difficulties continued,<sup>1</sup> and further uncertainty arose because of lack of information concerning potential capacity abroad. For example, the Air Ministry conducted an inquiry during 1938, both at home and in North America, into the available manufacturing capacity for airframes and engines; and the Supply Board pointed out that, until it was known what was to be the total capacity allocated to aircraft production in this country, it was impossible to deal effectively either with Air Force requirements for other products such as guns, or indeed, with certain requirements of the other two Services. This therefore naturally affected the current estimates of raw material requirements.

The great variety of potential uses for a given material obviously complicated the work of the Organisation very considerably. On the other hand, to have ignored the results of research in order to avoid complications would have condemned the military machine to impotence before it was even set in motion. The task of keeping estimates up to date was not impossible, but to deal with this and numerous other technical problems required considerably more trained staff than were at any time available to the P.S.O. Committees.

Throughout the pre-war period in fact the whole supply organisation laboured under the very severe handicap of inadequate staff. As early as September 1931, the Supply Board was pointing out that: 'more rapid progress in various directions could only be made by increasing staffs within departments where pressure is greatest'. In October 1932 it reported:

The magnitude and difficulty of the problem . . . are not sufficiently appreciated. . . . At the present rate of progress there is no prospect of these investigations being completed in any reasonable period, and certainly not before earlier investigations have become out of date.

The need for increased staff, particularly for technical duties, was

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<sup>1</sup> E.g. the Supply Board noted in 1936: 'The prolonged heating time required as the result of the extended application of nickel chrome molybdenum steel has reduced the output of forgings from existing plants. We have therefore invited the Defence Departments to consider the extent to which other types of steel might be utilised in emergency'.

therefore once again emphasised, and in the same year attention was drawn to the fact that British defence departments were spending £8,000 per year on technical staff for this work while the expenditure by the American Government was twenty-five times as much. In 1934 the P.S.O. Committee noted also that the French Government employed 223 officers and technical experts on work for which the War Office was allowed only twenty-nine technical experts.

In the years before 1935 the technical staff of the Services were needed by their departments and only a limited number were released to assist in the work of the Supply Board. After 1935 the rearmament programme made the heaviest calls upon trained staff who could only consider their Supply Board work as of secondary importance. As late as April 1939 the Advisory Panel of Industrialists was stressing the serious consequences which flowed from this fact.

We appreciate this difficulty (they reported) and realise that there are limits beyond which it is not possible to go in divorcing the planning of war potential from current work under the rearmament programme, with the consequent separation of the staffs employed on each. We are, however, of the opinion that the efforts of certain Supply Committees might be considerably strengthened by the addition of more full-time staff who would be solely employed on war planning.

Although numbers were gradually being increased during the last years before the war at no time were the Supply Committees or the Board of Trade Supply Organisation sufficiently staffed to deal with the enormous problems allotted to them.

#### CIVIL DEFENCE ESTIMATES

Here, in the matter of civil defence, we have a striking instance of the problem of preparing for war-time demands without having any peace-time foundations on which to build. Gas masks, for example, were mercifully not a normal article of peace-time manufacture,<sup>1</sup> and the whole problem of civil defence had barely arisen during the First World War, or indeed at any time in the history of warfare. The expansion of civil defence requirements depended on the measure of security aimed at, and the possibilities were almost limitless. In the matter of hypothesis, the basic framework was even more uncertain than those upon which the service estimates were drafted. When the question of gas masks for civilians was first raised in 1932, Supply Committee I (Armaments) pointed out that, in asking for civilian respirators, the Air Raid Precautions Committee was evidently work-

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<sup>1</sup> The hope was expressed at a meeting of the Supply Board that 'a public demand for gas masks would arise in which case it would become a normal commercial article and be sold by all stores.'

ing on an hypothesis of a European war, while the Services were still working on the hypothesis of an extra-European conflict. It added that, if the Supply Committee now worked on the A.R.P. Committee hypothesis of a European war, the service requirements for gas masks would have to be increased and the estimates of the availability of gas masks for civilians would, therefore, have to be recalculated!

The P.S.O. Committee was made responsible for estimating requirements for gas masks and protective clothing for the civil population in 1933, but in 1934 the committee was still awaiting information from higher authority, 'not only as to the types and quantities of respirators and other materials, but also as to what government department will be responsible for their supply in peace-time'.<sup>1</sup> It was again pointed out in December 1938 that 'the Supply Board has not up to the present catered to any large extent for civil requirements in war'; and as late as May 1939 the Supply Board mentioned A.R.P. requirements as one of those cases in which 'committees are still ignorant of the products for which they have to provide'. The P.S.O. Committee reported in July 1939 that 'there are large requirements for civil defence which were not foreseen [a year before].'

The Home Office conceived its task as the provision *in peace* of adequate A.R.P. supplies to fulfil the vast majority of war-time needs. For example, the Advisory Panel of Industrialists reported in April 1939 that 'the Air Raid Precautions Department of the Home Office has a problem which differs from that of the service departments in that the great bulk of its supply should be secured before war (i.e. under the rearmament programme).'<sup>2</sup> Civil defence requirements did not, therefore, play a prominent part in the pre-war deliberations of the P.S.O. Committee. The whole problem was one which concerned the rearmament programme rather than the Supply Board and not until early in 1939 were arrangements made for departments concerned with civil defence to be fully represented on the appropriate supply committees of the planning organisation.<sup>2</sup>

Where some attempt was made to formulate A.R.P. estimates, the chief concern was anti-gas protection. In March 1935, when the first statement of A.R.P. requirements was submitted, the only items mentioned were respirators, protective clothing and bleaching powder and 'certain medical materials'. In July 1937 it was stated at a C.I.D. meeting that the question of reserves was being considered only in

<sup>1</sup> In March 1935 the committee was informed that the Home Office would be responsible; in 1938 a Special Supply Committee (No. VIII) to deal with both service and civilian requirements for medical stores was set up.

<sup>2</sup> In December 1938 the Supply Board uttered the warning: 'It is apparent, however, that unless arrangements can be prepared in advance to cater for civil needs on a large scale, there is bound to be much confusion at the outbreak of a war. A great deal of the panic buying of the last crisis was on account of A.R.P. requirements'.

respect of bleaching powder, gas mask components and sandbags. In 1939 the question of providing fire-fighting apparatus and general stores was considered, and some discussion took place over the supply problem of cement for shelters, but no detailed estimates for these purposes appear to have been submitted for Supply Board consideration before hostilities began.

THE REQUIREMENTS OF DOMINIONS, COLONIES AND POTENTIAL ALLIES

As a result of the special meeting held during the Imperial Conference of 1927, two recommendations were submitted to the C.I.D. and approved by it. The first was that the dominions governments should be invited to consider setting up P.S.O. Committees similar to the ones already existing in Great Britain and India; the second advocated the closest liaison between dominion representatives in London and the United Kingdom P.S.O. Committee and the annual exchange of progress reports. The colonial and protectorate governments were asked to include estimates of their war requirements in their local defence schemes. It was intended that these reports and contacts should fulfil the dual purpose of providing information about United Kingdom requirements from the overseas Empire as well as the Empire's requirements from the United Kingdom. The high commissioners for Australia, New Zealand and India regularly attended meetings in London of the P.S.O. Committee; relations with India were fairly close, and her estimated requirements were notified to the P.S.O. Committee from time to time; but plans for official liaison with the Governments of South Africa and Canada had, even by July 1939, made 'but little formal progress'.

The absence of detailed planning on a Commonwealth basis arose out of a number of considerations. In the first place there were the usual difficulties already indicated of obtaining firm service estimates. Although the dominions and colonies encountered this handicap to a lesser degree than did Great Britain, it did nevertheless make itself felt in the work of their Supply Committees. In addition, the various governments within the Empire were unwilling to enter into positive commitments in peace concerning their purchases from each other in time of war and it was in any case argued that lack of shipping and currency might handicap United Kingdom purchases in some parts of the Empire. At the same time the feeling existed that each section of the Empire should be able, as far as possible, to supply its own requirements in an emergency. One delegation, however, presented a motion to the Imperial Conference of 1937 stressing the importance of pre-war arrangements for purchases within the Empire. The motion was not adopted; and in its place the conference passed motions which were explicit in their limitations upon any Common-

wealth plans of this type in peace-time. For example, it was recognised that:

It would be of great value to His Majesty's Government in the United Kingdom to be able to rely on supplies of raw materials from the dominions and India in the event of an emergency, but at the same time, any commitment or undertaking cannot be entered into during peace-time either to purchase or to supply raw materials during a period of war.

The imperial activities of the Supply Board were restricted therefore to an exchange of information concerning the estimated requirements and the available supplies of the dominions and colonies.<sup>1</sup>

The P.S.O. Committee thus received annual reports from the P.S.O. Committees in Australia, South Africa and India, and, at the end of 1938, the Government of Burma was arranging to set up a similar organisation. In addition, the P.S.O. Committee received statements from the Overseas Defence Committee about colonial import requirements. While progress was made therefore in collecting a useful body of information, the P.S.O. Committee in the last report it presented before the outbreak of war had to record that 'the supply of the war requirements of the dominions, colonies and allied powers has not so far been considered by the Supply Organisation in any great detail'. It could do little more at that stage beyond hope that 'as their rearmament proceeds, the dominions will discover what supplies they will be unable to provide for themselves in war'. The P.S.O. Committee hoped also that particulars of these requirements would be notified as soon as possible to the Supply Board.

Preparations to fulfil the requirements of allies and potential allies likewise failed, for similar reasons, to go beyond the stage of exchanging memoranda. In October 1938 negotiations were begun between a French commercial mission and the Board of Trade Supply Organisation concerning French raw material requirements from the United Kingdom and the British Empire as well as from neutral countries.<sup>2</sup> In the discussions which followed very tentative plans were made for co-ordinated purchases in overseas markets of certain materials such as copper and tungsten. In addition, French requirements of lead, nickel, magnesium and other commodities from Canada, Australia, India and elsewhere in the British Empire were discussed. In some cases, for example copper sulphate and ammonium nitrate, the French were informed that no supplies were likely to be available; in others, such as phosphorus, they were assured that supplies would probably be available, while in the case

<sup>1</sup> The arrangements made with regard to wool should be noted as an exception. In the case of wool from Australia and New Zealand negotiations had reached an advanced stage by September 1939. See pp. 57-58.

<sup>2</sup> See also Chapter XVI.

of iron and steel they were told that no reply could be given until more detailed investigations were carried out. Where the British agreed to the French obtaining supplies from Empire sources, the French were informed that the dominion and colonial governments must be approached because the ultimate supply decision rested with them.

Great Britain in any case felt that, in view of the heavy demands made by her own rearmament programme, she could not at present release essential materials to the allies. The Supply Board pointed out in 1939 that:

Owing to the stress of the rearmament programme and the cramping effect on war preparations of the former War Office hypothesis we find ourselves unable to meet these demands [made by Poland, Roumania, Turkey, Greece, Egypt, Irak and Portugal], except fractionally, unless we are prepared to deprive our own forces of the material involved.

Even the vague conclusions reached in the discussions with the French mission were deprived of some of their value by two later events, namely the new Army hypothesis of March 1939 and the commitments entered into with Roumania and Poland. The Anglo-French relationship on the outbreak of war can be briefly summarised. As far as possible the two countries agreed to keep to their normal sources of supply. In a number of cases, however, co-ordinated purchases were considered 'desirable' and it was hoped that a syndicate of commercial missions of Britain and France would be set up here in war. In addition, a French purchasing mission for minerals and possibly other raw materials was to be attached to the Ministry of Supply. On 2nd September 1939 it could still be stated that: 'Tentative discussions only have taken place in the past . . . no definite arrangements of any sort have yet been made beyond the proposed mission'. The extremely limited character of the contacts, and the fact that no final decisions were taken, meant that the whole subject of Anglo-French economic relations was, in the words of a Ministry of Supply official in the early months of the war, little better than 'chaotic'.<sup>1</sup>

#### CIVIL CONSUMPTION AND THE EXPORT TRADE

Apart from its concern with military requirements, the Board of Trade Supply Organisation was instructed to obtain estimates of the raw material needs of the non-fighting departments as well as of public services such as railways, road transport and waterworks. In addition,

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<sup>1</sup> At an inter-departmental meeting held at the end of September 1939, he drew attention to 'the serious gap which existed in Anglo-French economic relations which at the moment were chaotic'.



it was to endeavour to calculate so far as possible the raw materials needed for ordinary civilian consumption and to assess also the requirements of the export trade.

We have seen that, when trying to estimate service requirements of raw materials, the Board of Trade Supply Organisation worked on an explicit service hypothesis involving fairly definite, although frequently changing, requirements. In respect of civil requirements even such limited guidance was lacking. The question of what precisely was meant by minimum requirements for this purpose does not appear at any stage to have been officially answered. Such a question would not have come solely within the sphere of the C.I.D. and in any case it would have eluded any concrete answer, since no policy had been laid down for civil consumption in war, apart from food-stuffs. In the absence of any official guidance on the matter, the Board of Trade Supply Organisation, in general, based its civilian estimates on the normal peace-time consumption.<sup>1</sup> Thus, in its annual report for 1938-39 it stated of bromine that 'it should be possible to arrange for supply to consumers in accordance with normal requirements'; for industrial alcohol it recommended machinery by which 'customers would be limited to their normal supplies'. On the subject of cotton, the report was even more explicit. 'The object of the control would be rather to maintain the peace-time trade, especially the export trade, under war conditions.'

The Supply Organisation did, however, in some cases, envisage a possible reduction in civilian supplies, but where it did so, it examined the problem from the viewpoint of a reduction enforced by shortage rather than a deliberate cut as part of a general economic policy. Thus, of paper, it reported: 'Such supplies might well diminish in war-time . . . In these circumstances consumption of paper would probably have to be severely restricted . . . and it is on these grounds that control appears to be inevitable'. It was aware also that consumption might well have to be reduced, as in the last war, because of a labour shortage, irrespective of the raw material position.

There were, however, some exceptions to this general approach to the problem. The key position which fertilisers were to occupy in the future war economy caused their selection for special consideration by the Board of Trade in collaboration with the Ministry of Agriculture. In this case estimates were based not on normal but on expanded requirements and the Supply Organisation therefore not only made preparations to safeguard war-time supplies but also undertook the purchase of reserve stocks under the provisions of the Essential Com-

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<sup>1</sup> It is noteworthy that, apart from food and petrol rationing, there was no war-time civilian rationing until the first Limitation of Supplies Order of June 1940, ten months after the outbreak of war.

modities Reserves Act of 1938. On the other hand, in the case of silk, both raw and waste, the Organisation gave no figure for estimated civil requirements and recorded, instead, that apart from service requirements silk was 'normally used for luxury articles most of which can be dispensed with in war'. Similarly, for woodpulp, the Organisation gave annual war-time requirements as 1,200,000 tons, 'estimated at roughly half normal consumption'.

In some cases, the Board of Trade Supply Organisation found it impossible to produce any satisfactory figures for civilian consumption; of mercury it reported the difficulties arising from 'the lack of information regarding the normal uses of mercury in this country, which are spread over a large number of trades'. Of timber, the Organisation reported as late as June 1939: 'Very little information is available as to probable requirements of timber in war'. For steel, the Organisation abandoned the project of estimating requirements in detail and simply adopted the maximum output of existing capacity, i.e. 14½ million tons of ingot steel, as its figure. It added: 'It is impracticable in the case of iron and steel and ferro-alloys to split requirements as between "service" requirements and "civil" requirements'. For lubricating oil likewise it was 'very doubtful whether it would be possible to disentangle the requirements of lubricating oil for the manufacture of munitions from the requirements of the civil population'.

In general, however, the war-time civil requirements figures presented by the Board of Trade Supply Organisation in its last report before the outbreak of war were based upon the available figures of normal peace-time consumption obtained from the non-fighting departments and from the trades concerned.

In attempting to form estimates of the requirements of raw materials for the export trade, the Organisation was working, as in the case of civilian consumption, upon no officially laid down policy for the type of export trade to be encouraged, and, in the main, used no other quantitative basis than that of current consumption. The Organisation was, of course, aware that emphasis would be laid upon the exports of those industries which imported raw materials from soft currency countries and exported finished commodities to hard currency countries, particularly where the labour conversion value was high, as in the case of wool. The machinery for the encouragement of the export trade had itself received attention<sup>1</sup> but the question of amounts was not settled during the pre-war period. Thus, of cotton, the Organisation reported in June 1939 'the question as to how far a control is necessary depends largely on the policy to be

<sup>1</sup> A P.S.O. Committee report of June 1939 said of wool: 'The need for the maintenance of as large an export trade as possible does not need to be stressed, and consideration has been given to the question of devising a workable method of encouraging exports'.

adopted with regard to our export trade in manufactured cotton goods'. This absence of an export hypothesis led in general to the production of figures for requirements which did not distinguish between civilian consumption requirements and those of the export trade. Thus, the report added: 'It is clear, however, that by far the greatest proportion of the requirements for cotton will be for civilian purposes, particularly in connection with exports'.

The last pre-war annual report presented by the Board of Trade Supply Organisation gave, with the exception of steel, the total national requirements of raw materials under two heads only: service and civilian.<sup>1</sup> The export figure was included with the latter. The Organisation obtained its estimates for both civil requirements and the export trade from the same source, namely the trade, which provided global totals of the annual consumption of raw materials, without, in most cases, being able to determine what proportion was devoted exclusively to civil consumption or exports.

#### THE VALUE OF THE ESTIMATES

It had been hoped, originally, that through the machinery of the P.S.O. Supply Organisation it would be possible at a fairly early stage to survey the basic national requirements of raw materials in time of war in order to be able to plan to safeguard their supply. That object was never fully achieved. 'It is more than doubtful', observed one official when war came, 'whether the strategists have yet told those whose business it is to supply munitions, how many they want and when'. The changing hypotheses, the technical difficulties of interpreting estimates in terms of raw materials, the difficulties in the way of determining imperial and allied needs, the impossibility of forecasting civilian and export requirements and the shortage of staff all combined to make raw materials estimates unreliable soon after they had been worked out.

The first complete table of service and civilian requirements, referred to above, was produced only a few months before the outbreak of war, but even then it had to be emphasised that 'changes in practice as the result of research and experiment are naturally to be expected and in this sense estimates of raw material requirements can never be final'. In the case of steel, as has been shown, the Organisation assumed that the only reliable estimate was the maximum output of available capacity.<sup>2</sup> Faced with a deteriorating international situation the Organisation reported that it would, in respect of all materials, 'proceed on the assumption that the estimates previously given to them by Supply Committees will eventually be

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<sup>1</sup> See Appendix 3.

<sup>2</sup> See p. 45 above.

altered, sometimes radically, in an upward direction'. The P.S.O. Committee at the same time stressed that 'approximate figures . . . are of more use for the present purpose than figures of detailed accuracy obtained only after considerable lapse of time'. A table of comparison between the estimated and the actual consumption of raw materials during the first year of war is given in Appendix 4 to this volume.

Yet though the objects were never fully reached, the researches of the Board of Trade Supply Organisation stimulated a more detailed analysis of requirements than could ever have been obtained without its work. It succeeded in its major object of directing attention to the supply problems of certain raw materials such as steel and timber, and also provided a wealth of information concerning a variety of other essential materials. The annual reports of the Organisation and the special analyses of the supply position of certain raw materials presented from time to time did serve the basic purpose for which the Organisation had been set up. With these as well as the provisional war-time estimates, the P.S.O. Committee was able to make some preparation for the accumulation of raw materials before the outbreak of war, as well as to plan measures and machinery to safeguard their supply and use in time of war. The character of this planning is examined in the pages which follow.

## CHAPTER III

# PLANNING THE SUPPLY AND DISTRIBUTION

**T**HE Board of Trade Supply Organisation was assigned tasks considerably wider than those described in the last chapter. On the basis of the vast mass of information, of varying reliability and usefulness, that it was collecting, it was instructed to submit plans for both the supply of materials and for the machinery of their control in time of war. It was also to make recommendations for any action necessary before the outbreak of hostilities. We must examine its work broadly in respect of the measures and the organisations it planned; yet, since planning inevitably hinges upon the statistics built into the foundations of the plan, it is to the problem of statistics that we must first briefly turn.

### STATISTICS

One of the gravest handicaps in the planning of raw materials supply and use was the lack of reliable information upon which the Organisation could work. The difficulties presented by the changing service hypothesis, as well as uncertainty concerning war-time productive capacity, undoubtedly contributed to this situation; but another uncertainty flowed from the lack of accurate figures of trade stocks. This difficulty was overcome in the case of some materials when the Essential Commodities Reserves Act of 1938 was passed.<sup>1</sup> Under it the Board of Trade obtained authority to purchase reserves out of the specially created 'Essential Commodity Reserve Fund', and to require the trade to make stock returns. The act dealt, however, only with those commodities 'required as food for man, forage for animals or fertiliser for land, and any raw materials from which any such commodity can be produced' and petroleum and any product of petroleum. As the links between the Organisation and the trade grew closer, and as more trained staff became available in the Board of Trade, the Organisation succeeded in arranging voluntary censuses of stocks of some materials. By the outbreak of war, it had organised a system by which it obtained regular stock returns from the trade

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<sup>1</sup> 1 & 2 Geo. 6, ch. 51.

for twenty-five materials and groups of materials.<sup>1</sup> For nine other materials stock figures at a given date had been obtained.<sup>2</sup>

Preparations were made to put the voluntary arrangements on a statutory basis in the event of war both to ensure speedy compliance and to combat the likelihood of hoarding in anticipation of a rise in prices.<sup>3</sup> These returns were to provide in addition a useful method of checking consumption statistics without which no planning of use could be undertaken. It was left to the controls to collect national statistics of stocks and consumption; but apart from those controls which took over highly developed trade associations, such as the Iron and Steel Federation, there existed very little in the shape of organisation or personnel upon which a statistical department could be constructed. A similar problem was encountered, as we shall see, at the raw materials headquarters of the Ministry of Supply.

#### THE MEASURES FOR THE SUPPLY OF RAW MATERIALS

The 'hypothetical contingencies' upon which the Organisation was working made it appear unlikely that supplies of many essential materials would be cut off, although it was recognised that there might be a reduction in the supply of certain materials such as timber, iron ore, hemp and flax should sources pass under enemy control, purchasing power prove inadequate or shipping space become scarce. The Organisation was therefore instructed to make proposals for the accumulation of reserves *before* the outbreak of war; for the acquisition of materials *after* the outbreak of war; and for the development of home resources.

#### THE ACCUMULATION OF MATERIALS BEFORE THE OUTBREAK OF WAR

As the result of its work on aluminium, antimony and magnesium the Organisation had by 1930 come to the conclusion that the supply position of these materials might become critical on the outbreak of hostilities. The Board of Trade therefore recommended that 'when warning of an emergency is received' the British Government should purchase or obtain an option on essential raw materials in

<sup>1</sup> Cotton, iron and steel, sulphuric acid, sulphate of ammonia, phosphate rock and superphosphates, potash, ferro-alloys, copper, nickel, the platinum group metals, spelter and zinc concentrates, silk, raw material for artificial silk, flax and flax yarn, hemp, jute, tanning materials, industrial alcohol and molasses, bromine, iodine and mica.

<sup>2</sup> Antimony, wool, timber, papermaking materials, leather, mercury, refractory materials, abrasives, carbon black.

<sup>3</sup> Statutory powers, however, did not in war-time prove entirely effective in preventing hoarding. An official report noted in October 1940 that '... there is a strong tendency to hoard stocks to cover the risk that there may be some delay in obtaining supplies under future allocations. There is some evidence that in Great Britain stocks of scarce materials have at times been hoarded in this way with the result that the genuine shortages have been rendered unnecessarily acute'.

foreign countries. 'A double purpose would be served if the material acquired were material that would otherwise be bought by the potential enemy'. This principle of 'purchases when warning of emergency is received' was adopted by the P.S.O. Committee in 1931, and remained in force for four years. But under it pre-war purchases were to take place only during the brief period following a government warning of an emergency, and the question of creating in normal circumstances a reserve of specific raw materials was not involved.<sup>1</sup>

The provisional purchasing agency for each material was allocated to the Service which used it most, for example the Admiralty was to be the agent for calcium carbide, ferro-chrome, ferro-silicon and graphite; the War Office for antimony, copper, cork and petroleum jelly; the Air Ministry for aluminium, magnesium, flax and potash. These arrangements were, however, challenged the following year by the service departments themselves, who argued that the purchasing arrangements should be taken out of their hands and given to the Board of Trade from the outset, on the grounds that the service departments were not normally concerned with raw materials (apart from copper and a little ferro-chrome), but with manufactured or semi-manufactured articles. In any case they possessed neither contacts with the trade nor experienced staff to inspect the raw materials, whereas the Board of Trade had much closer commercial relations and had been designated as the ultimate purchasing organisation. On the basis of this recommendation the arrangements were altered and the Board of Trade took over the anticipatory purchasing arrangements for all raw materials where civil requirements exceeded those of the Services.

The general policy remained unchanged until 1936, and the preparations continued to be based on the optimistic assumption that shortly before the outbreak of war, that is for a period of about three weeks after an emergency had been declared, it would be possible to obtain considerable quantities of raw materials by immediate purchases abroad. As early as 1930, however, the Organisation had tentatively raised the question whether the Services should accumulate stocks of magnesium forthwith. From 1934 the Organisation had indeed been receiving from the trade representations to build up reserve stocks of some materials, such as pyrites and aluminium, but it had recommended against the accumulation of government reserves. In 1936, however, it radically altered its policy and sub-

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<sup>1</sup> The P.S.O. Committee set up a special Anticipatory Purchases Sub-Committee in 1931 with the dual functions of preparing a schedule of materials for anticipatory purchases and, in time of emergency, making the arrangements for purchase. These purchases were to be undertaken by the contracts departments of the three Services as agents for the Board of Trade, pending the establishment of a purchasing organisation in the Board of Trade or a Ministry of Material Resources.

mitted a paper to the P.S.O. Committee setting out the reasons for its change of outlook. The Organisation argued that by now the policy of 'anticipatory purchases after warning of an emergency' was inadequate for a number of reasons. Under the new hypothesis European supplies would be subject to considerable dislocation. The expanded estimates required moreover a greater supply of raw materials than had previously been calculated, while the stocks carried by both producers and consumers had become smaller in recent years as the result of the policy of international cartels in restricting production. In addition, the trend of United States neutrality policy indicated that American supplies of raw materials might be withheld from a belligerent in a future war. For all these reasons it would be extremely difficult to obtain large quantities of raw materials during the short period covered by the 'warning of emergency'. There was added, in 1939, the increasingly important consideration that the pre-war accumulation of reserves would greatly ease exchange difficulties in war, particularly as some prices were bound to rise after the outbreak of hostilities.

The Organisation accordingly recommended in 1936 that the Government should accumulate reserve stocks of raw materials as 'perhaps the only way of safeguarding the position' in some cases, and estimated that at a total cost of £5½ millions it would be possible to accumulate six months' reserves of certain selected raw materials, namely: copper, aluminium, magnesium, antimony, ferro-chrome, ferro-silicon, silico-manganese, molybdenum, tungsten, vanadium concentrates, tin, lead, zinc, sulphur, pyrites, potash and flax. The recommendation was accepted in principle by the C.I.D. Committee on Defence Policy and Requirements; and a special sub-committee was set up to make definite proposals for accumulating a reserve of raw materials 'as soon as possible'. In the same year the Supply Board carried the process a stage further by recommending defence departments to consider holding stocks of semi-wrought materials, such as gun forgings, for immediate issue to manufacturers on the outbreak of war.

The Organisation began in 1936 to present memoranda to the Sub-Committee for the Accumulation of Stocks of Essential Raw Materials, and within a year the amassing of government reserves of aluminium, magnesium, high carbon ferro-chrome, molybdenum, tungsten, vanadium, amber mica, antimony, pyrites and magnesite was under way. In the case of one of these materials, amber mica, however, it was found extremely difficult to obtain reserves and the P.S.O. Committee therefore recommended that research be conducted into the use of alternative materials.<sup>1</sup> The P.S.O. Committee

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<sup>1</sup> See also p. 62.



kept the situation constantly under review and revised recommendations were made at varying intervals. The policy in general was to build up reserves of those materials 'where normal stocks in the country are not large and some dislocation of our normal sources of supply may be expected in the early months of an emergency'. The Government received advice from the trade and in some cases obtained free storage from firms. In 1939, for example, 18,000 tons of sulphur and 50,000 tons of pyrites were purchased by the Government and stored by a firm free of charge. A similar arrangement was made with members of the Fertiliser Manufacturers' Association by which the Government obtained free storage of 10,000 tons of potash.

In June 1939 Sir Arthur Salter presented a memorandum to the Minister for Co-ordination of Defence recommending the immediate accumulation of government reserves of certain foods and raw materials as a means of ensuring adequate supplies, and of economising in shipping space and currency in time of war. He recommended that the raw materials reserve should be estimated as the amount brought in by eight million tons of shipping space, i.e. half of our imports for 1917. He added that, if shipping alone were considered, it would be best to import what was bulkiest and cheapest, e.g. timber: on the other hand he recognised that it might be better, on financial grounds, to buy more expensive materials whose price would greatly increase in time of war. If, however, plans were made on the basis of war breaking out in 1939,

by far the best action would be to fill every ship that is, or can be made, available with *any* raw materials that will store without deterioration, e.g. pitprops, timber generally, ores and metals; and in the next rank (involving some storage but not insuperable difficulty) wool.

He suggested that we should spend about £100 millions on food and raw materials, and by estimating the charge as distributed over a number of years, this would amount to only a small percentage of current defence expenditure. The government reserves of raw materials, petroleum and food, either acquired or authorised but not acquired, stood in terms of shipping tonnage at that time at 3,600,000 tons (apart from service reserves, which were small).

This eleventh-hour proposal was considered by the Board of Trade but opposed on the ground that, even if additional purchases were negotiated, it would be extremely difficult to acquire and import them without considerable delay. For example, no surplus pitprops were available and 'it takes anything from six to twelve months, according to the season of the year, from the time when pitprops are ordered to the time they can be shipped from the producing countries to the United Kingdom'. In addition, sudden large-scale

imports would lead to congestion and delay in the ordinary programme of essential imports, as well as put tremendous strain upon the available port facilities. In many cases, also, these stocks could only be accumulated at the expense of current requirements. Storage, however, was not expected to lead to serious difficulties, even though many of the materials concerned were bulky.

Meanwhile, short-term purchases were specially considered with a view to creating an additional reserve of iron ore or pig-iron, pit-props, sulphur and pyrites. On 26th July the Cabinet authorised the expenditure of a sum not exceeding £15 millions on reserves of raw materials and £5 millions on food, and gave instructions also for an investigation of long-term prospects. The position at the end of July was that authority had been given for special purchases of 150,000 tons of American cotton, 1,000,000 tons of iron ore, 100,000 tons of phosphate rock, 40,000 tons of copper, 17,000 tons of hemp and 120,000 tons of pitprops. It was considered very doubtful, however, whether the intention to import these reserves by 15th October could be fulfilled. In August additional authority was given for the purchase of 200,000 bales of Egyptian cotton and 400,000 bales of Indian cotton, 15,700 tons of tanning materials, 50,000 tons of woodpulp, 160,000 tons of pyrites, 100,000 tons of sulphur and 3,000 tons of electrolytic zinc. But these decisions were taken less than a month before zero hour and such last-minute decisions could not be fulfilled. The most terse comment upon the situation was made by the Minister of Shipping two months after the outbreak of war: 'The whole shipping problem has been aggravated by the fact that we did not start the war with larger reserves of vital commodities'. The estimated stock position on the eve of the war is shown in Appendix 4 to this volume.

Once it had been laid down in 1936 that government reserves would be accumulated, the problem arose of acquiring reserves without creating exchange difficulties for the United Kingdom. An inter-departmental committee was appointed by the Chancellor of the Exchequer in January 1939 to investigate this question; and the policy laid down, and applied in the last months of peace, rested upon the principle that purchases should be made:

from countries with which the United Kingdom has clearing agreements, from countries in which goods can be obtained in payment for export credits, from countries which would buy more from the United Kingdom if the United Kingdom bought more from them, and from the British Empire sterling countries.

The Organisation pointed out in June 1939 that this principle had been applied to a number of purchases. Cotton, however, had presented a peculiar problem in that imports of American cotton had

been diminishing considerably before 1939, but the purchase of a reserve had had to be ruled out on account of exchange difficulties. A solution was found in June 1939 in the cotton-rubber barter agreement between the United Kingdom and United States Governments by which the United Kingdom Government was to receive 600,000 bales of American cotton in return for a quantity of rubber equivalent in value to the total value of the cotton.<sup>1</sup> The Organisation considered also how far the purchases of government reserves, in the pre-war period, would affect the price level, but reported that there was no evidence that the price level was being moved upward to any appreciable extent as the result of the current purchases. These reserves were obtained either under special authority from the Sub-Committee on Defence Policy and Requirements with the approval of the Treasury, or by the Board of Trade for the materials covered by the Essential Commodity Reserve Fund as explained earlier.<sup>2</sup> In the special case of timber, however, the Office of Works after consultation with the Organisation purchased a reserve for emergency repairs to working-class houses.

The acquisition of reserves involved often lengthy negotiations with the Treasury<sup>3</sup> as well as the expense of storage and the danger of loss through deterioration. It was natural, therefore, that other methods of accumulating reserves were explored, and approaches were made to the trade to hold reserves of their own for use in the war effort should the necessity arise.

#### THE ACCUMULATION OF RESERVES BY THE TRADE

It was reasonable to assume that producers, merchants and consumers carried certain reserves of raw materials to meet sudden emergencies, but as we have seen, until 1938, and in some cases 1939, no reliable information existed as to the amounts held. It was, therefore, not always possible for the Organisation to make special recommendations to the trade for the accumulation of reserves. Gradually, as increasing information on both the trade position and service requirements became available, it proved possible to approach the trade with fairly definite proposals. But firms which were prepared to accumulate reserves reminded the Government that they became involved in the expenses of storage and inspection as well as in a loss of interest on capital locked up. In addition they ran the risk of loss through a possible fall in prices of raw materials on the world market. What inducements, then, could firms be offered by way of compensa-

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<sup>1</sup> Cmd. 6048.

<sup>2</sup> See p. 48.

<sup>3</sup> For example, the chairman of the Iron and Steel Federation recommended that one million tons of pig iron be accumulated as a reserve. After consideration the Treasury sanctioned the purchase of half a million tons of Swedish ore, but the sanction came too late for the purchase to be effected before the outbreak of war.

tion for these costs and risks? The question first emerged in 1934 over a proposal by one firm to carry larger stocks of manganese ore in return for an increase of duty on imported ferro-manganese; but, after considering the supply position, the Organisation rejected the proposal. In 1936, when the question of reserves became more important, the Organisation hoped that a general scheme might be worked out on the basis of a government guarantee against loss arising out of a possible fall in prices and with payment of a subsidy equal to the interest on capital locked up. No general scheme, however, was worked out and the Government treated each case on its merits. For example, an agreement was made with the armour plate manufacturers who undertook to carry larger stocks of ferro-chrome on condition that a higher price was paid for the finished articles. Another company agreed to hold an extra 200 tons of cobalt as a reserve on condition that the Government paid the warehouse charges. In other cases, such as ferro-silicon, silico-manganese and manganese, the Iron and Steel Federation undertook to encourage their members to carry reserves of these materials equivalent to six months' consumption. Similarly, heavier stocks of bauxite and abrasive materials were carried by the trade at their own expense.

But progress in the work of accumulating reserves both by the Government and the trade was not rapid and by the outbreak of war much of this task was incomplete. As is shown in Appendix 4, in only six out of the twenty-one cases examined was the total stock of the material equal to its estimated consumption for a period of six months.

#### IMPORT PROGRAMMES

While such provision was being made the Government was also exercised over the larger issues of planning imports in time of war. But in the pre-war period no detailed programme could be produced because the preparatory work of the Organisation was, for reasons which it could not control, never completed before war came. The amount of raw materials to be imported was in fact not known. Nor was it possible to make detailed plans for the allocation of available shipping space according to an import programme. As early as 1931 the Board of Trade had recognised the importance of the problem and reminded the C.I.D. of the serious difficulties which arose in the last war, 'owing to departments taking measures to purchase or control commodities which involved sea transport before the possibilities of sea transport had been investigated'. In 1935 the Organisation once more referred to the very important issues of shipping priorities, but added, 'it is, of course, recognised that no actual priority for materials could be laid down until the nature of the emergency was apparent'. Again, in 1938, it stressed that one of the objects of war-

time control was to ensure the economic use of freight. But on the existing strategic assumptions, it was not envisaged that there would be a grave enough diminution of total shipping space to cause any severe cut in the volume of imports. What was foreseen was the problem of *dislocation*. The Organisation therefore maintained contact with the men allocated to the controls and with the various Ministry of Transport committees, to investigate questions of diversion of shipping from the east to the west coast ports; and various detailed matters of procedure were discussed.

Meanwhile the problem of import licensing was being investigated. In working out the draft control schemes, the Organisation included in a number of the early orders the prohibition except under licence of imports of materials such as iron ore and scrap, paper and paper-making materials. It was, in fact, envisaged that, sooner or later, import licensing would have to be established for nearly all critical materials. These measures were prepared with the threefold object of facilitating exchange control, of eliminating competition abroad between British traders, and of ensuring that at least the beginnings could be made, when war came, in the planning of British imports according to national needs.

As an additional element of this policy and to obtain the best bargaining powers generally, plans were made for centralised long-term purchases by the Government or its agents.<sup>1</sup> To prevent the hoarding of scarce materials in this country, it was agreed also that the Government would have to purchase sufficient materials to ensure that supplies were available; moreover, as the Board of Trade pointed out in 1938: 'if the Government prescribe maximum prices they must in many cases be prepared to undertake the responsibility, either directly or indirectly, for ensuring the continuance of supplies'.

The main source of raw materials upon which the United Kingdom Government expected to place its greatest reliance in time of war was the overseas Empire; and, as early as 1927, the P.S.O. Committee recommended that preparations should be made to secure priority for the United Kingdom in supplies of raw materials and manufactured articles from these areas. In 1930 the Board of Trade recommended to the P.S.O. Committee that the British Guiana Government should be asked to control, in time of war, all stocks and supplies of bauxite, and the Canadian Government both bauxite and aluminium, so that imperial requirements might be safeguarded. In February 1937 the P.S.O. Committee proposed to the C.I.D. that for a number of materials 'His Majesty's Governments overseas should be invited to make arrangements to reserve in time of emergency

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<sup>1</sup> In addition, it was argued that importers might diminish their imports because of the danger of air-raid destruction, and it was, therefore, necessary for the Government itself to become an importer.

sufficient supplies to meet the needs of the United Kingdom'. But, as we have seen, at the Imperial Conference of the following June it was decided that no commitment should be entered into in peace-time for the purchase or supply of raw materials in war.<sup>1</sup>

Until 1938, British activities in this respect were restricted to the exchange of information about supplies and requirements for the different parts of the Empire, and considerable data were made available in this way. In July 1938 the P.S.O. Committee reported that: 'Generally it may be said that, given the co-operation of the dominions and other parts of the Empire, satisfactory supplies of essential materials should be forthcoming, provided that the seas are open'. The report added significantly: 'In the case of most essential materials, all purchases from abroad must, from an early stage, be made on government account, being made, if necessary, jointly with our allies'. It was at this period, with a deteriorating international situation, that positive proposals were made for bulk purchases in the Empire. At its meeting on 21st July 1938 the Committee of Imperial Defence agreed in general terms that the Dominions and Colonial Offices should prepare schemes for the maintenance of supplies from the Empire to Britain. But in October 1938, the Board of Trade reported that, although bulk purchasing arrangements with dominion governments or particular interests, such as the Canadian and Northern Rhodesian copper producers, were contemplated, 'no authority has yet been given to make the necessary inquiries and no indication is yet available as to whether such purchases could be made'. Negotiations were however begun at this time for bulk purchases from the overseas Empire, and draft contracts for several commodities were being drawn up, in consultation with the Treasury. Arrangements were made to purchase the whole output of lead and zinc from one of the Australian producers, and, later, negotiations were started for the purchase of the whole of the Australian and New Zealand wool clip. The completion of these arrangements was intended to mark the beginning of a series of contracts for bulk purchases, which it was hoped would be completed much more speedily now that the principles had been worked out. The wool negotiations were not concluded before the outbreak of war; but, in October 1939, agreement was reached with the governments concerned for the purchase of the whole of the Australian and New Zealand wool clip for the period of the war, and one clip year afterwards. The price agreed with Australia was 30 per cent. above the previous year's price and 2.3 per cent. above the average price of the previous three years; the New Zealand price was 33 per cent. above that of the previous year and 5 per cent. above the average for the previous

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<sup>1</sup> Cf. pp. 41-42.

three years. It was estimated that the annual cost to the United Kingdom Government would be £43 millions in Australia and £15 millions in New Zealand. On the other hand, the Canadian Government had, before the war, made it clear that it preferred the United Kingdom Government to make its arrangements direct with the Canadian producers of copper, nickel, zinc and lead, rather than by means of inter-governmental contracts.<sup>1</sup>

Negotiations for bulk purchases from the British Empire were only in an early stage of development when war came; but arrangements for similar purchases outside the British Empire did not even reach that stage. In the discussions with the French commercial mission in August and September 1938 about British requirements from France and the French Empire and French requirements from Britain and the British Empire, no results were achieved, as we have seen,<sup>2</sup> apart from an exchange of information, and no definite preparations for purchase were made. The question of joint allied purchases was also raised at these meetings, but the discussion proved equally abortive.

#### THE DEVELOPMENT OF HOME RESOURCES

As it became increasingly clear that our imports of raw materials in time of war might fall short of essential requirements, the Organisation turned its attention to the problem of the development or expansion of home sources of supply. It was foreseen some years before the outbreak of war that timber would present a serious war-time problem, and, in 1936, the Organisation reported of softwoods, of which ninety-five per cent. of current annual consumption came from imports, 'there is no prospect, except by disastrous overcutting, of meeting any substantial proportion of total needs from home sources'. A considerably greater proportion of hardwood requirements could, according to the Organisation, be met from home supplies, but difficulties would arise from the small amount of kiln drying capacity in the country and further delays would follow because most of the wood would have to be seasoned in the open air. In its conclusion, the Organisation recommended 'that the Forestry Commission should be asked to prepare the necessary plans for the economic exploitation of the home-grown timber resources'. Discussions were held with the timber trade and the Forestry Commission; and plans for home supplies were directed mainly to the expansion of fellings in government forests in time of war, the control of private felling, and the purchase of standing timber.

One-third of the total iron ore consumed in this country in 1937 (one-half in terms of metallic content) was imported, and it was anticipated that supplies from Scandinavia, Spain, North Africa or

<sup>1</sup> See also p. 254.

<sup>2</sup> See pp. 42-43.

elsewhere might be considerably reduced in time of war. It was proposed therefore to increase home ore production 'to the highest possible figure compatible with the inevitable restriction of labour'. Special attention was to be directed to increased output from the north-west mines in view of the expected reduction in imports of non-phosphoric hematite ore. The Organisation added that 'it should not be impossible' to reach the peak figure of the last war for total home ore production, an annual rate of 14,800,000 tons.

The Organisation also investigated the home production of flax, but reported in 1939 that the prospects were not good. The possibility of using natural or unretted fibre for government fabrics, however, offered some promise, and arrangements were made for the Admiralty to take over the station of the Linen Industry Research Association in Norfolk with increased acreage and up-to-date machinery. In addition the Government purchased the surplus flax pedigree seed from the 1939 home crop with a view to the expansion of production if an emergency required it.

The possible shortage of bromine, which was bound up with the production of aviation spirit for the R.A.F., caused the Organisation to put forward a scheme for setting up a plant in peace-time for the extraction of bromine from sea water. Because of the impossibility of guaranteeing adequate supplies from Palestine in an emergency, sanction was granted for the building of a factory to produce the total estimated requirements of bromine for the first year of the war. To safeguard the interests of the firm supplying eighty per cent. of the material, it was agreed that the peace-time production of the plant should be restricted to amounts necessary for testing purposes and for the production of sufficient ethylene-dibromide for accumulating an increased R.A.F. reserve of tetra-ethyl-lead.

Because of inadequate supplies of sodium metal, sanction was also granted to the Air Ministry for the building of an additional production unit for that material. Also, once it had been established that 'large quantities of sulphuric acid could be produced in Great Britain from native materials', a special plant for the purpose was erected at Billingham.

But in general three main reasons militated against the exploration and development of home resources. In the first place the staff for this highly technical work was lacking. Moreover, the current claims of the rearmament programme for the available labour and materials meant that very little of either could be released for the production of plant for the hypothetical event of our having to fall back upon home sources. The third main deterrent was the belief that the transport of supplies from overseas in time of war would not be drastically curtailed. The last report presented by the Organisation, covering the twelve months ending 30th June 1939, recorded a



number of examples of research into home sources of supply; but for the majority of materials, no large-scale preparations had yet been made for the development of native resources in an emergency.

#### MEASURES FOR THE CONTROL OF DISTRIBUTION AND USE OF RAW MATERIALS

The Organisation was aware that at a fairly early stage after the outbreak of war it would be necessary to assert complete control over all the uses of essential raw materials so that non-essential consumption could be either cut down or eliminated. It was aware, on the other hand, that to introduce those restrictions on the day that war was declared would produce not the elimination of inessential civilian consumption, but industrial and administrative chaos. It was not proposed, therefore, to introduce a complete standstill order on purchase, sale and use when a state of emergency was declared. The Board of Trade, after its 'trial run' during the 1938 crisis, set out its proposals for 'short-term' policy in this respect as follows:

In general, it was proposed to allow all manufacturers to proceed in the usual way with stocks in their possession and with materials delivered under existing contracts, but to require that no new purchases or sales of the materials might be made except under licence or in accordance with a general permission in the Order to make deliveries not in excess of the usual scale. The Board of Trade were advised by the industrialists whom they consulted that where these measures were to be taken it would be most unlikely to impose any handicap on manufacturers for some weeks. On the other hand, the quantities of materials that could be used for non-essential purposes in the few weeks after the outbreak of a war would be negligible in relation to the available supplies. To deal with exceptional cases, especially in the non-ferrous metal trades, it was proposed to take immediate power to issue permits for new dealings. Measures were in contemplation designed to reduce any applications to a minimum by requiring that applications should be made through a recognised trade association and by giving publicity to the fact that permits would only be granted in the case of materials required for work of urgent national importance. These measures, it is thought, would have prevented the number of applications from being such as to overload the licensing machinery at a time when it was being set up.

'Long-term' policy was to be based upon priority directives<sup>1</sup> as to use given to the control by the government priority committee; but considerable powers were to be vested in the individual controls, which were to determine whether a material should be released for a non-service purpose. In general, service needs were to be treated as essential.

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<sup>1</sup> See Chapter IV, pp. 78-79.

For a number of commodities, however, complete control of distribution, use and price seemed impossible without the power to requisition. In particular, plans were made to requisition timber, which, until it was felled, was to remain in private hands, and flax, if the supply situation became critical. The existence of powers of requisition was also intended to serve as a threat to recalcitrant merchants or stockholders who might endeavour to evade the control's direction as to use and sale. The considerable difficulties involved in the use of requisitioning powers were, however, pointed out. They might lead to increased hoarding, while, on the other hand, the threat, or the effect, of heavy air raids might 'depress rapidly the market price of many materials and make purchase of all stocks at market prices at the beginning of the war a bad bargain for the Government'. Moreover, where stocks were large and there was a wide variation in type and quality, the inspection and assessment of requisitioned stocks would be an almost impossible task. For these reasons it was proposed to use powers of requisition only where all other methods of control were unlikely to be effective.

#### SUBSTITUTION

Towards the close of the pre-war period beginnings were made in the conservation of raw materials by substituting for those likely to be relatively scarce in time of war others which were easier to obtain. A number of the more difficult materials had been investigated with varying degrees of success. For example, the United Kingdom was normally dependent upon central Europe for its true hemp supplies, and manufacturers had been unwilling to use Chilean hemp, which was poorly handled and graded. The importers were, therefore, approached by the Organisation to improve the handling so that Chilean supplies could be introduced in place of central European hemp to the extent of 4,000 tons annually. Manila hemp presented an even graver problem in that ninety-eight per cent. of the world's supplies come from the Philippines: but the Organisation was able to report in 1939 that some progress had been made in substituting sisal for both manila and true hemp. Flax had been the subject of investigation since 1931, and a 'constant source of anxiety' because of the extent to which we depended on Belgium and the Netherlands for our supplies of the finer flaxes. Defence departments were recommended to reduce their requirements of imported flax by the use of substitutes (such as cotton and other textile fabrics) and home-grown natural or unretted flax. The Services were at the same time seeking substitutes for Far Eastern silk in the form of mercerised Egyptian cotton and serge.

For mercury, the United Kingdom was dependent upon Spain and Italy and the position was, therefore, equally urgent. Experiments

had been conducted in the use of substitutes and, although they had not reached an advanced stage, the Organisation was able to report, in June 1939, that the position was 'considerably clarified' and that it seemed that the original estimates could be reduced by over eighty per cent. Britain was also dependent upon Madagascar and Canada for the best qualities of amber mica for aero-engine sparking plugs. In view of the danger of supplies being cut off the Air Ministry conducted experiments in the substitution of ceramic for amber mica; by the outbreak of war the Ministry's researches had been successful enough to allow them to place large orders for the production of sparking plugs from the substitute material. Similarly, it was found that fire-refined copper, produced in Lancashire, was a good substitute for some service uses of electrolytic copper.

In the case of timber the Organisation was aware that there were considerable opportunities for substitution, particularly of one soft-wood for another and of home-grown for imported hardwoods. Some exploratory work was done on this subject before the war; and one of the duties of the special economy branch of the Timber Control, set up immediately on the outbreak of war, was to examine specifications with a view to substitution.

Service departments were urged by the P.S.O. Committee to seek substitutes for benzol and toluol; and design departments had been instructed by the War Office to exclude, where possible, the alloys which came from foreign sources in favour of those available from the Empire. In 1936 discussions had also been started to modify specifications of materials used in ordnance factories.

On the whole, however, very little progress was made in the pre-war period in the work of economy and substitution and no pre-war preparations appear to have been made in connection with the salvage of raw materials. The factors already considered which limited projects for increased home production operated with added force to limit preparations for substitution and salvage.

#### THE CONTROL OF PRICES

It was widely realised that the effective prosecution of a war depended amongst other things upon stability of prices. It was, moreover, assumed that the outbreak of war would lead to a rise in prices; and it was known that failure to control that rise would have the double effect of completely upsetting war-time methods of distribution as well as adding enormously to government expenditure, since the Government would be the chief purchaser of the finished products. For these reasons the Organisation, in its negotiations with the various trades, stressed the importance of price control; and for the majority of materials arrangements were made to fix maximum prices of the raw materials, and in some cases the semi-finished or

finished product, from the moment war broke out. For example, steel price control extended to sheets and plates, wire rods and wire; paper price control extended from papermaking materials to paper itself.

The general policy was that prices should be held at the pre-war figure for a period immediately after an emergency was declared. In the case of many materials controlled in peace-time by quasi-monopoly organisations or effective trade federations, agreement was reached to hold prices by voluntary action. This applied, for example, to iron and steel, ferro-alloys, antimony, cobalt, nickel, platinum and other rare metals, calcium carbide, industrial alcohol, sulphuric acid and glycerine. In other cases, where such voluntary action did not appear practicable, draft orders were drawn up for issue under the Defence of the Realm Regulations to prevent rises in price for the time being: these measures were prepared for copper, zinc, aluminium, mercury, hemp, flax, timber, wool, jute, silk, leather and paper. Panic and profiteering rises resulting from a crisis were thus to be prevented, and from thence on new orders would be made, as the necessity arose, altering the maximum prices to allow for increased war-time costs. In the course of the negotiations with the Iron and Steel Federation, which had an elaborate system of price control and centralised purchase operating in peace-time, special arrangements were made. Statutory authority was to be given for the collection of an ingot levy on all steel produced in the country, thus continuing a pre-war scheme operated by the B.I.S.F.; and this levy was to provide funds to even out the prices of imported and home-produced raw materials.

There might in some cases, however, be great disparity between the costs of raw materials from different sources. It was hoped to meet this where practicable by the organisation of government bulk purchases abroad and, if necessary, requisitioning home-produced materials and stocks, as explained above. It would then be possible to issue materials at uniform prices. By thus controlling *supply* the Government prepared to reinforce in practice its legal authority to control price.

#### THE CONTROL OF EXPORTS

Soon after it began its work in 1928, the Board of Trade Supply Organisation was engaged in preparing memoranda on individual raw materials and in recommending the prohibition of exports of those materials in war-time where supply shortages were anticipated. The decision whether the materials in question should be included in the 'prohibited' list rested with the Principal Supply Officers' Committee, but at the same time it was proposed that 'a special list designed to prevent supplies reaching the enemy' be drawn up by the

Advisory Committee on Trade and Blockade. The P.S.O. list was begun in May 1929 with benzol, and from that time onwards additions were made until the outbreak of war. In the last report it presented, the P.S.O. Committee named fifty-three materials or groups of materials which had been approved by the C.I.D. for inclusion in the list of prohibited exports (see Appendix 5 to this volume). In 1936, in connection with the Italo-Abyssinian dispute, the P.S.O. Committee produced, in collaboration with the Customs authorities, a list defining more exactly the raw materials covered by the draft prohibitions. Clearly, the prohibition of exports was to have a twofold purpose: to restrain the flow of essential materials from this country in time of war and, more particularly, to prevent their reaching the enemy.

But what of the flow which might take place before hostilities officially opened? As a result of the Czech crisis in 1938 the Board of Trade drew the attention of the P.S.O. Committee to a further aspect of the policy of prohibiting exports. While the crisis was at its height, exports were going out in considerable quantities to potential enemies. The Board of Trade was powerless to intervene legally to conserve the available supplies of essential raw materials, but succeeded in some cases, with the co-operation of the Foreign Office, in inducing merchants to hold back supplies. The Board of Trade asked for consideration to be given to the prohibition of exports in time of international crisis even though this country was not engaged in hostilities. It recognised, however, that apart from the diplomatic consequences of such a measure, special difficulties might well arise from peacetime prohibitions. Mercury, for example, had continued to be exported from this country during the Czech crisis; but the firm involved was a Spanish one working through London for convenience only, and to have prohibited the export of mercury in September 1938 might have caused the trade to desert London as an entrepôt centre, thereby reducing available stocks. During the drafting of the Ministry of Supply Bill in 1939 a clause was inserted giving the Minister power to prohibit exports of essential commodities when an emergency seemed imminent. It was included with the specific object of preventing exports of scrap metal to Germany in time of crisis; but it was dropped before the bill was presented to Parliament when the Cabinet concluded that there were numerous objections to the clause. For example, existing commercial treaties prevented discriminatory treatment against countries without the introduction of a specific bill for the purpose. On 24th August 1939, however, the export of many essential materials was prohibited by an Order in Council.<sup>1</sup>

In December 1929, the Board of Trade had been made responsible

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<sup>1</sup> S.R. & O. (1939) No. 945. For a discussion of similar problems in 1950, see H. of C. Deb., Vol. 478, Cols. 1553-1677, 18th September 1950.

for the issue, in time of war, of proclamations prohibiting exports, and the authority to do so passed from it to the Ministry of Supply on the outbreak of war.

#### PRECAUTIONS AGAINST AIR RAID DAMAGE

After the Munich crisis the Board of Trade examined the possible effects of air raids upon supplies and stocks of raw materials, and recommended safeguards. It pointed out that there was no satisfactory method of calculating in advance the effects of bombing upon trade and supplies, but it stressed the great danger to concentrated stocks of materials, especially in the ports. For example, it had already been noted that about thirty per cent. of imported softwoods and fifty per cent. of imported hardwoods passed through the Port of London, and large stocks, particularly of softwoods, were maintained at the Surrey Commercial Docks and elsewhere in the Port. Similarly two-thirds of the total national stocks of rubber were normally kept in London.<sup>1</sup> As far as timber was concerned, the Organisation recommended the removal during the precautionary period of a large part of the stocks held in vulnerable areas and the diversion of supplies to ports other than those through which the trade normally passed. The general policy of dispersal and diversion was limited, however, by the inadequacy of storage and port facilities elsewhere, the extra handling and freight charges, and the delays to essential industry which would result from manufacturers having to draw their materials from unusual supply centres. One of the major difficulties in the early stages of the war arose out of the serious delay caused by the diversion of shipping from east coast ports.

These, then, were the broad plans made in the last years of peace to maintain supplies of materials and to conserve and direct their use. What machinery, we may now ask, was created to implement the policy?

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<sup>1</sup> The Rubber Trade Association warned the Organisation that evacuation of stocks would lead to great confusion and the impossibility of identifying ownership once stocks were removed. The Association used this as an argument in favour of control being instituted immediately on the outbreak of an emergency.

## CHAPTER IV

# THE MACHINERY AND MEN FOR RAW MATERIALS CONTROL

**I**N planning their system of control the P.S.O. Committee and the whole supply organisation were concerned with three major problems. They had to create executive bodies to organise the supply and distribution of raw materials, that is the raw material controls. They had next to discover how the diverse activities of the controls should be correlated under one central organisation or ministry directing them. They had finally to define the inter-departmental machinery which would determine the whole raw materials policy for the total war effort. Before proceeding further it is useful to remind ourselves that the fundamental policy underlying the preparations of the pre-war period was set out by the P.S.O. Committee in 1927, and remained in force until the outbreak of war, namely:

- (a) To build up the peace organisation out of machinery which already exists.
- (b) To arrange that procedure in war follows as closely as possible the normal procedure of peace.

We may perhaps examine the maturing of the pre-war plans with these considerations in our minds.

### (i) PLANNING THE CONTROLS

The functions of the controls were never fully defined in peacetime. It was realised that the individual problems of the various materials would to some degree determine, and from time to time change, the character of the proposed organisations. In many cases it was planned that control should involve control of purchase, sale, use and price; the organisation of bulk purchases in the United Kingdom and abroad; the development, where possible, of indigenous sources of materials; and the supervision of conservation measures. It was recognised, also, that while control might in the first place consist mainly of the control of the raw material, it would for a number of materials, such as steel and hemp, have to be extended to semi-finished and finished products. Controls were to be set up either as voluntary or statutory organisations. Where a material, though essential to the national effort, was not expected to be 'critical', the control was to be organised on a voluntary basis by a firm or trade

association under the supervision of the Ministry; alternatively the Raw Materials Department might itself act as 'controller'. This applied, for example, to rubber, silk, asbestos and other materials. Where supply difficulties would be encountered quite early, it was decided that a statutory control should be set up as soon as possible after a state of emergency was declared.

While the general principles of raw material control were being worked out in the pre-war period, three important issues were thrust to the fore: the extent to which existing trade machinery could be adapted to perform the functions of a control, the sources from which the control's personnel should be drawn and the way in which it should be financed.

As early as 1925 the P.S.O. Committee had considered the problem of using existing trade associations in time of war. It recognised the advantages of not having to improvise machinery in an emergency, but pointed out that there were difficulties in the way of adapting existing trade associations. Many of them covered only a proportion of the firms in the industry. They were, moreover, very diverse in character: some were price-regulating associations, some were concerned primarily with labour questions, while a few, such as the National Federation of Iron and Steel Manufacturers, as it then was, covered most matters relating to their particular industries. Objections might further be raised on political and administrative grounds. This consideration was, however, dismissed with the comment that 'the main function, even of those sufficiently developed and organised, would be advisory'. The report added:

But we believe that the stronger and more representative these associations become, the more valuable they are likely to be in war, and we hope that every opportunity will be taken to foster their growth on the principle that they should be the general headquarters of their particular trade.

It therefore commended the work of the Board of Trade in assisting the setting up of these associations.

Economic causes as well as government encouragement<sup>1</sup> led to the creation and strengthening of many of these associations in the period between the two wars; and the Board of Trade Supply Organisation came more and more to rely upon them for technical advice. By 1933 the Organisation had selected a prominent member of the trade for each of the raw materials under examination and discussed with them confidentially the preparations being made for

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<sup>1</sup> The setting up of the Iron and Steel Federation under government instigation in 1932, and the subsequent relationship between the Federation and the Import Duties Advisory Committee, exemplifies the close relationship between the Government and industry during this period (cf. Cmd. 5507 (1937)). See also p. 22 above, et seq.



control.<sup>1</sup> By 1936 a panel of trade advisers had been set up, to whose assistance the Organisation paid the highest tribute; and a year later the Organisation reported that the special work that it had been doing had 'necessitated an increasingly close contact with a number of trades'.<sup>2</sup> Until 1937, however, these contacts had been purely for purposes of advice. After 1937 more detailed work was being done in the preparation of control machinery, and in 1938 the Organisation announced that:

It has been found in general that the control of a particular material could best be worked through the trade association or other body particularly concerned with it, that body becoming in effect a sub-department of the Ministry of Supply.

It is noteworthy that this represents the abandonment of the P.S.O. Committee view expressed in 1927 that 'the main functions even of those [associations] sufficiently developed and organised would be advisory'.

On the basis of employing trade machinery wherever possible, considerable work was done in creating shadow controls. Developments tended to follow one of three main courses according to the nature of the trade association. Where existing organisations effectively covered the larger proportion of the trade, it was claimed that these bodies could easily be adapted to form the control. For example, a section of the British Iron and Steel Federation, which was an industrial organisation covering most branches of the trade, was to form the nucleus of the Iron and Steel Control. Similarly jute and sulphuric acid were to be controlled by the transfer of their trade associations to the Ministry of Supply. The British Metal Corporation, which was a commercial organisation, was to provide the basis of the Non-Ferrous Metals Control. Even in those cases, however, where effective machinery already existed, it did not always cover the whole of the industry. It required considerable effort on the part of the Organisation to bring, for example, the foundry and forge pig iron, the iron casting, the tube manufacturing and the ferro-alloy sections of the industry under the Iron and Steel Control, and nickel, antimony and certain other metals under the Non-Ferrous Metals Control.

A second group consisted of those industries where the trade was, in peace, virtually in the hands of one firm. In these cases, such as the asbestos, industrial alcohol and bromine industries, the firm which exercised the monopoly was to be appointed to take charge of the

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<sup>1</sup> At the same time, the Supply Committees were entering into consultation with industrial firms and 'certain prominent leaders of industry who had considerable experience of munition production in the war'.

<sup>2</sup> It should be stressed that these contacts were confidential ones with individuals, and that the associations as such did not at this stage take part in the discussion.

control under the jurisdiction of the Ministry. In the third group, however, where no adequate trade organisations existed and which included wool, hemp, timber, paper and leather, special *ad hoc* control machinery was planned with the help of leading figures drawn from the trade.

It was proposed also that special committees should be established to assist the controller in an advisory capacity in his relations with the trade. In addition there might be a Civil Allocation Committee to advise on the allocation amongst ordinary industry of such civil supplies as were available. This committee might be drawn in all or in part from persons not connected with the trade. Elaborate preparations were also made by which, for example, the advisory council for wool was to establish district or sectional rationing committees to arrange for the equitable distribution locally of quantities of wool, tops and yarn for civilian production. The declared policy, then, was to use as much as possible of the existing industrial and commercial machinery, and 'adapt the ordinary channels of trade to the control' to avoid dislocation in war and delays to the rehabilitation of trade after the war.

Closely linked with the question of utilising existing trade machinery was that of utilising trade personnel. The original recommendation, made in 1927 by the P.S.O. Committee, had been that the controllers-designate should be selected by the President of the Board of Trade, that they should be 'tried administrators with commercial experience', and that their staff should be selected from the Board of Trade officials who had been dealing with the material in question. The phrase 'tried administrators with commercial experience' was, however, an extremely vague one. It might, or might not, mean administrators drawn from the trade which they were to control. But after the setting up of the panel of trade advisers in 1936, the process of selecting one or more representatives from each trade for special work in connection with control preparations logically developed. When even more detailed planning became necessary after 1938, and the selection of controllers-designate became essential, it appeared also a logical step to choose those men who had been acting as confidential advisers to the Organisation over a period of years.

The effect of this policy was inevitably felt in the control staffing as well. The controller-designate, when recruiting a body of experts to advise him, and the administrative machine through which he should work, drew them not from the Civil Service, as recommended by the P.S.O. report of 1927, but from the trade. By April 1939 arrangements had been made by which 'practically the whole of the required staffs will be available in the trade associations or other bodies which are taken over or in firms and works at present operating in the trade'.

In July 1939 it was stated at a P.S.O. meeting that 'there were a number of civil servants who had been earmarked for employment with certain controls'; but, apart from those who became control liaison officers, the Board of Trade officials who were nominated for appointments in the war organisations were directed not to executive posts on the control staffs but to administrative duties at the Ministry's headquarters.<sup>1</sup>

The policy of drawing controllers from the trades with which they were associated in peace-time was therefore determined by the following considerations. The Organisation had been negotiating with the trading interests over a lengthy period, and it would have been difficult to jettison these confidential advisers at the last moment and select controllers from *outside* the trade. (In the absence of similar preparations and extensive trade associations in the First World War the tendency to draw the control machinery from the trade was by no means as strong.) Moreover, some of the controllers-designate had already had experience in the control of the same material during the last war.<sup>2</sup> In any case, the Organisation also held the view that a controller drawn from and enjoying the confidence of the trade was the man most capable of obtaining the maximum support of the trade for the war effort.<sup>3</sup> On the other hand, when the names of controllers-designate were announced in the summer of 1939, a number of protests were made either by the trades concerned, or by prominent members of the trade, against the individuals selected for certain controls. The Organisation believed that any inclination on the part of the controllers to protect the vested interests of their trade would be counteracted by the strong central authority exercised by the Ministry; any such tendency could in addition be resisted by the proposed Allocation Committee for civil supplies, composed of, or including, business men not concerned with the material under control.

The phrase 'controllers drawn from the trade' does not, however, accurately describe the pre-war official positions of the persons appointed. In general, men were selected as controllers more because of their work in connection with their trade association than on account of their purely business interests and technical knowledge. For example, Sir Andrew Duncan was not himself engaged in any branch of the steel industry but was independent chairman of the

<sup>1</sup> Discussion took place between the Organisation and the Imperial Institute in May 1939 concerning the release of Imperial Institute staff for appointments at the controls or the Ministry of Economic Warfare, but it was agreed that they could best serve the national interest by continuing their work at the Institute.

<sup>2</sup> e.g., Sir Harry Shackleton (Wool) and Dr. E. C. Snow (Leather).

<sup>3</sup> Against this argument it should be noted that members of the trade might be unwilling to supply confidential information to a controller who would himself be returning to the trade after the war. In addition a controller not belonging to the trade might be able to steer a 'neutral' path in respect of one section of the trade against another.

Iron and Steel Federation Executive Committee; Dr. E. C. Snow (leather) was a whole-time official of the United Tanners Federation; Mr. N. Garrod Thomas was a whole-time official of the National Sulphuric Acid Manufacturers Association. Other controllers, like Major A. I. Harris (timber), owed their connection with the Organisation not solely to their business activities but to the fact that they had been presidents of their trade association. Two exceptions to the rule should be noted: Sir Percy Ashley who, until he was appointed Cotton Controller in 1940, had been a civil servant and former chairman of the Import Duties Advisory Committee; and Sir Harry Lindsay, Director of the Imperial Institute until he became Flax Controller. A list of the controllers in office in November 1939, and their pre-war industrial posts, is given in Appendix 7 to this volume.

While it was recognised that the controls would naturally need a government grant, the official policy laid down by the Treasury was that they should be self-supporting as far as possible where they embarked on any commercial activities. Each control was to 'operate its own trading accounts in accordance with the best commercial practice' under the supervision of the finance department of the Ministry and would submit its accounts for audit by the Exchequer and Audit Department. The problem of remuneration for control staff was also considered in 1938, and it was proposed, wherever possible, to employ members of the trade on the ordinary salaried basis of temporary civil servants. The position was, however, more complicated where it was desired that whole organisations such as the British Metal Corporation, the Iron and Steel Federation, and the Sulphuric Acid Association should be taken over *en bloc* to provide the control staff. The salaries received by officials of these organisations were in many cases higher than the appropriate scales for civil servants; and while the Iron and Steel Federation was prepared to make its staff available without charge to the Government, it was anticipated that the question of payment for additional staff and other costs might at any moment arise. In respect of the British Metal Corporation, which was a profit-making trading company, the question involved not simply staff salaries but commission payment for the transactions which the Corporation would be conducting on behalf of the Government. These problems were still under consideration when war broke out.

The problem of compensation was also investigated in the pre-war period, particularly in connection with wool brokers, fell-mongers, cotton brokers, the London Metal Exchange and steel merchants. In view of the bulk purchases to be arranged centrally, it was clear that many traders would be driven out of business. While it was proposed 'even at the cost of a little inconvenience' to employ

merchants wherever possible, it was envisaged that some compensation pool maintained by the surviving firms and the Government might have to be formed for those firms which could not be employed.<sup>1</sup> It was hoped, also:

to draw a distinction between businesses which are closed by force of circumstances during war, over which the Government has no control [and which should therefore not receive compensation], and those businesses which are brought to a standstill by administrative action in setting up some different method of trading.

Similar problems arose in connection with food, and the tentative policy laid down by the Treasury was that of:

not paying compensation, as such, to anybody for loss of business but of trying, so far as possible, to avoid depriving firms of any share in the business. In some trades, this will take the form of making collective agreements with all existing importers and brokers by which they divide up the work and remuneration amongst themselves.

No final decision had been taken on this issue before the outbreak of war.

#### (ii) PLANNING A MINISTRY

On the wider issue of directing the controls a number of questions soon arose. How far would it be possible to separate the control of raw materials from the control of finished stores; and if production and raw materials problems were dealt with by the same department, what effect would that have upon the Services' control of design and inspection? If it were agreed to set up a raw materials department, what should be its structure and functions?

The first detailed examination of these problems was made in 1926 by the P.S.O. Committee, whose report was presented at the beginning of 1927 and approved by the C.I.D. with minor modifications in March of that year. The report dealt with the problem from two aspects: the organisation for peace-time preparations, which has been explained above,<sup>2</sup> and that necessary in time of war. It recommended that in war the control of materials should not be vested in that service department which was the principal consumer of the finished product. For this it gave a number of reasons. The control of a material, it said, which involved civilian consumption should come more appropriately under a civilian department and not the Services; a service department or a Ministry of Supply should not be asked to

<sup>1</sup> In the subsequent discussions the distinction was pointed out between non-stockholding merchants, who were of assistance to the steel industry, and the purely gambling element.

<sup>2</sup> See pp. 33-34 above.

divert an increasing amount of energy to the technical problems of raw material purchase and control. 'For example, the purchaser of cloth or socks is not, as such, peculiarly fitted to control the wool clip'. But if control over different materials were exercised by different departments it would be hard to establish a uniform policy in relation to all consuming departments, the trade and the public. The service ministries would themselves, in any case, probably not be able to agree which department should control a particular raw material. The P.S.O. Committee recommended therefore that, in the initial phases of a war, when serious pressure on supplies was not expected, the control of materials should be exercised by the Board of Trade, but preparations should be made for the setting up of a separate 'Ministry of Material Resources' should the necessity arise. On the production side the Supply Board should continue to function in time of war as the co-ordinating body between the three Services. Should it later become necessary, however, to set up a Ministry of Supply (which should be separate from the Ministry of Material Resources), the Supply Board organisation should be taken over by the Ministry of Supply with full executive authority in placing contracts and, therefore, in controlling design and inspection.

In 1931 the first difficulty arose over finished products, and the P.S.O. Committee laid down the principle that the control of a finished product should be vested in the service department which was the largest user. It was thus settled that the Admiralty should control wire rope, wire, and wire rod, while the control of billets for the production of rods should be under the Board of Trade. In 1933 it was laid down that the Board of Trade should control the production of leather, but the War Office should control the production of boots. In 1935 a similar question arose in respect of non-ferrous metals, and it was agreed that the Board of Trade should control copper and aluminium in the form of ingots, bars, blocks, slabs, cakes, etc., while the Admiralty should control firms engaged in drawing tubes or producing strip for welded tubes.

The scheme which had been outlined in 1927 remained the working basis for all discussions on the subject of pre-war planning until 1936, though confidence in it was steadily waning. In that year the whole question was reopened with a memorandum<sup>1</sup> from the Supply Board. This drew attention to a number of points. No adequate provision had been made for the control of finished or partly finished materials, or of 'those appliances which are the necessary pre-condition to all production, machine tools, jigs, gauges, etc.' The

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<sup>1</sup> The chairman of the Supply Board declared that 'grave misgivings have been entertained by members [of the Supply Board] for several years as to the soundness of the above scheme. . . . When requested to become whole-time chairman of the Supply Board, I was informed that one of my main responsibilities would be to endeavour to find a way out of the *impasse*'.

pressure of the war effort and public opinion would, it was held, sooner or later call for the setting up of a Ministry of Supply in time of war. If and when such a ministry came into existence, it should cover those supplies for which major changes in large-scale industry would be necessary, such as the engineering, metallurgical, chemical and allied, optical glass and instrument industries, while the departments should retain control of supplies in which no war-time difficulty might be expected. The control of production involved also the control of design, and this therefore raised the question of Admiralty supply. It was suggested that the Admiralty could not be expected to hand over control of warship design to a new department, and it was therefore proposed that the Admiralty should retain control of its own supplies, subject, where controversy arose, to the Cabinet Priority Committee. The new ministry, on the other hand, should control supplies to the War Office and the Air Ministry and the common user articles for all three Services. From this suggestion the Air Ministry demurred. It felt that it too could not hand over its design and construction to the new ministry, and asked therefore to be excluded from its jurisdiction.

The Supply Board also asked whether, if a Ministry of Supply were set up, it should absorb the proposed Ministry of Material Resources. If it did not and there were two separate ministries, it would be 'very difficult to say at what point the chain of production leaves the sphere of raw materials'. Control should therefore be exercised, it recommended, throughout the industrial process by one ministry. A production ministry should not be dependent upon another department for its raw materials.

In submitting this memorandum to the C.I.D. the Minister for Co-ordination of Defence reported the view of the P.S.O. Committee that, if a Ministry of Supply were set up, there should be no separate Ministry of Material Resources but a raw materials department under a parliamentary secretary in the Ministry of Supply. He recommended that this question, and the disputed issue of whether the Admiralty and the Air Ministry requirements should remain outside a Ministry of Supply, should be considered by the C.I.D. and, if necessary, a special sub-committee should be set up to examine them.

This sub-committee was established in December 1936 under the chairmanship of the Minister for Co-ordination of Defence, and presented its report a year later with the following recommendations:

1. Arrangements should be made to establish at the outset of a major war a ministry which should control<sup>1</sup> 'certain categories of

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<sup>1</sup> The report added: 'The stresses of a war of any length will mean that control will more and more turn into supply and to that extent this ministry would be a Ministry of Supply'.

supply common to all the service ministries, such as labour and materials, including those which are in one sense raw materials and in another sense finished or partly finished materials'.

2. Since, by recent government decision, no large-scale army expansion was anticipated, it should not be necessary to prepare for a single central supply organisation for finished stores, provided that the present defence programmes of the departments were completed and adequate preparations were made to expand production in time of war.

3. The whole question should be reviewed early in 1939. These recommendations were approved by the Committee of Imperial Defence in February 1938.

After the Munich crisis the character of the discussion changed: the question was now not simply one of deciding whether a Ministry of Supply should be set up in time of war, but whether one should be set up in peace. The matter was considered by the Cabinet in October 1938, and it was agreed that it was undesirable at that stage to set up a Ministry of Supply with compulsory powers over industry and labour; the question of a Ministry of Supply with voluntary powers should be considered later. This issue was investigated by the Minister for Co-ordination of Defence, who advised against such a ministry on the ground that it would offer no advantage from the standpoint of either labour or munitions supply, and might, indeed, delay the provision of essential equipment.<sup>1</sup>

In January 1939 the Minister for Co-ordination of Defence reopened discussions on the whole question of a supply ministry, as had been arranged the previous February, and recommended immediate preparation for the setting up in an emergency of a ministry, 'in the full sense'.<sup>2</sup> The question of whether it should supply all three service departments or only the War Office and the Air Ministry should be deferred until the emergency itself.

By now it was clear that the two conceptions which had influenced the discussion of February 1938, namely, that preparations for expansion made in peace might be found adequate in time of war, and that the war might be one of limited liability,<sup>3</sup> were no longer acceptable. The C.I.D. therefore submitted to the Cabinet for early consideration recommendations embodying the Minister's memorandum,

<sup>1</sup> 'It has to be appreciated that the welding of the transferred staff into a new department and the development of that new department into an efficient machine would be a long and difficult task, in the course of which there would be a very grave risk of impairing the one essential object, the provision of what we require in the quickest possible time'.

<sup>2</sup> i.e., to cover 'finished war stores—guns or motor vehicles or aircraft.'

<sup>3</sup> In the words of one minister: 'It was now clear that if we became involved in war, it would be a struggle for our very existence and not a war in which we could limit our liability . . . if the Ministry of Supply was not already in being at the outset . . . there was a danger that the war would be lost before the organisation could be set up'.



and at a Cabinet meeting in March 1939 the general policy was laid down that preparations should be made for a war-time Ministry of Supply. It should be responsible for supply to the War Office and the Air Ministry and for part of the Admiralty requirements,<sup>1</sup> but it should not be set up in peace.

The decision taken in the same month to expand considerably the Territorial and Regular Armies radically altered the whole situation. The issue became, in essence, that of supplying urgent Army requirements<sup>2</sup> and finally determined the setting up of the Ministry in peace. It also cut the Gordian knot of Air Ministry and Admiralty supplies, since the emphasis was now laid primarily upon Army requirements. It was understood, however, that preparations would continue to be made on the assumption that a Ministry of Supply 'in the fullest sense' would be set up, if necessary, in time of war. On 19th April the Cabinet decided to establish a Ministry of Supply in peace, and on 13th July the necessary act was passed.<sup>3</sup> By the Transfer of Powers Order of 25th July 1939<sup>4</sup> the Ministry obtained control of supply, design and inspection of all Army requirements and of common user articles for the Army, the Air Force, the Admiralty, civil defence and the Commissioners for Works; Board of Trade functions in respect of the Essential Commodities Reserves Act (1938) were likewise transferred to it. On 1st August 1939, when the Ministry began its work, the Board of Trade Supply Organisation was transferred to the Ministry of Supply as the nucleus for the Raw Materials Department.

While the controversy whether there should be a Ministry of Supply was in full blast plans were being made for the organisation and functions of the Ministry of Material Resources, on the assumption that those functions would pass to a raw materials department if the Ministry of Supply were set up. No detailed account of its various duties was produced before the outbreak of war, but a rough plan of its organisation was worked out in the spring of 1939. The department was to be organised under a minister or parliamentary secretary with a senior civil servant as head of the department to advise him. The co-ordination of the controls' activities was to be allocated to a Director of Controls responsible to the permanent secretary. The Organisation recommended that the director 'should be an industrialist of considerable standing and influence with, if possible, experience in guiding the work of decentralised concerns'. He might, if the necessity arose, have the help of a civil servant as an

<sup>1</sup> 'For some part, but not the whole, of the Admiralty requirements, unless and until the stresses of war compel the inclusion of the whole.'

<sup>2</sup> The Ministry of Supply Bill was drafted in such a way as to make possible the full extension of the minister's powers over supplies to the other Services.

<sup>3</sup> 2 and 3 Geo. 6, Ch. 38.

S.R. & O. (1939), No. 877.

assistant director. His duties were set out under a number of heads. He was to act as controller where no control was established. He was also to co-ordinate existing controls, supervise voluntary ones and maintain liaison between the controls and other bodies, including the consumers. He was to be charged also with a number of general functions involving priorities, shipping, transport, publicity and statistics. Other branches of the Ministry were to be concerned with *finance*, including the supervision of control financial activities and the maintenance of liaison with the Treasury; *establishment*, amongst other things to co-ordinate the methods and organisation of the controls with the headquarters department; and there was to be a *legal* department to assist in the drafting of orders under the Defence Regulations and deal with the legal aspects of contracts. It was not proposed to set up an advisory council representing the various controls since, scattered as they were in different parts of the country, meetings would be difficult to arrange. *Ad hoc* conferences of controllers might, if necessary, be called to deal with specific problems. The proposed structure of the department is set out as a chart in Appendix 8 to this volume.

### (iii) INTER-DEPARTMENTAL CONTROL

Immediately the C.I.D. began its work it was brought face to face with the problems of priority for raw materials, productive capacity and labour.<sup>1</sup> Clearly some machinery was necessary to interpret and translate government policy into the day-to-day activities of the ministries and to see that essential needs were fulfilled. The tendency at first, however, was to argue that the setting up of an elaborate priority organisation comparable to the Smuts Committee of the last war was not necessary in the event of pre-war preparations being sufficiently advanced to prevent competition between different essential demands.<sup>2</sup> The same would be true if the war were only a minor one. These hopes did not survive the further researches of the Supply Organisation.

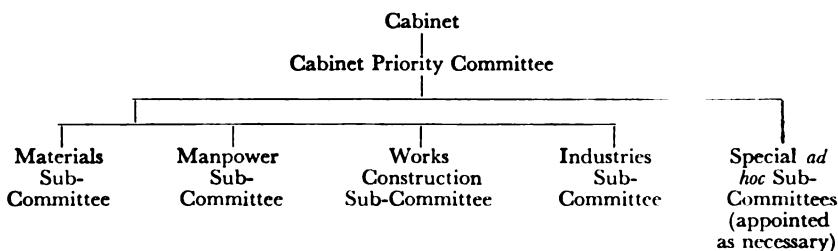
In 1925 the P.S.O. Committee recommended that on the outbreak of a major war a Cabinet Priority Committee should be immediately set up; and at the end of 1926 the P.S.O. submitted a detailed scheme for priority organisation in time of war. The scheme was accepted in principle by the C.I.D. which appointed a special sub-committee to examine the details of such an organisation. The outline which that

<sup>1</sup> In 1924 the Committee stated 'we realise that it is probable that in several instances the stocks of raw materials will not be sufficient to meet all demands, and that, even if this were not so, the man power requirements of the fighting services would probably conflict with those of industry, and thus interfere with production'.

<sup>2</sup> In September 1925 it was stated: 'we think that the investigations of our sub-committees should enable an approximate estimate of war requirements to be formed which can be amended from time to time as necessary; . . . there should be neither undue competition between departments nor waste of the productive power of the country'.

sub-committee presented in 1927 remained the basis of the priority arrangements which were established on the outbreak of war.

The focus of the whole priority organisation was to be a committee of Cabinet rank consisting of: a chairman (a Cabinet minister without portfolio), the First Lord of the Admiralty, the Secretary of State for War, the Secretary of State for Air, the President of the Board of Trade, the Minister of National Service, the Minister of Material Resources, the Minister of Supply (if such a ministry was set up). It was proposed that the Cabinet Committee should work through a number of sub-committees as follows:



The tasks and composition of the Materials Sub-Committee were broadly stated in the following terms:

- (i) The functions of this sub-committee will be to make recommendations on questions involving materials which are referred to the Priority Committee.
- (ii) It will be composed of representatives of the same departments as are represented on the Priority Committee. . . . The chairmanship will be held by the representative of the Ministry of Material Resources.

The report added that, while the P.S.O. Committee continued in its existing form, it would be concerned with settling priority questions in production as a sub-committee of the Cabinet Priority Committee, while the Materials Sub-Committee would be concerned solely with raw materials. 'Should, however, a Ministry of Supply be instituted, then this sub-committee will assume the responsibility for questions involving production as well as materials.' In point of fact the Production and Materials Committees met as one body under the chairmanship of the Parliamentary Secretary to the Ministry of Supply for the first year and a half of the war.

The main structure, planned in 1927, was modified only in detail by the discussions which took place after 1936 over the setting up of a Ministry of Supply. The basic procedure was to be the issue of 'General Directions' by the Materials Committee to the controls, after disputed points had been discussed inter-departmentally on the committee. The method by which the 'General Direction' was to be

enforced was the licensing system through which the controllers were to interpret the direction. It is important, however, to notice that the controllers were to have very considerable powers in determining the various uses to which the raw materials could be put.<sup>1</sup> The pre-war scheme was based upon licensing and not allocations. The whole framework was built upon the assumption that a limited number of raw materials might from time to time be in short supply and that these difficulties could be overcome by *ad hoc* directions as to use. Apart from this, no pre-war preparations appear to have been made for a general raw materials plan extending over the whole field of material resources.<sup>2</sup> The central control was in the hands of committees, in keeping with a time-honoured tradition, not under a single planning and directing authority. Similar conditions prevailed in relations between the Services. The national will and power were thus diffused through a multitude of committees, not concentrated under a unified command. In a democratic society this was perhaps the normal way to act though, as one critic put it, writing in the second half of the war, it meant that 'for a perilously long time the belligerent power of this country was fantastically disproportionate to its industrial resources'.<sup>3</sup> This same criticism was put forward in stronger and more explicit terms in an official report on defence organisation written a year after the end of the war. While attributing to 'the political and economic circumstances of the decade before 1939' the main responsibility for the failure to equip the Services on an adequate scale before the outbreak of war, the report regretted also 'the absence from the machinery of the Committee of Imperial Defence of a guiding hand to formulate a unified defence policy for the three Services'.<sup>4</sup> When the darkest crises came, however, Britain, again in keeping with her traditions, put less reliance on the machinery than she did on the men.

What conclusions, then, can be drawn about the work that we have been examining? There can be little doubt that the valuable explora-

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<sup>1</sup> An official report of October 1940 drew attention to this important aspect of licensing. 'Licensing . . . necessarily places in the hands of the controller wide discretionary powers and it is not easy always to scrutinise in detail the wisdom with which these powers are exercised.'

<sup>2</sup> The Select Committee on National Expenditure (*10th Report, Session 1939-40*) has a critical analysis of the whole priority organisation with special reference to the inadequate links between raw materials priority and production priority. 'In fact, it was stated by one witness that priority might fairly be said to have started in this war where it left off in the last but this remark does not seem to be generally supported by the evidence available to the Sub-Committee.' (Para. 9.) It added 'There is no one centralised organisation responsible for reviewing and minimising delays and deficiencies in the light, not of individual departmental needs, but of the armament programme as a whole.' (Para. 16 (vi)).

<sup>3</sup> *The Economist*, Vol. CXLV, p. 486, 9th October 1943.

<sup>4</sup> Cmd. 6923, October 1946.

tory studies made under the ægis of the P.S.O. Committee provided an extremely useful groundwork upon which the principles and practices of war-time control could be reared. Handicapped by a host of strategic uncertainties and severely under-equipped with staff, these organisations succeeded none the less in extracting from their material certain guiding lines of policy. In keeping with the climate of opinion, ministerial no less than public, it was assumed that the war-time system of controls could and should be derived from the less exacting instruments of peace. No student of the contemporary records can fail to observe for how long and how sturdily this comforting conviction survived. To one writing more than a decade after the outbreak of the Second World War it seems that the lessons of the First World War, as well as the experiences of inter-war depressions, hinted at least that the British economy must submit to a profound and widespread control over a vast field of human effort. But this assumption would have been less easy to make even in the darkening prospects of 1939. To a late hour it had seemed as though the war would be a war of limited liability and many aspects of economic life had reasonable hopes of surviving intact. This assumption explains much that was lacking in the pre-war plans: the knowledge, the staff, the close system of control, the effective co-ordination of controls through some central system. In the end, though much of the work was invaluable even in a rapidly changing situation, much of it had to be speedily superseded as the following pages show. In a word, it proved impossible fully to prepare for total war without experiencing total war.

PART II

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The Requirements of  
Raw Materials



## CHAPTER V

# THE EVOLUTION OF A METHOD

**T**HE difficulties of estimating requirements were, as we have seen, complex enough before war came. When we cross from peace to war conditions we find that the estimation of requirements was beset with far graver pitfalls amidst the clamour of war and the dust and heat of inter-departmental controversy. In this chapter we shall raise some of the general problems which beset the planners, problems of definition and administration, while in the four chapters which follow we shall look more closely at the requirements for specific sectors of the community, the Services, the export trade and the civil population.

The estimation of raw material requirements in time of war represented the last stage of a complicated process. The military strategists had, in the first place, to assure themselves of the necessary men and equipment and they needed therefore to translate their plans into specific demands for manpower and munitions. With manpower this narrative is not concerned; but the munitions demands for so many ships, guns, planes and bombs had in turn to be broken down into estimates of raw materials. These then were passed on to the raw materials divisions which had to discover how far the materials were available and subsequently had to ensure that the right amounts were available at the right moment in the right place. At any of these stages a great margin of error might and did intervene. If the strategic hypothesis proved wrong, or was changed by circumstance, the munitions estimates perforce underwent drastic changes which in turn radically affected the budget of raw materials. The greater the changes in estimates, the more complicated became the task of estimating and providing the raw materials. In America, similar problems arose. An American official, writing in August 1942, commented on the difficulties which resulted from

the lack of a single agreed estimate of the military requirements, due to the fact that the organisation for making the translation into materials is still in process of being developed in the War and Navy Departments.

Moreover, the situation was fluid; the whole basis of calculation might change because of losses of some raw material supplies, the accession of new sources, the development of alternative materials, the modification of existing capacity and numerous other issues which



combined to make all existing plans highly provisional. For all these reasons we must constantly bear in mind that even when tables and calculations of raw materials requirements were presented, they remained throughout the period tentative approaches, in some respects unreal approaches, to one of the principal problems of war planning.

If this element of unreality was always there, the absence of important statistical data aggravated the difficulties of the task. At various places in this volume reference is made to the severe handicaps imposed by the *lacunæ* in the statistical material, especially before, but to a considerable extent during, the war. These defects were not peculiar to one department:

When I was called upon to clothe the Army in May 1939 (said Lord Woolton<sup>1</sup>) the War Office had no statistical evidence to assist me. Here there could be no doubt that to guess was to endanger the chance of victory and the security of the state. I had the greatest difficulty in arriving at any figures that would show how many suits of uniform and how many boots were involved.

This state of affairs prevailed to a varying degree before the war; and, in its early stages, the whole problem of 'breaking-down' finished products into raw material requirements proved a harassing and well-nigh insoluble problem. As the war advanced remedies were sought and, in some cases, found. On the production side of the Ministry of Supply, the statistical division became one of its key branches and its assistance over a field much wider than the mere collection of statistics was invaluable; in the raw materials section, on the other hand, the statistical branch, apart from collecting figures from various sources within the Ministry, enjoyed no intimate contact with the department, while many wide gaps in its data remained. It was never given the authority or information to assume its legitimate place in the planning of raw materials requirements and supplies.

These or comparable difficulties existed, as we have seen, in peace; and they bequeathed grave handicaps to the Ministry of Supply when war came. We may revert at this stage to the special question of steel. Until the last few months of peace, the Board of Trade Supply Organisation, which was charged with the estimation of requirements and with recommending methods for the provision of raw materials, was working on a military hypothesis which postulated that the maximum munitions requirements of iron and steel during the first year of war would be  $3\frac{1}{2}$  million tons of finished steel. The Organisation was obliged, as a sub-committee of the C.I.D., to accept the estimates presented to it. On the other hand, the British

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<sup>1</sup> Address to the Royal Statistical Society, 22nd November 1945, *Journal of the Royal Statistical Society*, Vol. CIX (1946), p. 4.

Iron and Steel Federation, which was not a government body, had views of its own and based many of its arguments not on the C.I.D. hypothesis but upon the conditions of the First World War. It argued that the war effort for the first year would require at least 13 million tons of iron and steel. Here was the dilemma. The chairman of the Supply Board was inclined to agree with the Federation, which favoured the accumulation of certain stocks of materials for the emergency it had in mind;<sup>1</sup> but neither the Supply Board nor the Treasury could accept recommendations to engage in expenditure which was not called for by the hypothesis. Similar handicaps were encountered in planning for other commodities. By the nature of the problem and the structure of the war planning machinery, the Organisation's decision could not be modified without a change of hypothesis. When the great change came, in the spring of 1939, it was too late and the stocks of raw materials were not accumulated. In other words, the estimates made before the war played their part in limiting the accumulation of strategic reserves. Deprived of adequate reserves, the Ministry of Supply lacked the elbow room it badly needed, particularly after Dunkirk.

In war these problems assumed a different but far more acute form. Whereas until the summer of 1939 the potential demands of war had to take second place to the normal demands of trade, after September governmental requirements were given a place of supreme and unchallengeable importance in the supply programme. For example, the overall priority granted to departmental demands for steel completely upset the balance of the whole industry's supply arrangements in the early months of 1940, and nearly brought the steel distribution machinery to a standstill. By contrast, the Timber Control, aware from the outset of the imminence of a timber crisis, issued directions of so stringent a character that the building programme, including that part concerned with construction of a most essential kind, was interrupted. But as the result of the valuable, albeit expensive, experience gained during the first twelve months of war, the Government was able, as we shall see, to identify with increasing clarity the principal divisions into which requirements fell and gradually to ensure a more balanced treatment for governmental demands, civilian needs and the export trade respectively.

This approach represented a significant step forward: but it was only a beginning. It was one thing to agree upon general principles and another to apply them to day-to-day practice. Here we must turn, therefore, to one of the major problems of central policy which

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<sup>1</sup> His task was rendered still more difficult by the fact that he was dependent for this advice upon a trade body which, during the slight recession of 1938, might be interested in the accumulation of a pig iron reserve for reasons extraneous to the problems of war planning.

exercised the minds of the War Cabinet as well as departmental officers during the first twelve months of war. It arose in part from the inability to create before the outbreak of hostilities some central machinery to determine how the available resources should be employed; but it was also an inevitable product of the military crisis of June 1940.

#### PRIORITY AND ALLOCATION ARRANGEMENTS FOR RAW MATERIALS

In the manufacture of a given product three principal factors of production called for consideration: manpower, capacity and materials. In time of war, when the three items became, or threatened to become, scarce, some machinery had to be evolved to utilise all three factors in the most efficient way. Not only did demands generally considered inessential compete with those deemed highly essential; but within the generally recognised group of essential needs it was sometimes necessary to determine which requirement was most essential. It was also necessary to strike a balance between *essential* demands which had a more or less equal claim upon the nation's limited resources. The method devised for dealing with these issues was sometimes loosely described as the priorities system.

The consumer of a finished product was obliged to pose two questions to his potential supplier; the first was: how much? the second: how soon? In other words one was a question of amount, the other a question of time. A priority directive gave to the requirement a *prior* right to the necessary material before all other consumers; the alternative system worked by allocations and granted to all consumers, once they were recognised as essential, an equal title to their share of the available raw materials during a specific period. In effect, under the allocation system, each government department was allocated known quantities of a material: it then examined the demands of the consumers coming within its purview. If the department agreed that a consumer had justified his demands for a share in the total allocation, the department 'sponsored' the claimant's application to the control for a licence to consume. Put in another way, the allocation was the bank account of the department; it drew upon it in the form of cheques to the consumers it sponsored. Priority laid down the order in time at which demands should be fulfilled; allocation laid down the quantity which should be allowed over a period to satisfy a programme. Priority looked at the problem at a given moment in time and with a special requirement in mind; allocation approached the problem as part of an overall plan for a given period.

The organisations which grew up between 1914 and 1918 attempted at first to distribute scarce materials according to priority

directions. But in the end they treated production and manpower problems on the basis of priority and raw material matters on a rough allocation basis. By the spring of 1915, the War Office had begun to issue instructions to contractors that they should give precedence to government orders and by August 1915 the section responsible for issuing these certificates had grown into a special priority branch. For the time being the branch was concerned equally with manpower, materials and capacity; and questions were dealt with inter-departmentally by an advisory priority committee, representative of interested departments but possessing no executive authority. In general, three classes of certificates were granted: A—for direct war work, B—for 'necessary' work, and C—for all other work, while various refinements upon this classification were subsequently introduced. This crude system seemed to work well as long as no critical shortages were encountered. But from the middle of 1916, as the bottlenecks grew narrower, conflicts arose which could not easily be settled by voluntary agreement. Some of these conflicts were aroused by the acute supply situation; others by the increasingly elaborate departmental machinery which was growing up. For example,

allocations of material by supply departments frequently conflicted with priority rulings, for, while the duty of providing supplies of any given war material was definitely assigned to a self-contained department of the Ministry (the Priority Department) acting without interference from other departments, the duty of distributing these supplies often fell in practice to various sections of the steel, explosives or raw materials departments, who frequently acted without reference to each other or to the Priority Department.

Side by side with these priority schemes a raw materials budget or allocations plan was beginning to take shape. Thus, by the summer of 1916, the Ministry of Munitions felt itself able to control the whole output of steel; and, by the last year of war, the total production and import of this material was being allocated amongst departments, after conferences between them, and subject to the general direction of the Joint Priorities Board. It was considered that this arrangement 'relieved the Priority Department of the necessity of attempting to settle which was the most urgent of the demands put forward' since each consuming department would require to plan its own consumption out of its total allocation. By the end of the war, then, a system of allocations was replacing the priority machinery; but no other material was as important as steel and no other allocation plan reached the same advanced stage. For a growing number of materials, however, specific quantities were allocated to departments which might issue priority certificates to consumers within their jurisdiction.

At the same time, capacity and labour were being directed by priority certificates to specific end uses. But anomalies and discord remained and 'no complete solution had been found by the end of the war'.<sup>1</sup>

In the period between the two wars, the existence of so many uncertainties, as well as a number of false hopes, contributed to the lack of any complete plan for priority or allocation. For reasons which we have considered in previous chapters shortages were not expected to be so severe as to demand tight and extensive control. It was recognised that ultimate authority must reside in a committee of Cabinet rank, if inter-departmental disputes were to be brought to issue, and under it there were to be a series of sub-committees dealing with materials, manpower, capacity, works and buildings and transport. The sub-committees were to issue 'General Directions' to controllers, but these officers were to retain considerable powers of discretion which, in effect, often meant authority to determine which end uses were essential to the war effort.<sup>2</sup> With only this rough outline for guidance, the arrangements made at the beginning of the war sought to get the best of both worlds, priority and allocation. The Government established the paraphernalia of an allocations system and laid down what was to be the consumption of scarce materials such as steel and flax for a given period; but in some cases, such as timber, no allocation was made until several months after the outbreak of war; in some, such as rubber, no allocations were made until the third year of war; while some materials were never allocated at all. Indeed, during the early period, some of the allocations were in effect so rudimentary and remote from the day-to-day requirements of consumers that they received scant attention. The real burden of responsibility therefore descended upon the individual controllers and the licensing system which they applied. The powers which might have been exercised by some central organisation, or, failing that, by an inter-departmental body, passed in practice to the executive officers of the Ministry of Supply. It was they who decided, by the issue of a licence, which demands had a prior claim to material. But the difficulties of working such a machine were increased, in the case of steel, by the exemption until April 1940 of all government departments from the licensing system altogether. As a result departments jettisoned all notions of a raw materials plan and therefore felt free to issue priority directives to individual producers as and when the spirit moved them. In some cases, it was said, 'contrary instructions arrive on the same day from different depart-

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<sup>1</sup> The Select Committee on National Expenditure did not consider 'that the system employed in the last war broke down through being misconceived but through lack of authority in its application'. (*Tenth Report, Session 1939-40*, para. 32.)

<sup>2</sup> See pp. 77-79.

ments'.<sup>1</sup> In the avalanche of certificates which descended upon manufacturers they were obliged to set about evolving and laying down policy instead of being simply the agents of the Government.

By the spring of 1940 this dispersal of authority was shown to be unworkable. A way out of the *impasse* was found in the tightening up of the allocation machinery; the reduction of the period in general from one year to three, four or six months; and the requirement that consuming departments should not sponsor applications for material in excess of the total amount allocated to them by the Materials Committee. Here was the germ of an overall plan, and the licensing arrangements fell back into proper perspective as the instruments for fulfilling in detail the policy decisions taken at a higher level. Priority for production remained and factories were still directed to give preference in time to certain individual demands; but the quota of raw materials to each department was more or less assured, subject to unforeseen supply crises, once it had been approved by the Materials Committee. This applied, of course, only to those materials brought within the jurisdiction of the Committee.<sup>2</sup>

But while this workmanlike plan was in the process of being applied, the military events of the summer of 1940 threatened to throw it back into the melting pot. An allocation system can function fairly smoothly as long as some coherent plan is being followed; but the crisis of 1940, which produced so great a demand for fighter aircraft, could not easily be made to fit in with these long-term arrangements. The newly-appointed Minister of Aircraft Production (Lord Beaverbrook) urged that fighter planes should for the time being be given priority over all other equipment. The time factor seemed all-important. Therefore, although a number of consumers had claims to alloy steel and drop forgings, Lord Beaverbrook argued that the prior claims of aircraft, without which the Battle of Britain would be lost, must be fulfilled, if necessary before any other demands were entertained. There followed, then, a new avalanche of priority certificates to the increasing embarrassment of other departments, notably the Ministry of Supply.<sup>3</sup> Priority as applied to aircraft threatened to play havoc with the munitions programme in general and the tank programme in particular. Thus, one firm was

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<sup>1</sup> 'The sub-committee have seen a letter from one department giving complete priority to certain weapons. Two days later the firm received a letter ordering them, on behalf of another department, to take no notice of instructions purporting to give priority to particular work, and stating, quite correctly under the then existing arrangements, that all armament work was of equal importance.' *Tenth Report from the Select Committee on National Expenditure, Session 1939-40*, para. 20.

<sup>2</sup> See below, Chapter XXV, p. 412 *et seq.*

<sup>3</sup> It was reported in July 1940 that 'the [allocation] system was beginning to work reasonably well until the priority order was issued. This order had cut across the allocation system and caused confusion'. Three months later it was stated that in one case priority certificates had been granted for mugs.

held up for about half a dozen drop stampings. These . . . formed about fifteen per cent. of the total drop stampings required for the vehicle, and . . . the sum total of drop forgings would not amount to more than ten per cent. of the whole vehicle. The deficiency, therefore, formed a very small percentage of the total vehicle and it was most unfortunate that output should be held up in this way.

A complaint was made that, under existing conditions, departments scrambled for available materials and overstated their demands; and apparently the Minister of Labour felt himself at a loss to know what instructions to give employment exchanges. It was said also that the export trade suffered a good deal more than would have been the case if matters had been conducted in a more orderly fashion. The position was made even more confusing in that priority for finished products was not extended to plant making the finished product. On the other hand, if it had been, the series of priority certificates would have been as long and miscellaneous as the equipage of the King of Caractacus.

The virtual state of war which existed between the Ministry of Supply and the Ministry of Aircraft Production in the summer of 1940 was not concerned with the amount of alloy steel or drop forgings which should be allocated to the Ministry of Aircraft Production: on this they were more or less in agreement. The struggle was concerned rather with the *date* at which they could be made available. The Ministry of Aircraft Production wanted its share as soon as necessary, if need be before other departments got theirs. The Ministry of Supply, by contrast, wanted M.A.P. to take its place at the counter for its weekly rations.<sup>1</sup> The battle between the two Ministries was fought out at the Materials Committee and in the Cabinet, and unofficially in the production offices of private firms. It was not until the dust and heat of the Battle of Britain had subsided that the priority apparatus created by the Ministry of Aircraft Production was absorbed into the existing machinery of the Materials Committee and the raw material controls.<sup>2</sup> Thus, individual departments could now determine the time order in which their *own* demands should be satisfied but could not override the claims of others.

Thereafter many materials were distributed by the allocation methods in which the officials of the various departments were now gaining both statistical knowledge and practical experience. The

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<sup>1</sup> The defenders of the allocation system argued that the stages which should be followed to give effect to priority were as follows:

- (i) Broad strategic policy should be settled and priority of arms laid down;
- (ii) On this basis, departments should state their requirements of munitions;
- (iii) These should be broken down in terms of materials; (iv) The materials required should be compared with the supply position; (v) After this, allocations should be made to departments.

<sup>2</sup> In October 1940 it was agreed that 'priorities were to be operated within allocations'.

priority officer within each department established a kind of clearing house for the total demands which that department was anxious to support, and he often acted as one of the spokesmen of his department at the Materials Committee meetings. Where certain categories of a given material threatened to become so scarce as to create acute bottlenecks, special periodic allocations were made of that type within the total allocation for the material as a whole. This, for example, applied to alloy steel, drop forgings, castings, tinplate, hard and soft hemp and to a number of other commodities, but priority directions were not issued. After the spring of 1941, priority directives for raw materials ceased to be employed altogether and in November 1941 a revised Priority of Production Direction specifically excluded materials from the field of priority. Allocations generally took one of two forms: they were either made on a departmental basis, under which each department had a certain tonnage allocated to it and sponsored each application to the control for a licence within this total, as in the case of steel and timber; or the allocations might be on the basis of the end use, with the control itself determining how far an application conformed to the general allocation to end use made by the Materials Committee, as in the case of rubber and paper.<sup>1</sup> But this machinery was not designed to establish a full surveillance over *all* raw materials.<sup>2</sup> Until a material became scarce the Materials Committee did little more than exercise its 'supervision' over it, if it considered it at all; this applied, for example, to rubber and other materials until the spread of the war to the Pacific.

In essence, then, the issue of priority certificates for raw materials was a clumsy and sometimes dangerous way of ensuring the fulfilment of essential demand, while allocations made possible some measure of long-term planning. On the other hand, in times of great crisis it could be argued that priority directives were necessary, although this was challenged, to ensure that an urgent requirement was satisfied as speedily as possible even at the cost of a certain amount of administrative and production chaos. No really successful method was found for harmonising these utterly different approaches to the same problem, particularly where production and labour issues were also involved. But from the end of 1941 the virtual elimination of priority for raw materials made possible a greater measure of consistency and planning than had hitherto been achieved.<sup>3</sup>

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<sup>1</sup> See Chapter XXV, p. 413 and Appendix 37. In the case of cotton, although in general departmental allocations were made, an additional allocation was made for industrial uses.

<sup>2</sup> Cf. *Tenth Report from the Select Committee on National Expenditure, Session 1939-40* para. 18.

<sup>3</sup> Perhaps the epilogue had best be spoken nearly six years after the end of the war by Mr. C. R. Attlee (then Prime Minister): '... "an overriding priority" for defence ... as all our experience in the last war showed, creates more problems than it solves and produces bottlenecks which very soon interfere with the whole production machine.' *H. of C. Deb.*, Vol. 483, Col. 586, 29th January 1951.



**THE FIELD OF RAW MATERIAL CONTROL**

While these efforts were being directed to resolve conflicts on the highest plane between departments, there were numerous other questions of detailed administration which were arising. One of the earliest, and one of the most intractable to solve, concerned the definition of raw materials. If directing policy was not to be dispersed amongst several departments it was essential that an almost exact delimitation of the category 'raw materials' should be provided. But since neither individual firms nor government departments were in peace-time obliged to restrict their plant or their interests to the rigid interpretation of where the raw material stage ended and the finishing process began, it was inevitable that the establishment of controls should raise this question, in many cases, for the first time. 'Our difficulty', wrote an officer of the Iron and Steel Control in February 1940, 'is that we do not know precisely what are raw materials'. The Director of Steel Tubes pointed out the following May:

You have asked me an almost impossible question, namely, to define what a precision tube is. As a matter of fact the International Tube Cartel spent ten years trying to arrive at a definition but ultimately gave it up as a bad job.

This problem was further complicated by the fact that many controls were obliged, either because of the pre-war structure of industry or because of war developments, to extend their functions over an ever-widening sphere. For example, drop forgings can hardly be described as raw materials, while tubes, wire, bolts and nuts the term is even less applicable. But these articles were sometimes produced by single, vertically integrated firms whose interests extended from the iron ore up to and including many of the finished products. Moreover, while controls usually began with the raw materials, it was soon found that merely to deal with the preliminary stages of an industry often meant that the crises were shifted on to a later process of industrial production where, in the interests of national efficiency, some intervention soon became necessary. For these various reasons, the activities of the Cotton Control extended from the raw cotton through the yarn to the grey cloth. Similarly the Leather Control's jurisdiction covered hides, tanning materials and finished leather itself. The Paper Control was responsible for paper-making materials such as pulpwood and esparto grass as well as for finished products such as newsprint. Thus, although the problem of definition was never really solved, it became necessary for the machinery of raw material control to reach out over a sphere wider than the raw materials themselves.

**THE DETERMINATION OF ESSENTIAL NEEDS**

Of much more profound importance was the task of determining what were the minimum requirements. The very use of the term in-

volves the concept of a total plan for the nation as a whole. We know, however, that the first glimmerings of such a plan were not visible until after Dunkirk, and that its broad outlines were not formed until the middle of 1941. Thus, no general programme was available until more than two years after the outbreak of war; but in observing this we must be careful neither to minimise the difficulties of preparing such an all-embracing schedule nor to overrate its value once it was prepared. Clearly any such statement of total requirements became static amidst the dynamic conditions of war; it became obsolescent before it had even appeared in typescript. Nevertheless, to those who recognised its limitations but also appreciated the value of the broad working principles it sought to establish, it served as an invaluable aid in the formulation of their individual plans. Without it, in many cases, the executive measures of war threatened to become confused and distorted amidst the discordant clamour of consumers' demands for each scarce material and controllers' efforts to gain for themselves a larger share in the diminishing import programme. We also know, from other evidence examined below, that during the first two years of the war 'minimum' demands were not in fact minimum requirements. Departments were sometimes asking for and obtaining more than they were in fact able to consume. We thus have the interesting situation that until Dunkirk, when imports were high, stocks of raw materials declined while after Dunkirk, when the shipping situation deteriorated, stocks in fact increased. What was a minimum requirement? The question was answered not by a theoretical solution to a series of postulates, but by the awareness that supplies had really become critically scarce. It was only then that the nation realised what was the minimum upon which it could live and fight and effective demand became almost co-terminus with basic need.

In the process of discovering a sound basis for preparing demands the only safe course open to responsible officials seemed in the first place to be that of over-estimation. When presented in June 1940 with the current demands for alloy steels, the Senior Military Adviser to the Ministry of Supply observed that 'there is no indication that there is included in these calculations a factor of safety, or margin, to meet situations forced on us by enemy action'. He felt, in particular that, in view of the changing military situation on the continent of Europe, there was 'quite a cogent argument for exceeding arithmetical calculations'. In reply, the Director-General of Raw Materials recognised 'that the only way to create a real reserve is to over-estimate the requirements of finished products'. To these precautions there was added the further argument that estimates of importing capacity could not be fully relied upon. In February 1940 the D.G.R.M. had himself raised with his Minister the question of correlating the raw material estimates as calculated by his depart-

ment with the estimate of shipping space worked out by the Ministry of Shipping. Speaking of the raw materials requirements programme, he wrote

It has not been thought useful to vet this down to the estimates (varying from time to time) of the Ministry of Shipping as to what they expect to be able to import. These estimates have not been borne out by events in the past and may not be in the future. Any exact balancing of demands against them seems therefore to have little value.

It was not possible to dissipate by purely theoretical methods this reciprocal scepticism under which the importers thought that the consumers were asking too much while the consumers thought that the importers were making too pessimistic an estimate of the available ships. Indeed, the view of the Raw Materials Department, at the beginning of 1942, was that a distinction must be drawn between the 'rock-bottom' estimate (i.e. 'if the military situation requires such imports to be reduced to rock-bottom') and the current requirement programme. In reply to a Treasury inquiry about the major discrepancies between the two programmes, R.M.D. pointed out that 'there has been no suggestion to date that import programmes should be prepared on this rock-bottom basis'. Increasingly the two elements of the equation, requirements and supply, came into balance as shipping space was reduced to a minimum and the consuming departments were forced to ask themselves what really constituted their minimum needs. This process was slow and painful and never really complete as we shall see; but the pressure of the Materials Committee and the Ministry of Production on the one hand, and the pressure of events on the other, gave answers in 1943 which would have been inconceivable even in the darkest moments of Dunkirk.

Akin to this was the fundamental difficulty already noted of breaking down finished products into requirements for raw materials. Whereas for a given number of simple components it was possible to calculate a total raw material demand, the more complicated a munition of war the greater was the uncertainty of the raw material estimate. Attempts were made to prepare a programme of requirements setting out, (a) the demand for certain materials, and (b) the periods at which they were required. But, when the question of alloy steel arose in the summer of 1940, the head of the Supply Department of the Ministry of Supply as well as the Admiralty representative felt that such a complete summary of requirements presented almost insuperable difficulties. If it was impossible to calculate the total demand for armour plate for tanks, how much more difficult was it to produce a quantitative analysis of *all* materials and the date of their delivery for the construction of a warship? And what new complica-

tions were added when, as was often the case, the munitions programme was the subject of drastic alterations? In addition, production departments, as distinct from R.M.D., had to determine what percentage must be added to the basic requirements as an insurance policy. For example, the Ministry of Supply planned in August 1940:

to produce something between twenty-five and thirty-five per cent. above the requirements of an Army of fifty-five divisions so as to allow for losses due to enemy attacks on factories or on shipping and to cover replacements in the field.

Nearly two years later the American Government embarked upon a similar venture, somewhat more elaborate in character, to obtain an accurate breakdown of requirements. An English observer recorded that:

It sets up a colossal amount of paperwork. The contractors would have to answer thirty-nine complicated questions on the quarterly form and more than twenty questions on supplementary monthly forms. The information gained from the forms would be layered laboriously up from level to level and then back down again level by level until the allocations finally reached contractors and suppliers.

In England the Gordian knot was cut, not unravelled. It was found that, far better than an elaborate and detailed breakdown, it was simpler, and in the end effective, to allocate upon the user basis for preceding periods, modified where necessary by changes in the requirements or supply situation. In the process the machine sometimes creaked, but it did at least start and it kept going.

## CHAPTER VI

# THE CHARACTER AND DEVELOPMENT OF MUNITIONS REQUIREMENTS

**W**E are not concerned in this volume to discover how the munitions programmes came to be built up or to what extent they satisfied the military requirements of the time. These questions fall to the other writers in this series. But we must notice here what these programmes meant when they came to demand an increasing proportion of the available raw material resources. We have seen that the first effect of the declaration of war was to grant to government requirements, and particularly to requirements of the Services, a pre-eminent claim to supplies. Isolated attempts were made by some controllers and by the Stamp Committee<sup>1</sup> to submit the more ambitious demands to analytical treatment. As early as January 1940, ministers had been asked by the War Cabinet to consider whether the present system of allocating steel, under which the highest degree of preference was given to all service uses, was justified, or whether service demands should be further classified so that the highest rate of preference was applied only to the most important service uses and lower rates of preference allocated to the less vital requirements. But in general the munitions claims remained virtually unchallenged for six months. The military setbacks, occurring at a time when the unwieldy licensing machinery was being suffocated by a mass of imperfectly assimilated demands, injected some elements of realism into the situation. But the immediate reaction was to reinforce the superior claims of military needs, and the newly formed Production Council at once endorsed these claims. Even the President of the Board of Trade himself recognised that 'The export trade must undoubtedly give way to the service departments where its requirements in raw materials competed with theirs'. But a note of warning crept into the deliberations of these ministerial conferences, and at its second meeting, at the end of May 1940, the

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<sup>1</sup> The Stamp Committee was an inter-departmental committee set up in October 1939, under the chairmanship of Lord Stamp, 'in order to keep under review and to co-ordinate the functioning of the departments in relation to the economic effort of the country as a whole and to make any necessary arrangements for Anglo-French economic co-operation'. It was expressly intended to carry on and extend the work of the pre-war 'Stamp Survey,' i.e. the survey of the country's economic and financial plans for war carried out during the summer of 1939 by Lord Stamp and two colleagues.

Production Council limited its grant of preference to service orders, over home and export demands, with the words 'for the time being'.

At this stage, also, there arose the controversy, which we have considered in the last chapter, over the issue of priority certificates for aircraft and tanks against all other demands. The victory won by the Ministry of Aircraft Production was a fleeting one; and that Ministry as well as the other Services was soon linking and adjusting its requirements to a more uniform, planned, production programme. By July 1940 the War Office was being invited to distinguish between the needs 'for vital points in defensive positions' and 'ordinary protection for military personnel'; it was recommended that these latter needs should make no greater call upon scarce materials than those provided for civilians. Some months later the chairman of the Materials Committee made it clear also that 'he did not wish to penalise other departments by giving production departments amounts which might not be immediately productive'.

Early in 1941 the Ministry of Supply and the War Office were engaged in applying a policy of conservation to military demands, not only to restrict the total amount of equipment but to modify their specifications so that less raw material would be used.

For example, cloths of lighter weights or with fewer warp and weft threads might be arranged; designs may be altered and sizes reduced, if by so doing materials can be saved without disproportionate reduction in the utility of the article.

At the same time the Minister of Supply was asked to investigate with the naval and air force authorities what opportunities for economies on similar lines existed in these Services. Meanwhile, as the supplies released for civilian and export demands were progressively reduced, the definition of their minimum needs also became more precise, as we shall see. In fact, 'inessential', or less essential, articles continued to be produced, but, as the triple mesh of labour, capacity and materials scrutiny grew finer, the production of less essential commodities became difficult or impossible. The curve of armaments production was to that extent assisted in its upward movement. But that by itself cannot reveal the whole story.

The consumption of raw materials alone gives an incomplete picture of the munitions situation. The diversion of manpower to munitions production, and the creation and adaptation of industrial capacity to meet service needs, were other measures which displayed the nature of military demands. But apart from this, the change in the *character* of the import programme further emphasises the claims of munitions. Even before the introduction of lend-lease aid, the Americans had been urging upon Britain that she should import

proportionately less raw materials and more semi-finished and finished products, for example less ingot steel and semis and more components and finished equipments. While currency was the limiting factor, Britain was naturally reluctant to adopt this policy: after Pearl Harbour, when shipping rather than currency was the crucial problem, Britain was obliged to translate her import programmes for goods from the United States increasingly into terms of finished products. Table 6 expresses in pounds sterling the import of commodities from the United States under various heads.

Table 6. Imports from the United States, 1939-45: main groups of commodities

	£ million						
	1939	1940	1941	1942	1943	1944	1945
Food, drink and tobacco . . . . .	34	29	61	128	171	139	96
Raw materials . . . . .	27	52	38	38	59	52	34
Articles wholly or mainly manufactured <sup>1</sup> . . . . .	56	194	176	186	305	340	190
Munitions . . . . .	..	..	133	183	509	859	290
TOTAL . . . . .	117	275	408	535	1,104	1,390	610

Source: Based on *Annual Statement of the Trade of the United Kingdom*

<sup>1</sup> Semi-processed materials are included in this category.

This table reveals unmistakably the relative decline in imports of raw materials from the United States as compared with imports of semi-processed materials, munitions and other finished products. When it is remembered that quantitatively imports rose very steeply we have a further measure of the extent of this process.

What general picture of munitions requirements can we draw from the information at our disposal? We obviously cannot consider every material which had to meet the challenge of war because if we did so we should be concerned with thousands of commodities of immense diversity and range and for which in numerous cases no adequate data can be found. The term 'munitions', moreover, is not always easy to define, and for each material it is necessary to determine into which sector we must place requirements which fall on the borderland between munitions and civilian consumption, for example the needs of inland transport. For practical purposes we must restrict ourselves to a selected group of materials whose importance is manifest and for which reasonably sound figures in adequate detail are available. Thus we can look first at two outstanding munitions metals, steel and aluminium; then, in view of its significance in so many industries, at timber. We must then consider two textile materials, flax and cotton, where some striking contrasts may be observed.

Finally, we may draw certain general conclusions derived from the study of these materials and from other sources. For the detailed statistics upon which the following paragraphs are based the reader is referred to Appendices 9-13 at the end of the volume.<sup>1</sup>

## STEEL

The material which at once comes to the mind when we think of munitions is steel. Not surprisingly, therefore, we find that many of the hardest battles were fought over steel. The service and supply departments naturally won victories against competition from the civil and export trades, but by the summer of 1940, as we have seen, they fell to debating amongst themselves as to their prior rights to steel and steel products. Meanwhile their share expressed as a combined total continued to rise. On the basis of the figures fully set out in Appendix 9 we may put in tabular form the percentages they received (Table 7).

*Table 7. Steel: direct service consumption as a percentage of total consumption, 1940-44*

	1940	1941	1942	1943	1944
Ministry of Supply and War Office . . . . .	26.6	40.5	48.7	47.2	46.8
M.A.P. and Air Ministry . . . . .	12.5	10.6	10.4	10.7	9.8
Admiralty . . . . .	10.3	11.5	11.3	14.3	12.9
TOTAL . . . . .	49.4	62.6	70.4	72.2	69.5

These figures tell an impressive story. We have no reliable estimates of what percentage of total steel supplies went to munitions before the war, but the table we have built up clearly reveals a steep rise in munitions demands between 1940 and 1942. In 1943 the curve began to flatten, and it was only in 1944 that it began to turn slowly in a downward direction. The pace, of course, quickened in 1945. Yet, in broad terms, munitions throughout the period 1941-44 were taking two-thirds, more or less, of the available supplies.

Even here our story is not complete. We have been considering so far only direct service demands. Amongst the remaining consumers the requirements for shipbuilding and the Ministry of War Transport belong more appropriately to munitions needs than to the civilian sector. Admittedly within that total some part must have been for non-munitions requirements, though how much it is impossible to calculate. On the other hand, some of the requirements of the Ministries of Food, Fuel and Power and other 'civilian' depart-

<sup>1</sup> Where possible, the tables extend from the beginning of the war to 1945, but in some cases the material for the beginning or end of the war is not available.



ments must have gone to satisfy the needs of service personnel, but those we are not including. We may then add our shipbuilding and transport percentages to those for direct service needs and, on this basis, revise our figures as in Table 8.

*Table 8. Steel: munitions consumption as a percentage of total consumption, 1940-44*

	1940	1941	1942	1943	1944
Direct service needs . . . . .	49·4	62·6	70·4	72·2	69·5
Shipbuilding and M.W.T.	11·3	12·5	12·2	12·6	11·9
TOTAL . . . . .	60·7	75·1	82·6	84·8	81·4

Again the story is roughly the same: a steep rise until 1942, a slower one for the following year, a slight fall in 1944 and a steeper one in the last phase of the war. By 1942 munitions demands accounted for more than four-fifths of the total and continued to do so for two years.

#### ALUMINIUM

Steel is, as it were, the 'ubiquitous' material; it appears in every aspect of men's lives. For this reason certain quantities were always necessary for the maintenance of even the minimum standards of living as well as to sustain any export trade which survived. Aluminium, whose civil consumption could be more drastically cut with safety, was able to show an even steeper rise in the satisfaction of munitions demands. Table 9, based on the data in Appendix 10, sets out deliveries to the Services (which are in this case almost co-terminus with aircraft needs) for the period 1940-44.

*Table 9. Aluminium: munitions, export and civil consumption as percentages of total consumption, 1940-44*

	1940	1941	1942	1943	1944
Munitions . . . . .	95·0	97·6	98·5	99·0	97·1
Exports . . . . .	0·8	0·4	0·1	—	0·2
Civil . . . . .	4·2	2·0	1·4	1·0	2·7

From the rough pre-war estimates available, it is calculated that fifty per cent. of the aluminium produced in the year 1938 went to aircraft. Since total consumption of aluminium amounted to about 65,000 tons during this period as compared with 136,000 tons in 1940 and 317,000 tons in 1943, it is clear that munitions demands vastly increased. Total supplies had approximately doubled by 1940, but

munitions requirements had themselves reached ninety-five per cent. of this increased total and stayed above that percentage in 1941, 1942, 1943, and for 1944 as a whole, although service demands began to fall in April of that year. The peak year was 1943 when, with total supplies two and one-third times as great as in 1940, munitions were taking ninety-nine per cent. of this record total. But aluminium occupied a unique position. No commodity, with the exception of magnesium, bore comparison with it in its complete or virtually complete diversion to service needs. No other major material could be so ruthlessly cut out of the civilian economy.

## TIMBER

In the case of timber we must consider the material under three main heads: softwood, hardwood and plywood. Table 10, which, with Tables 11 and 12, is based on the more detailed data in Appendix 11, gives the deliveries<sup>1</sup> of softwood, expressed in percentages, for the period 1941 to September 1945. No satisfactory figures are available for the year and a quarter extending from September 1939 to December 1940.

*Table 10. Softwoods: munitions and non-munitions consumption as percentages of total consumption, 1941-45*

	1941 <sup>1</sup>	1942	1943	1944	1945 <sup>2</sup>
Admiralty . . . . .	6.0	7.6	9.0	6.8	6.3
Ministry of Supply (including War Office) . . . . .	11.9	27.1	13.2	36.5	30.0
M.A.P. and Air Ministry . . . . .	6.0	7.0	26.7	8.4	6.6
Other munitions requirements . . . . .	42.3	30.0	24.0	21.7	18.5
Total munitions requirements . . . . .	66.2	71.7	72.9	73.4	61.4
Non-munitions requirements . . . . .	33.8	28.3	27.1	26.6	38.6

<sup>1</sup> Second half of 1941 calculated on annual basis.

<sup>2</sup> First half of 1945 calculated on annual basis.

Clearly, the Ministry of Supply was the greatest consumer, followed by the Ministry of Aircraft Production and the Air Ministry. Munitions requirements, however, covered an immense variety of uses including rifles, hutting, packaging, furniture for warships and numerous others. We therefore find considerable fluctuations within the total of munitions requirements. For example, the consumption of the Ministry of Supply and the War Office rose steeply between 1941 and 1942, fell to the same degree a year later and then a year after that rose more steeply than it had ever done before. Yet it is signifi-

<sup>1</sup> Figures are based upon 'certificates to purchase' issued during the period.

cant that in spite of the fluctuations within the total, the rise in the overall munitions demand was maintained during the period under consideration. In 1941 it was 66.2 per cent. and was still rising steadily; in 1942 it was 71.7 per cent., in 1943 it had risen slightly to 72.9 per cent, and in 1944 it was 73.4 per cent.; it was only in the first half of 1945 that a sharp fall began.

The pattern of hardwood requirements does not closely follow that for softwoods, as Table 11 reveals.

*Table 11. Hardwoods: munitions and non-munitions consumption as percentages of total consumption, 1941-45*

	1941 <sup>1</sup>	1942	1943	1944	1945 <sup>2</sup>
Admiralty . . . . .	8.6	10.0	9.2	6.7	6.3
Ministry of Supply (including War Office) . . . . .	17.5	22.2	22.2	25.9	18.5
M.A.P. and Air Ministry . . . . .	7.7	8.4	3.9	2.8	2.5
Other munitions requirements . . . . .	17.4	17.2	18.3	18.3	17.8
Total munitions requirements . . . . .	51.2	57.8	53.6	53.7	45.1
Non-munitions requirements . . . . .	48.8	42.2	46.4	46.3	54.9

<sup>1</sup> Second half of 1941 calculated on annual basis.

<sup>2</sup> First half of 1945 calculated on annual basis.

In the case of both softwood and hardwood the Ministry of Supply was the greatest single consumer, but total munitions demands for hardwood reached their peak sooner, in 1942, and had already begun to fall in 1943, though not to any great extent. In terms of percentages, munitions demands for hardwoods (for factory equipment, carriages and wagons, tool handles, patterns and jigs, etc.) at their highest, 57.8 per cent., were never as great as those for softwood, which reached their peak at 73.4 per cent. In broad terms this difference reflects the greater suitability of softwood for many essential demands as compared with hardwood. It reflects also the substitution of home-grown hardwood for imported softwood for civilian needs. In other words, non-munitions uses could have a greater share of hardwoods than softwoods. This category, of course, comprises not 'non-essential' uses but a variety of essential civil uses including furniture, housing needs, light cooperage and coffins.

The curve of munitions consumption of plywood resembles that of softwood rather than hardwood (Table 12). Munitions, including packing cases, hutting and 'technical plywood' for aircraft, took 74.1 per cent. of the total in 1944 when, as in the case of softwoods, the peak was reached, and non-munitions requirements were proportionately cut. The main civilian uses of plywood during the period were for furniture and housing.

*Table 12. Plywood: munitions and non-munitions consumption as percentages of total consumption, 1942-45*

	1942 Apr.-Dec.	1943	1944	1945 <sup>1</sup>
Admiralty . . . . .	6.9	8.6	7.2	7.9
Ministry of Supply (including War Office) . . . . .	23.7	24.5	40.3	34.9
M.A.P. and Air Ministry . . . . .	13.1	23.4	15.7	10.7
Other munitions requirements . . . . .	17.4	14.5	10.9	6.6
Total munitions requirements . . . . .	61.1	71.0	74.1	60.1
Non-munitions requirements . . . . .	38.9	29.0	25.9	39.9

<sup>1</sup> First half of 1945 calculated on annual basis.

### FLAX

When we come to flax we find a slightly different picture, at least in 1941, as is shown by Table 13, based on the data contained in Appendix 12.

*Table 13. Flax: munitions, civil and export consumption as percentages of total consumption, 1939-45<sup>1</sup>*

	Sept. 1939- Apr. 1940	July- Dec. 1940 <sup>2</sup>	1941	1942	1943	1944	1945
Service and other munitions re- quirements . . . . .	70.2	59.1	51.2	79.2	80.7	78.8	51.6
Home civilian requirements . . . . .	4.9	10.7	7.6	9.9	10.3	10.9	16.4
Export require- ments . . . . .	24.9	30.2	41.2	10.9	9.0	10.3	32.0

<sup>1</sup> Based on figures of licences to spin issued during the war.

<sup>2</sup> The months May and June 1940 have been omitted from the table because there are no figures for Northern Ireland for this period.

Once again service requirements covered a variety of uses including naval canvas, aeroplane fabric and parachute harnessing, but civil requirements comprised essential equipment of a different kind, such as fire hose, linen thread and cheese scrim; included amongst exports were requirements from both these spheres. It is noteworthy that service demands were some seventy per cent. of the total during the first seven months of war, a high percentage which was clearly achieved at the expense of civilian demands. Thereafter service demands remained well above seventy per cent. of the total, reaching eighty-one per cent. in 1943, declining slightly in 1944 and more steeply during 1945. The only exception to this general trend was during the export drive late in 1940 and during 1941 when the

service percentage fell to fifty-one per cent. When the export drive came more or less to an end munitions demands reached and passed the level of the first seven months of war.

## COTTON

The last material we are considering, cotton, shows an even more striking contrast with the other materials. Table 14, based on the data given in Appendix 13, sets out service consumption as a percentage of the total. Reliable figures for the period before October 1941 are unfortunately not available.

*Table 14. Cotton: service, civil and export consumption as percentages of total consumption, 1941-45*

	Oct.- Dec. 1941	1942	1943	1944	Jan.- Sept. 1945
Service . . . . .	34·0	35·0	35·6	33·9	32·9
Civilian and essential home . . . . .	45·9	48·4	44·0	44·3	46·5
Export . . . . .	20·1	16·6	20·4	21·8	20·6

In this commodity, service requirements made a considerably lower demand than in the case of the four materials previously considered. This situation is easily explicable by the special place which cotton was bound to occupy in the export and civil sectors. Thus, throughout the war, exports (comprising woven piece goods, cotton yarn, thread, etc.) consumed, with the exception of 1942, at least twenty per cent. of the total supply. Domestic needs, including not only civilian goods, such as clothing, blankets, sheets and towels, but many industrial needs such as narrow fabric, cordage, tyre cases, belting and numerous other items, remained fairly steady from 1942 onwards, fluctuating only between 44·0 and 48·4 per cent. of the total. Service consumption, as such, comprising uniforms, waterproof covers, belting and webbing, tentage, balloon covers, etc., rose to 35·6 per cent. in 1943, but declined from that level in 1944 with the fall continuing in 1945.

It is convenient at this stage to summarise in tabular form the information we have examined under separate heads. The final picture which emerges is shown in Table 15.

The evidence examined briefly in the preceding paragraphs shows then that certain general conditions governed the very diverse group of materials under consideration. We see, in the first place, that the switch-over to munitions production in the first twelve months of war, though it foreshadowed a revolution in the economic and social life of Britain, was neither rapid nor extensive, with the

exception of aluminium and flax, and that the tempo rapidly increased after Dunkirk and particularly in 1941-42. For steel, aluminium, flax and cotton the year 1943 was clearly the peak year of munition demand. In the case of hardwood the peak year was 1942, but the drop in 1943 was small. Softwood and plywood did not reach their peak until 1944, but in 1943 they were nearly there. So the story is broadly the same—a steep rise between 1940 and 1942, a slower rise in 1943 and then in most cases a gradual fall in 1944 and a much sharper fall in the last months of the war.

*Table 15. Munitions consumption of certain materials as a percentage of total consumption, 1940-44*

	1940	1941	1942	1943	1944
Steel . . .	60·7	75·1	82·6	84·8	81·4
Aluminium . . .	95·0	97·6	98·5	99·0	97·1
Softwoods . . .	..	66·2	71·7	72·9	73·4
Hardwoods . . .	..	51·2	57·8	53·6	53·7
Plywoods . . .	..	..	61·1	71·0	74·1
Flax . . .	59·1 <sup>1</sup>	51·2	79·2	80·7	78·8
Cotton . . .	..	..	35·0	35·6	33·9

<sup>1</sup> July-December 1940.

These conclusions are broadly confirmed in the data in Chapter 8 where, as is to be expected, a reverse process can be seen at work as applied to civil demands. They are confirmed also in Table 16 which provides in addition some interesting information about American and Canadian developments.

*Table 16. Munitions production indices, 1940-44, for the United Kingdom, United States and Canada*

	1943 = 100		
	United Kingdom	United States	Canada
1940 . . .	37·2	4·7	14·3
1941 . . .	54·3	15·1	35·0
1942 . . .	84·4	56·5	79·6
1943 . . .	100·0	100·0	100·0
1944 . . .	97·4 <sup>1</sup>	108·3	102·9

Source: *The Impact of the War on Civilian Consumption in the United Kingdom, the United States and Canada* (H.M.S.O., 1945), Part II, Table 2.

<sup>1</sup> This figure should be somewhat higher since the samples used can take no account of certain items, e.g. the two Mulberry harbours, constructed in 1944.

These figures show that Britain was only a third of the way to peak munitions production in 1940, the first year of war. America, on the other hand, during her first year as a fighting ally, reached more than half way to her goal, but this provides also some measure of the value of British orders in the United States during 1940 and 1941, which greatly helped the tooling up of American industry for war. On the

other hand, America in 1943 was still some distance from her peak whereas Britain had reached it and was beginning gently to relax the severe pressure upon the economic machine which war had exercised with increasing intensity for some four years.

But these broad estimates cannot apply uniformly to all commodities. The individual tables considered above show that certain materials were diverted to the military effort in greater proportion than were others. Thus, at the time of peak demand, aluminium, steel, softwood, plywood and flax were asked to contribute more than 70 per cent. of their output to munitions; aluminium reached the phenomenal figure of 99 per cent., steel 84·8 per cent., flax 80·7 per cent., plywood 74·1 per cent. and softwood 73·4 per cent. These conclusions are not surprising. They merely show that the Second World War was fought with aircraft, guns and tanks, the great consumers of aluminium and steel. They show also that modern munitions required good quality fabric and adequate timber packaging. In cotton a lower percentage was diverted to munitions as such (at its maximum 35·6 per cent.) but again that merely established that men and women could not produce the instruments of war in the factories unless they were adequately clothed for the purpose—although the word adequate came to be covered by a diminishing quantity and a declining quality of supplies. Table 17 shows in financial terms the changes which were taking place:

*Table 17. Expenditure of United Kingdom national income in 1938, 1941 and 1944*

	<i>Percentages of national income</i>		
	<i>1938</i>	<i>1941</i>	<i>1944</i>
War . . . . .	8	53	53
Consumers' goods . . . . .	87	62	57
Net non-war capital formation at home and abroad . . . . .	5	—15	—10
	<hr style="width: 100%; border: 0.5px solid black;"/>	<hr style="width: 100%; border: 0.5px solid black;"/>	<hr style="width: 100%; border: 0.5px solid black;"/>
	100	100	100
	<hr style="width: 100%; border: 0.5px solid black;"/>	<hr style="width: 100%; border: 0.5px solid black;"/>	<hr style="width: 100%; border: 0.5px solid black;"/>

Source: Cmd. 6707, Appendix VIII, Table 14.

In other words the munitions share of the national income rose between 1938 and 1941 six and a half times and that level was maintained into 1944. This had been achieved in part by cutting civil consumption to sixty-two per cent. of the national income in 1941 and to fifty-seven per cent. in 1944. Some of these munitions demands could only be met by increased supplies, as in the case of aluminium; some had to be met in the face of a diminishing supply of materials, as in the case of timber. But all of them could only be achieved by certain sacrifices, notably of export and domestic civilian requirements. To complete this study, therefore, we must attempt to assess the contribution made in these two fields.

## CHAPTER VII

# THE REQUIREMENTS OF THE EXPORT TRADE<sup>1</sup>

**B**RITAIN'S industrial prosperity during the nineteenth century had been built upon the skill of her manpower and the bulk import of cheap raw materials, which combined to give her a dominant share of world trade until the eighteen-seventies. Though her share since then had diminished, Britain continued to rely upon easy access to imported materials and was in general not herself a producer; her exploitation of domestic supplies, such as lead and tin in Cornwall, proved relatively expensive and declined to negligible proportions. Of the important raw materials only coal and, to a certain extent, iron ore came from home sources. For this reason British exports of raw materials as such were, apart from coal, mainly re-exports or semi-processed materials; for obvious reasons they were small during the war period as will be seen from the tables in Appendix 14. On the basis of those tables we may obtain some measure of their reduction by comparing war-time exports at their highest and lowest with the figures for 1938. (Table 18.)

It will be seen that out of the twenty commodities considered, sixteen reached their peak export in 1940 and four in 1941. Yet in only four cases altogether did exports in the peak year exceed those in 1938, namely rayon singles yarns, sodium compounds, tinned plates and tin blocks. In a number of cases, such as semi-finished steel and steel products, aluminium and aluminium products and wool, peak exports were half or less than half the 1938 quantity. In ten cases, mainly metals and metal products, exports fell to less than ten per cent. of the pre-war figure, in four cases to between ten and twenty per cent., and in another three cases to between twenty and thirty per cent. For eighteen of the twenty materials the lowest point was reached in 1943 or 1944, though in a few cases a similar low record occurred in 1941 or 1942. The story is on the whole one of a sharp reduction of exports, usually from 1941, followed by further falls until nearly the end of the war.

But even in time of peace raw materials in the export trade were far more important in a converted form, i.e. when incorporated in finished products. The traditional system of importing raw materials

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<sup>1</sup> For a full discussion of this and related questions see E. L. Hargreaves and M. M. Gowing, *Civil Industry and Trade* (H.M.S.O., 1952).



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Table 18. Exports of certain raw materials at their highest and lowest war-time levels expressed as a percentage of 1938 exports  
1938 = 100

Material	Highest	Date	Lowest	Date
<b>Iron and steel:</b>				
Bars and rods . . . . .	51·9	1940	7·5	1941 and 1943
Uncoated plates and sheets . . . . .	34·5	1940	6·9	1943
Angles, shapes and sections . . . . .	28·6	1940	7·1	1941 and 1943
Tinned plates . . . . .	119·3	1940	5·1	1943
Wrought tubes . . . . .	59·7	1940	4·9	1943
Railway construction . . . . .	19·7	1940	6·0	1941
Wire and wire manufactures . . . . .	29·6	1940	7·0	1944
<b>Non-ferrous metals:</b>				
Aluminium and aluminium manufactures . . . . .	32·1	1940	3·7	1942 and 1943
Brass and brass manufactures . . . . .	60·0	1940	26·7	1944
Copper and copper manufactures . . . . .	64·4	1941	15·9	1944
Tin blocks, etc. . . . .	111·8	1940	25·5	1944
<b>Cotton:</b>				
Yarns . . . . .	54·3	1940	15·3	1942
<b>Wool:</b>				
Sheeps' wool and lambs' wool . . . . .	50·0	1941	1·9	1943
Tops . . . . .	86·8	1940	15·7	1944
Yarns . . . . .	51·2	1940	24·8	1944
<b>Rayon:</b>				
Singles yarn . . . . .	260·7	1941	178·5	1943
<b>Paper and board</b>				
Sodium compounds . . . . .	84·4	1940	15·0	1944
Ammonium sulphate . . . . .	134·4	1940	97·0	1944
	53·8	1940	3·9	1941 and 1943
<b>Paints and colours</b>				
	94·1	1941	43·0	1944

Source: Based on *Monthly Digest of Statistics, No. 8*, Tables 102, 105 and 106

cheaply, fabricating them and then exporting them as finished products became, therefore, doubly important in the early part of the war when it was vital to acquire scarce foreign currencies. The Lend-Lease Act of March 1941 marked the turning point in the story of exports in the Second World War. Before that event exports were an important part of our effort to pay for munitions and other commodities essential to the prosecution of the war; after the passage of the act, which 'took the dollar sign out' of the combined effort, exports were considered less important, an attitude which was increasingly reinforced by the total scarcity of supplies.

Until the inauguration of the export drive in February 1940, raw materials for the manufacture of exports were acquired in competition with the demands of the services and home market. Moreover, it was in many cases impossible while the commodities were in process

of production to differentiate between those for home and export; and, as was pointed out more than once, a competitive level of prices in the overseas trade was in many cases dependent upon a good level of home demand. The especial emphasis laid upon exports in February strengthened their claim to a proportion of raw material supplies; but this triumph was short-lived. The military situation at the time of Dunkirk obliged the export trade to make sacrifices to meet military needs.<sup>1</sup> Shortly after, in the middle of June, it was being recognised that a more clearly defined allocation of our resources was necessary. As a step in that direction it was agreed 'to reduce the allocations of important raw materials entering into the export trade'. It had become necessary to consider:

the extent to which the present export policy conflicts with the immediate needs of our war effort in raw materials, skilled labour and productive capacity, with a view to arriving at agreement on the policy to be pursued during the present emergency, without prejudice to our long-range war-time export policy.

But it was still the official policy that the export trade should not be obliged to give up its raw materials 'until all such resources had been withdrawn from the manufacture of non-essential goods for the home market'. Nor should the export trade make these sacrifices where the raw material represented a small proportion of the total cost of the article.

Stringencies from now onwards determined that the export trade should be analysed more closely in terms of objectives; and, although all the issues did not emerge at once, the Government had to judge the value of each export with reference to a number of questions which we may briefly summarise as follows:

- (1) Did it bring in soft or hard currencies (i.e. did it stimulate exports to countries with which Britain had a favourable or unfavourable balance of trade) and were those countries supplying us with exports needed for the war effort?
- (2) Did the price obtained show a considerable increase over the cost of importing the raw material for processing? In other words, was its 'conversion value' high as in the case of wool and steel products?
- (3) Was the export essential to the war effort of allied countries?
- (4) Was it part of our military and political strategy in relation to neutrals, e.g. Turkey?
- (5) Was it essential to the maintenance of trade connections for the post-war period?

Clearly a single case raised more than one question of this sort and the answers might conflict, e.g. a certain exported commodity might bring in a soft rather than hard currency but might be valuable for

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<sup>1</sup> See p. 96.

retaining trade connections; in that case the relative importance of the one against the other had to be balanced. Much depended upon individual circumstances and it would have been impossible to evolve some watertight priority system providing an automatic answer in every case.

The last of these considerations can, however, be very briefly considered. At the beginning of the war and during the early phases of the export drive it may well have been that exporters bore carefully in mind the importance of maintaining trade connections. But such an approach became increasingly impracticable as the control over exports was tightened in detail. Post-war markets, though of tremendous importance in themselves, could claim no relevance to the basic problem of winning the war. Once the Lend-Lease Act was passed the Americans took to scrutinising our exports to foreign markets, and our advertisements, for example in South American journals, to ensure that American supplies were not being re-exported, either raw or processed, to other consumers. But even before the Lend-Lease Act, it was becoming impossible to pursue the apparently contradictory objectives of winning the war and safeguarding post-war interests.

The next consideration to be eliminated was that of currency. In the months after Dunkirk the pre-eminent problem had been that of earning dollars: America, Canada and parts of the South American market were specifically made the object of the export trade. The articles of export were usually luxury articles in whose total cost raw materials played only a small part, e.g. high-grade linen articles and other textile goods; but already the whole viewpoint had been challenged. A memorandum, in the latter part of June 1940, by the Minister without Portfolio (Mr. Greenwood) had claimed that the relative value of exports had been reduced for two reasons:

On the one hand, it has become imperative that we should aim at the maximum production of munitions in the short period, and, on the other, there is a greater likelihood that, within the near future, credits will be obtainable from the United States.

The Lend-Lease Act eliminated the chief anxiety over currency. Essential imports from America were no longer limited by shortage of dollars; and this process was carried an important stage further when Canada made the first billion dollar gift in April 1942. On the other hand, while currency difficulties diminished, the American 'policing' of our export policy grew more stringent. Britain, for example, accepted the theory of substitution; as a result materials which could be considered as 'substitutes' for lend-lease supplies could not be used in British exports. These problems are considered in the chapters on Anglo-American relations below, but the obvious effect was un-

doubtedly to limit even further the field of British overseas trade. Meanwhile, we still had to pay our bills for pre-lend-lease purchases, met to some extent by the export of tropical materials from the Empire, especially rubber and tin. When the losses in the Pacific war, early in 1942, deprived Britain of this valuable dollar-earning capacity the Americans were not favourably disposed to place the lend-lease blanket over these early purchases, and the debts remained a drain upon British gold reserves.

But the ultimate cause for the steep decline in British exports is undoubtedly attributable neither to the discarding of post-war interests nor to the solution of the currency problem, but to scarcity; and, not without considerable heartburning, purely trading and post-war considerations were eliminated. Already, early in 1941, the policy had been applied to semi-manufactured steel so that no exports were permitted, 'unless to supply a requirement which is essential to the prosecution of the war and one which cannot be met from other sources'. In March 1942, after considering the claims of maintaining valuable trading connections and of earning foreign currency, it was decided that 'we could no longer afford to continue any appreciable volume of exports on either of these grounds'. In other words, economic interests gave place to strategic planning; and the South American markets were virtually abandoned to the nearer and wealthier supplier. It is not surprising, therefore, that American irritation at the alleged use of lend-lease materials in our export trade 'had decreased' but one minister reminded his colleagues:

that it was important that we should not give the United States the impression that we were prepared to allow them to have matters entirely their own way in the South American market.

The revival of the export trade was not begun until the last phase of the war and belongs to the history of reconstruction.

By 1942, then, the whole character of the situation had changed. The export of woven woollen piece goods may be taken as an example. Because of the considerable currency-earning capacity of such commodities, Britain had during 1941 sent exports to the United States and Latin America 'on as large a scale as possible' while sending the 'minimum essential supplies' to the Empire. By drawing upon the stocks which had been accumulated for the export drive, deliveries overseas were maintained at a high level during 1942. Thus, although production specifically for export during that year amounted to only eighteen million lb., exports reached the figure of forty million lb. of which fifteen millions went to the United States and South America. By 1943 these stocks were exhausted, but during the first half of the year it was possible to maintain exports across the Atlantic at a reduced level. The little that was available was, however, being in-

creasingly absorbed by the essential needs of other countries, notably South Africa; and in the second half of 1943 the allocations for export to the United States and South America were accordingly brought to an end. In spite of the economic and political attractions of supplying foreign markets, exports had become little more than an incubus upon the economic machine now almost fully tuned up to the exclusive needs of war. Britain, in particular, felt that exports should be considered as a burden upon the shoulders of the United Nations as a whole. In December 1941 the President of the Board of Trade had urged the creation of special Anglo-American machinery to assess the total non-munitions requirements of allies and neutrals and determine from which sources they should be supplied. Two birds were thus to be killed with one stone: the minimum civilian requirements for all (Americans no less than British) were to be laid down and the responsibility for exports was to be placed, in the most appropriate way, upon the shoulders most capable of bearing them in each case. After some delays, this task of allocating materials for export passed in many cases under the control of the Combined Raw Materials Board.<sup>1</sup>

Thus, by the summer of 1942, exports were roughly grouped into four categories and over them C.R.M.B. and other inter-allied organisations exercised a broad supervision. These categories comprised supplies for:

(i) The British Empire and the allies. They were to receive enough exports to fulfil essential war needs and minimum civilian requirements.

(ii) The Middle East countries. Similar considerations applied here except in the case of Turkey, which was receiving certain exports for political reasons.

(iii) The neutrals, Spain, Portugal and Switzerland. Exports and imports were arranged on the basis of the economic warfare being conducted in these countries against the Axis, as well as to obtain essential supplies.

(iv) The Latin American countries. Some were at war and were therefore treated as belligerents. Others, such as the Argentine, had to receive exports owing to their importance as a source of food and other essential materials. Tinsplate, in particular, had to be sent in order that canned foods might be exported.

Thus, by now, the export trade as such had been virtually abandoned: what survived, at least as far as Britain was concerned, had been assimilated to a strategic programme. But the Secretary for the Department of Overseas Trade warned his colleagues at this stage: 'I hope that before we decide to abandon the valuable weapon of export we shall make quite certain that labour and material for other

<sup>1</sup> See p. 290.

purposes are being economically used'. Moreover, it had already been argued that the abandonment of the South American markets did not, in fact, represent an economy in total allied resources: 'The diversion of manpower and productive capacity from the direct war purposes of the allies as a whole is just as great if the Americans export the manufactured goods as if we do'. But the enormous potential of American capacity easily gave her an overwhelming supremacy in the export trade.

An estimate for the year 1942 of the percentage of four critical materials embodied in non-munitions exports from Britain reveals the extent of the export restrictions (Table 19):

*Table 19. Estimated percentages of total United Kingdom consumption of certain materials in 1942 going into non-munitions exports*

Steel . . .	0.3
Copper . . .	1.9
Aluminium . . .	0.1
Rubber . . .	4.0

The situation during 1943, as shown by Table 20, demonstrates how far Britain had been obliged to abandon her traditional function in world trade:

*Table 20. United Kingdom commercial exports, 1938-45 (by value and index of volume)*

	£ million	Index of volume
1938 . . . . .	471	100
1939 . . . . .	440	94
1940 . . . . .	411	73
1941 . . . . .	365	56
1942 . . . . .	270	36
1943 . . . . .	233	29
1944 . . . . .	258	30
1945 Jan./Sept. . . . .	272	42 <sup>1</sup>

Source: Cmd. 6707, Appendix 1, Table 2

<sup>1</sup> Increase of exports in 1945 was partly due to exports for relief purposes.

During 1943 non-munitions exports fell to less than one-third of the 1938 figure and the anxiety amongst British commercial interests as to their markets in the post-war world had grown; Anglo-American combined planning, now achieved, was proving a mixed blessing. Thus, British critics of this policy referred to:

(a) Increasing uneasiness on the part of United Kingdom industry that their traditional markets are being transferred wholesale to the United States of America simply because we cannot stand up to the Americans. . . .

(b) Doubts whether American assurances of ability to supply now are related to the future labour position in the United States . . .

(c) Evidence of attempts on the part of American officials to use

the Lend-Lease White Paper<sup>1</sup> as a big stick with which to beat us into submission if we do not accept their programming proposals.

But it was an unequal contest. Britain possessed neither the capacity, labour, materials nor shipping to regain as yet any noteworthy share of her pre-war markets and when, towards the end of the war, she began to prepare for post-war trade, her commercial exports increased during the remaining period of hostilities by very small degrees. But, in preparation for the new situation, Britain, at her own request, had steel removed from the list of lend-lease materials at the end of 1944. Moreover, the Ministry of Supply had already decided that at the end of the German war 'wherever possible, they wished to exploit other sources for raw materials', rather than the American market. This was designed not simply to save dollars but to regain a free hand in the export trade.

This account of the decline of the British export trade during the war must be counterbalanced by reference to an important aspect of the British imperial economy. The extension of the policy of reciprocal aid to raw materials in July 1943 (i.e. reverse lend-lease) provided the United States and other allies with considerable quantities of essential materials. The loss of Pacific supplies was in part replaced by the increased exploitation of the Empire in Africa as a source of tropical materials, while the United Kingdom itself contributed considerable quantities of finished products to the American forces in the United Kingdom and elsewhere, to the Soviet Union and to other allies. These developments cannot be considered here but a brief summary of the exports of certain commodities under reciprocal aid provides some measure of this contribution. (Table 21.)

*Table 21. Raw materials exported to the United States under Reciprocal Aid<sup>2</sup>*

Material	£ thousand		
	Year ending 30th June 1944	1st July 1944- 1st Sept. 1945	Cumulative to 1st Sept. 1945
Asbestos . . .	190	262	452
Chrome . . .	88	113	201
Copper . . .	129	3,567	3,696
Goatskins . . .	391	654	1,045
Graphite . . .	57	49	106
Hides . . .	208	203	411
Pyrethrum . . .	213	906	1,119
Rubber . . .	5,947	13,636	19,583
Sisal . . .	1,036	1,920	2,956
Others . . .	413	1,369	1,782
<b>TOTAL . . .</b>	<b>8,672</b>	<b>22,679</b>	<b>31,351</b>

Source: Cmd. 6931, Table 4

<sup>1</sup> The significance of the White Paper is discussed in Chapter XVII, pp. 278-279.

<sup>2</sup> The majority of these materials came from the colonies.

## CHAPTER VIII

# CIVIL REQUIREMENTS

IT has already been indicated that the real turning point in government policy towards civil requirements occurred in the late spring of 1940, during the succession of military disasters which began with the German invasion of Norway on 9th April and ended with the loss of Dunkirk on the following 3rd June. Disasters of such rapidity and severity set the stage for the beginning of civilian austerity, although it is not without significance that the term did not gain wide currency until after Sir Stafford Cripps' speech of 25th February 1942.<sup>1</sup> In considering civilian requirements we must, however, bear in mind that such a term covers in wartime many activities essential to the war effort. The feeding and clothing of munitions workers, the provision of air raid shelters, the maintenance of electricity supplies and transport are bound to be included within the civilian sector, although to a nation in the front line the distinction between these and purely military needs must be largely academic. How, for example, could the expenditure of ammunition by the anti-aircraft defences of London be allocated between civilian and military needs? Nevertheless, with these provisos in mind it is possible to trace the shedding of the less essential coats on the civilian back as the nation stripped for battle. We must first consider what progress had been made along these lines in the conditions of pseudo-war which prevailed during the first six months of the conflict, and what happened also during the following three months of confusion, until the shock of the bitter warfare and grave defeats clarified the issues. We may then consider when exactly civilian consumption was forced down to the basic minimum and what contribution that made to meet the pressing demands of total war.

### (i) THE SEARCH FOR A POLICY, SEPTEMBER 1939–JUNE 1940

If, in the early weeks of the war, the Government had been endowed with the prophetic insight or the intelligence reports to enable it to foresee the military situation which was unfolding, it would still have been faced with major economic, political and administrative problems in attempting to reduce civilian demand at once against such an emergency. This complicated issue may perhaps be seen as a twofold question broadly conceived, namely,

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<sup>1</sup> H. of C. Deb., Vol. 378, Cols. 311–320.



how far the Government had the *will* to bring the civil consumption of raw materials down to the level which it in fact reached in 1943 and how far it possessed the *power* to do so.

### *The will*

In his first broadcast of the war, on 3rd September 1939, the Prime Minister (Mr. N. Chamberlain) stated that he had given instructions for all military and other preparations to be made on the assumption that the war would last three years: he hinted that economies in the civilian sector would have to be made, but combined it with the gibe that this country was not *beginning* the war with ration books, a circumstance which in due time proved a source of weakness rather than of strength. The widespread feeling of confidence helped to sap the will of those who might have demanded that the civilian cloth should at once be cut to meet the military garment. Those who might have instigated draconian measures from the beginning felt less incentive to do so. The appropriate measures in preparation for a three-years war, it was felt also, demanded not some sudden and catastrophic reduction in civilian standards but a more gradual tapering off of luxury supplies.

The acceptance of gradualism rather than speedy and drastic measures was encouraged also by a mixture of political and economic motives. The political argument ran that war in any case led to the danger of a sudden deterioration in public morale and that a well-stocked domestic larder and wardrobe exercised a tonic effect where most needed. This attitude was brought out most clearly in the case of food policy at this time, but it left its impact none the less on the raw materials decisions.<sup>1</sup> Secondly, any serious cuts in the supply of raw materials to civilian industries, it was argued, had the immediate effect of swelling the number of the unemployed at a time when neither the Army nor the munitions industries were yet sufficiently expanded to absorb them. To consider why this was so does not fall within the scope of this study; but it was certainly one of the conditioning influences in the evolution of requirements programmes. Apart from this, producers for the export market might be unable to sell economically and competitively abroad unless total demand were large enough to include the needs of the home market. A sudden cut in civil supplies at a time when purchasing power was increasing would also add to the inflationary difficulties with which the Treasury was wrestling. Moreover, there was no shortage of raw materials; in the first, fine careless rapture of that sunny autumn it

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<sup>1</sup> A point of some importance, though it did not greatly affect the government policy, was the hostility of the press to controls. Referring to the press attacks a senior Minister said that the attack on the Government and the controls by a certain section of the press was attributable to efforts to stimulate a flagging circulation.

was thought that perhaps there never would be. The raw materials suppliers had lost a purchaser in Germany: there were thus opened the prospects of a buyer's market. No stringency of either raw materials or of shipping could be adduced in favour of a rigorous economy programme.

It was in such a context that the first Christmas of the war came and went without manufacturers being called upon seriously to curtail their production for the domestic market. Propaganda had been employed to reduce civilian claims and the National Savings movement had attacked the problem from another angle in the campaign it had inaugurated in the preceding November. More propaganda was promised. A few days before Christmas it had been stated that the Stamp Survey was proposing to draw up a report *with a view to preparing the public for the idea* that great cuts in the consumption of imported materials were necessary. This was not simply a circumlocutory phrase; it revealed a frame of mind. But the Prime Minister was by now moving away from this desire for shock absorbers and, after a frank discussion with the French Minister of Finance, M. Reynaud, he expressed the belief that economies would be achieved not by exhortation but by cutting the supplies in the shops. He was strongly supported also by some of his colleagues. The immediate restriction of civilian consumption was suggested, and it was pointed out that an orderly economy programme would not damage civilian morale; but the situation would be fraught with danger if action was delayed till stocks had been exhausted and the Government had to take what appeared to be panic measures. We were also running the risk of a sudden paralysis of our production. The Germans, it was added, were drawing their own conclusions about the seriousness of our intentions as long as we maintained civil consumption at a high level.

By the middle of January, the Government (on the advice of the Ministerial Committee on Economic Policy) was calling for a stiff reduction in consumption of all goods, faced as we were with an inexorable need to achieve the maximum economy in private expenditure. As a practical step it approved in March 1940 the production of standard suits, but in July the Board of Trade was still asking for such a measure to be put into force. The production of utility cloth of some cheaper kinds began in September 1941 but the programme was not extended over the full range of materials until May 1942. On 29th May 1940 the Economic Policy Committee authorised the President of the Board of Trade to reduce civil consumption of many raw materials to two-thirds of what it had been hitherto, and an order was made soon after, 'restricting supplies to retailers of a large number of luxury and semi-luxury goods for household use'.<sup>1</sup> From the new year onwards the Government had

<sup>1</sup> Limitation of Supplies (Miscellaneous) Order (1940), No. 874, issued on 6th June 1940.

been aware that some direct action was essential to enforce cuts in raw materials consumption; and we must therefore consider what machinery existed for doing it, that is, what *power* the Government possessed for applying its will.

### *The power*

The plans for control and the nature of the controls are discussed in detail elsewhere. It is only necessary here to refer to some of the limitations in the existing apparatus of control which were manifest even during this early period. For example, even when the Government accepted the logic of the situation which had led to compulsory cuts it still lacked a central body to ensure that its directions were transmitted throughout the field of raw materials. The Cabinet, the Lord President's Committee, the Ministerial Priority Committee and below it the Materials Committee, gave directions for cuts to be imposed, but between these august bodies and the consumer there was a gap. The Limitation of Supplies Orders which began to be issued by the Board of Trade in June 1940<sup>1</sup> were efforts to bridge the gap, but these did not deal with all materials and were concerned much more with blocking the leak through the wholesaler than with cutting off the raw materials before they reached the producers. There were lastly the raw materials controllers who could be expected to play a part in restricting civil supplies. For reasons which are set out more fully in the section already mentioned, these officers, with the best will in the world, could not be expected to be *au fait* with the general situation; apart from this, it would have been a complete distortion of their functions to have expected them to determine which civil demands were legitimate and which were not. In the event, it was precisely this which they were called upon to do in the absence of any specially designed organisation for the purpose. The result, as was to be expected, was a gross disparity between the methods and policies of individual controls: some were known to be tolerant, others were less popular with consumers. All of them were inevitably subject to pressure from former colleagues in the trade. Some materials were not controlled at all. The surveillance exercised by the Production and Materials Committee was, moreover, extended only to those materials which were considered critical or expected to be critical: the rest did not come up for consideration at all. Some of the materials under the Production and Materials Committee were 'allocated' to departments; in other cases total anticipated supplies were divided by the Materials Committee amongst a number of 'end uses' and the executive fulfilment of this policy was vested in the

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<sup>1</sup> See Hargreaves and Gowing, *op. cit.*, Chapter V.

controls. Of the allocations of steel to departments it was stated in July 1940 that:

this system cannot be regarded as satisfactory. Once an allocation has been given to a department the Ministry of Supply has no responsibility as to the uses for which the department concerned authorises issues from the allocation made to it. . . . Further, the allocations granted to departments are based on estimates of requirements which the Central Priority organisation is not in a position to test in detail.

This absence of full control at the consuming end was paralleled by a similar absence at the supply end, namely many materials were still coming in free of licence.<sup>1</sup>

Clearly, then, the effective control of civilian consumption was only just beginning when the British troops were withdrawing from Dunkirk. At the end of 1939 some of the defects of incomplete control and the difficulties of maintaining the fullest supervision of consumption had already been pointed out. For example, it was almost impossible to keep track of wool throughout its many stages from the raw material to the finished article. As a result there appeared at the moment to be no shortage of woollen goods in the shops, though export demands could not be fully met. Some materials, even when submitted to supervision, presented peculiar difficulties of their own. For example, the home consumption of lead in May 1940 accounted for more than fifty per cent. of total demand, but it was proving extremely difficult to determine what proportion of this quantity was required for 'indirect but essential uses'. So, for a variety of reasons, the progress made in the first nine months of the war to restrict civil consumption was small. In June 1940 the Minister without Portfolio reported that the steps already taken by the Wool Control 'do not seem to have been very effective so far in reducing domestic consumption. . . . Total civil consumption (home and export) is still double that during the period September/January 1917/1918'. In the case of cotton, 'not much less than one half of the industry was still working for the home market'. Carpets and linoleum were being produced in considerable quantities and home consumption was not restricted below two-thirds in value of the pre-war level. As far as a major material like steel was concerned, it was reported that 'Information in regard to the use of steel for civil purposes since the outbreak of war is scanty' but:

The most obvious wastes have arisen in connection with the construction of public buildings, including cinemas, schools and churches, and factories for the manufacture of non-essential commodities.

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<sup>1</sup> See below, Chapter X. It had, however, been stated in December 1939 that the measures for the restriction of inessential imports put into force at the beginning of the war were already more thorough than at any time in the Great War.

Steel producers, in the absence of clear general direction, were themselves applying a priority system of their own. At the end of May the policy of raw materials economy had still been of a tentative character: the Production Council had agreed that '*for the time being* urgent service orders should have preference over home and export needs'.<sup>1</sup> But in June the chairman of the Materials Committee, the Production Council, and the Lord President's Committee were all emphasising the need for the most drastic action to cut civil demands upon the dwindling resources. On 21st June it was agreed that 'steps should be taken as soon as possible to eliminate all unnecessary domestic consumption of materials which enter into our war effort'.<sup>2</sup> The new mood was perhaps best expressed in the paper, already referred to, written by the Minister without Portfolio:

we have been plunged into a period of total war in which the policy of gradualism has become dangerous. It is, moreover, positively desirable to create unemployment in the non-essential trades as quickly as possible so that labour may be rapidly drawn into the munition trades.

That was on 20th June 1940; the concept of total war was being translated into civilian terms.

By the end of June 1940 Britain had been at war for ten months. By now some cuts had been made in civilian consumption, for example in timber and steel, but larger cuts were in preparation. It is thus of interest to compare these developments with the situation in the United States during 1942, the first year of its active belligerency. On the basis of calculations made by the War Production Board in Washington it was possible to see that:

In the second half of 1942 American consumers were purchasing goods and services at the highest rate in American history. The volume of civilian consumption was eighteen per cent. above that of 1939 . . . clothing purchases were up by twenty-eight per cent.; purchases of furniture and furnishings up by sixteen per cent.; of purchased transportation by eighty per cent., of personal services by thirty-nine per cent. . . . There was no general limitation of civilian consumption to the end of 1942; the volume of supplies was bigger than ever.

This high level did not apply to the metal-consuming industries, and elsewhere it could only be sustained by drawing upon stocks; but it is clear none the less that the problems of adjusting civilian demands to the military situation raised as many difficulties in the United States as in the United Kingdom.

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<sup>1</sup> The italics are the author's.

<sup>2</sup> It was also decided 'to reduce the allocations of important raw materials entering into the export trade'.

## (ii) JUNE 1940–DECEMBER 1941: STIFFENING THE CONTROLS

The shock of the British defeats in Europe in the spring and summer of 1940 opened the prospects of far greater economies than even the most anxious ministers had dared to anticipate. The decisions of June 1940 already referred to were, a month later, implemented with more detailed directives. The declining supplies of wool left for civil consumption must, it was felt, be diverted to 'clothing of the cheaper kinds' and the production of standard suits was again under consideration. Only very small quantities of flax were to be released for home demands. Jute cuts were imminent; steel, copper and lead economies were promised. Between now and the end of the year various schemes were introduced but, at the beginning of 1941, the reduced shipping programme determined much more serious cuts over a wide field. A paper presented to the Lord President's Committee by the Minister of Supply and the President of the Board of Trade was now speaking in terms of 'a severe restriction'. Even after Dunkirk relaxations had been made in the use of paper manufactured from home produced materials but now these 'must be revoked and further restrictions imposed on use'. The home consumption of cotton and wool must be cut to twenty per cent. of the pre-war figure; but it was hoped 'in the first place that the consumption of civilian boots and shoes need not be reduced below three-quarters of normal'. Unfortunately, certain materials such as rubber, asbestos and calcium carbide entered into so many diverse uses that there was 'little hope of reducing consumption without directly affecting the war effort in one way or another'. The warning was added that unless the economies were accompanied by comparable cuts in supplies to the Services, 'the sense of grievance will be increased if civilians see their relatives in the Forces getting over-liberal supplies'. The Lord President's Committee agreed that these proposals should be put into effect without delay and asked the Minister of Supply to re-examine the question of a reduction in rubber consumption. It also pointed out that 'a scheme for rationing consumers' goods' was almost certainly necessary. Yet even as late as April 1941 ministers were asked through the medium of a different committee 'to consider whether stocks of textile materials could be made available for civilian consumption so that the rationing of clothing could be avoided'. The President of the Board of Trade made it clear that 'he was sure that we ought to proceed with all the preparations for a rationing scheme'.

Those who sought to impose further reductions had recently received a new and powerful ally from overseas. The passage of the Lend-Lease Act of March 1941 granted to the American administration the power to examine all British claims to imports from the United States. This, in effect, permitted them to challenge what was

called the 'essentiality' of a finished product and, by implication, to impose limitations upon consumption in the British home market. The nature and extent of this supervision is discussed fully in the section on Anglo-American relations, below; but the very creation of this additional control strengthened the hands of those in Britain who were anxious to impose the maximum restrictions.

By the middle of 1941 the introduction of cuts under the Limitation of Supplies Orders, accompanied by the reduction of allocations of raw materials to the manufacturers, was promising serious economies. In October 1941 it was estimated that only one-sixth of the total supply of timber was being allocated to civilian needs (and this included many munitions uses, e.g. war factory roofing). Meanwhile thirteen per cent. of cotton supplies, less than twenty-five per cent. of wool supplies, thirty per cent. of non-ferrous metals (with qualifications similar to those applied to timber) and fifty-six per cent. of the available leather were available for home civil uses; the figure for steel was put at less than one-half of one per cent. These various economies were not effected without protest. Already, at the end of October 1940, it appeared that civil demands, however essential, for drop forgings were likely to be completely squeezed out under pressure from the overwhelming service requirements. By the following June shortages were being felt over a much wider field and the introduction of clothes rationing in the same month presaged further cuts; for some commodities, the allocations of raw materials were not enough even to meet the permitted output under the Limitation of Supplies Orders. The domestic hollow-ware situation was particularly acute, but part of this difficulty was attributed to the unwillingness of some manufacturers to produce the more essential articles, such as kettles and saucepans, because they were the least profitable. There was not at the moment a furniture shortage; but the fact that no timber had been allocated for domestic furniture in the second half of 1940 and very little during the first half of 1941 foreshadowed the more critical situation which was to develop later. Yet, though progress had been made and further progress was in prospect, civil consumption was still far from the minimum. An estimate made in July 1941 calculated that of the total labour force of 24,030,000 in Great Britain, 11,080,000, no less than 46·1 per cent., were employed in the 'home market and services to civilian population', although, clearly, much of this consumption was highly essential, if workmen were to remain efficient production units. In the case of many civilian commodities the opportunities for drawing upon wholesalers' and retailers' stocks were postponing the day of reckoning to a later stage of the war.

The available figures as well as the official comments show that by Pearl Harbour, in December 1941, there was a strong general desire

to economise in the civilian sector and very real changes had been made in the whole civilian way of life. But even as the control over consumption grew closer, it remained none the less true that the dividing line between 'essential' and 'inessential' consumption was extremely difficult to draw. We have seen that, when in February 1941 further economies were proposed, the Minister of Supply and the President of the Board of Trade regarded as almost insuperable the problem of isolating service from civil demands for rubber and other materials. Again, in October 1941, an official memorandum stressed:

It is not easy to determine the border between war effort and civilian use in the case of raw materials. The division turns so much on the length of the period under review: uses which are immediately civilian in character may ultimately have an important bearing on the maintenance of the war effort.

This elusive problem could not be settled in positive terms during the period under consideration. Nor did it admit of a final solution at any later stage. Once again scarcity, during the next phase of the war, made necessary and possible the imposition of the most rigorous cuts; and scarcity simplified the position in a manner which discussion alone could not achieve.

(iii) JANUARY 1942—MAY 1943: NEARING THE BONE

This, the final period of civilian cuts, lasted roughly from the beginning of the Pacific war until the summer of 1943, when the effect of the reduced service programmes began to be felt. For convenience sake the establishment of the Civilian Goods (Supplies) Committee in May 1943, when the first increases of civil supplies were envisaged, may be taken as marking the end of a phase.

The progress made by the beginning of 1942 did not represent the limit of civilian restriction, though it could be claimed that the cuts imposed during two years of war 'placed the vast majority of people in a condition which is little, if any, superior to that which was reached after the four years of the last war'. The Lord President reported early in 1942:

There is at the moment a general readiness to accept—indeed to demand—further sacrifices. Public opinion, as reflected in parliament and in the press, favours a more determined subordination of civilian well-being to the needs of strategy and war production.

Apart from this, labour was now becoming more scarce than materials. The President of the Board of Trade accordingly proposed



a more drastic approach to the whole situation. At the end of April he considered that the 'Limitation of Supplies' method was no longer suitable and decided to embark in some cases upon a policy of releasing materials only for utility goods, in others upon a policy of total prohibition. This prohibition was to apply to a number of commodities, including 'cut glass, metal office fitments, leather suit-cases, jewellery, toys made of scarce materials, ornamental lighting and a range of fancy goods'. He was aware that in some cases it would lead to unemployment amongst elderly and non-mobile workers, but was satisfied that 'this price is worth paying and must be paid'. The Lord President's Committee, however, thought that perhaps the pace might be too fast and would inflict severe hardship on certain sections of the community, e.g. workshops for the blind.

The general feeling of the committee was that the Limitation of Supplies procedure should be used to the fullest extent possible before recourse was had to total prohibition of manufacture.

It was held that 'there should be a gradual and progressive contraction of the manufacture of the less essential consumer goods'. It thus remained true that more than two and a half years after the outbreak of war there were social and administrative reasons for keeping the knife from the bone. In the summer it was, however, laid down that as from 1st September 1942, 'the manufacture of civilian furniture would be prohibited except under licence, and licences would be granted only for the production of utility goods'. These utility goods were to be available only to holders of priority certificates.

During 1942 the process of laying down the main lines of domestic consumption was completed, and further substantial progress could be recorded. For the year as a whole civilian consumption of goods, other than foodstuffs, was estimated at fifty per cent. of the pre-war total. Both in the quantities of finished products and in the raw materials used in their manufacture a very great decline had taken place since September 1939. In terms of raw materials it could be shown that imports had dropped from 29 million tons before the war to 12 million tons in 1942 and that less than one-sixth of this reduced amount was for civil consumption. By 1943 the consumption of household goods was down to one-third of the 1938 level. It may have been that some consumers managed none the less to obtain materials for purposes scarcely relevant to essential needs; and how far civilian needs could have been still further reduced will remain difficult to assess. Table 22, however, provides some measure of the increasing effect of the restrictions; it makes possible also a broad comparison of the impact of war upon civil consumption in the United Kingdom, the United States and Canada.

Table 22. Annual per capita purchases of all consumer goods and services in the United Kingdom, United States and Canada: 1941-44 compared with pre-war (valued substantially at pre-war prices)

	United Kingdom (at 1938 U.K. prices)	United States (at 1939 U.S. prices)	Canada (at 1939 Canadian prices)
	£	\$	\$
Pre-war (U.K. 1938; U.S. and Canada 1939)	87.9	508	336 E
1941 . . . . .	74.4	568	371 E
1942 . . . . .	74.1	558	379 E
1943 . . . . .	71.7	576	378 E
1944 . . . . .	73.9	589 E	388 E
Change from pre-war to 1941	- 15%	+ 12%	+ 11% E
Change from 1941 to 1944	- 1%	+ 4% E	+ 5% E
Change from pre-war to 1944	- 16%	+ 16% E	+ 16% E
	E = Estimated		

Source: *The Impact of the War on Civilian Consumption in the U.K., the U.S. and Canada* (H.M.S.O., 1945), Part III, Chapter I, Table 13

Certain important conclusions may be drawn from these figures. It is clear that the major cuts took place between 1939 and 1941 but that civilian consumption continued to fall slightly until 1943 after which a slow improvement began. Certain difficulties, however, arise in comparing these changes with those in North America. 1939 was a year in which more than eight million Americans were either unemployed or doing relief work; and comparable conditions prevailed in Canada. It was to be expected, then, that as rearmament gathered momentum in these countries, and the level of employment rose, expenditure on consumer goods should rise with them. It has been suggested that the year 1941 for North America is a better year for comparison with 1938 in the United Kingdom; but it is noteworthy that, even on that basis, except for a slight fall in 1942, civilian consumption in North America continued to rise right into 1944. The *per capita* purchases, moreover, only tell part of the story; the total consumer purchases in the United Kingdom fell between 1939 and 1944 by twenty-two per cent.; in the United States they stood in 1944 twelve per cent. above the 1939 level, in Canada, fifteen per cent.<sup>1</sup> These changes, considered in terms of clothing and durable household goods, the great consumers of raw materials, may be followed in Appendix 15. But the figures we have been considering do not, of course, allow for changes in the quality of the goods provided. Apart from this, none of the figures can show the other major economy in civil consumption, the abandonment of

<sup>1</sup> *The Impact of the War on Civilian Consumption in the U.K., the U.S. and Canada* (H.M.S.O., 1945), Part II, Table 12.

capital construction for civilian needs and the cessation of much essential repair work and replacement, e.g. in transport, electricity supplies and other public services. The figures in Table 23 set out, in financial terms, the industrial disinvestment (but do not include the running down of stocks of clothing and household goods or the omission of normal repairs to private property).

Table 23. *Disinvestment within the United Kingdom, 1940-44*

	£ million
1940 . . .	97
1941 . . .	254
1942 . . .	162
1943 . . .	194
1944 . . .	178
	885

Source: Cmd. 6707, Appendix VIII, Table 11

No allowance has been made in these figures for capital construction for war purposes, but its value as peace-time post-war capital may have reached as high as £150,000,000 (1949 values).

(iv) THE BEGINNING OF RELAXATION

The reduction in the service programmes had begun in 1943, but the acute shipping situation as well as scarcities at source held out no great hopes of alleviating the civilian lot. The distant prospect had, however, already been revealed in May 1943 when the Civilian Goods Committee had been established, amongst other things, to make recommendations regarding the 'adjustments between military and civilian output which become possible when capacity is released in the United Kingdom from service programmes'. At its first meeting in July 1943 the chairman of this committee recorded that the C.P.R.B. had recognised that certain civilian industries must obtain release from the severity of the economies imposed upon them, and he laid it down that:

Given the production of essential military requirements in the quantities needed, and provided that production of civilian goods for home consumption and export had been stripped to the minimum, output of these necessary goods must be assured the required productive resources, *pari passu with munitions*.<sup>1</sup>

More laconically, the President of the Board of Trade observed in September 1943: 'We cannot contemplate any further reduction in civilian standards in the United Kingdom'. Slowly here and there small quantities of raw materials began to seep through into the domestic market. In America the tide turned sooner and the first

<sup>1</sup> Author's italics.

relaxations of raw material specifications were introduced in 1943; in England the beginnings were more cautious and the first minor adjustments began in 1944. But with the appointment of a Minister of Reconstruction in November 1943, the plans for civilian supplies, notably houses, began to assume a definite character. The official attitude also began to change. Though supplies were not vastly increased there now 'emerged a kind of inverse priority under which the essential civilian minimum had to be guaranteed and the Services shared the rest to the best advantage'. Arrangements were made in March 1944 for 'exchanging information' between the United States, United Kingdom and Canada 'on proposals to relax material controls'; but the very acute scarcity of shipping and manpower meant that very little material was directly allocated for civil consumption before the war ended in August 1945. Even then, shortage of supplies as well as uncertainty meant that no immediate improvement could be expected.

## CHAPTER IX

### PROGRAMMES AND POLICY: A SUMMARY

**T**HE preceding chapters have recounted in succession the claims of the munitions, export and civil consumers to win for themselves a share of the raw material resources. For purposes of convenience each group has been selected for separate treatment, although the interaction of the other two groups has been noted in passing. That interaction was obviously more intimate and continuous than it was possible to reveal in the separate chapters. There were, in essence, two general issues which gave the dominant tone and pattern to the programmes of demand: the first was the problem of obtaining some method of forming accurate estimates of requirements, the second was that of determining which demands should be fulfilled and which should be sacrificed.

The machinery and methods of 'programming,' as it is sometimes called, were never fashioned into a perfect instrument. There were, as we have seen, too many variables which accordingly made every statement of requirements incomplete, tentative and, in the end, false. Consuming departments tended to inflate their demands, especially as each department suspected that its competitors for a scarce commodity were doing the same thing. Officials were chary about reducing their demands to the absolute minimum, lest the allocating body should impose a further percentage cut all round<sup>1</sup> or lest they themselves should find that they had set their needs too low. But in other cases estimates suffered because it was proving extremely difficult to develop a technique for breaking down demands for finished products into raw materials. We have seen several instances of this in Chapter V. Admittedly progress had been made since May 1939 when one official lamented the 'rather wild guesses' made by his colleagues and wondered what policy could be built upon such unsatisfactory foundations. Progress was made: but no degree of certitude could be attached to the figures presented to the Materials Committee. Such programmes when formulated were subject to sudden and drastic alterations when the quantity, quality or timing of the requirement was suddenly changed. On the

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<sup>1</sup> An all-round cut of five to ten per cent. looks the most fair way of settling an inter-departmental dispute. It is, in fact, a confession of weakness and lessens the value of any consumption plan to which it is applied.

other hand, a munitions programme entirely free from sudden and radical change might have been completely stultified and a menace to sound and realistic planning. To test the validity of each demand would have called for an army of investigators who could hardly have been spared when manpower was becoming scarcer even than materials; in any case such a skilled body of men hardly existed outside the consuming department itself.

It is not surprising, then, that suppliers frequently insisted that the estimates of requirements provided no satisfactory basis for their operations. Early in 1940 an officer of the Ministry of Supply concerned with steel complained that:

Whereas the Air Ministry programme of requirements [of alloy steel] furnished to us showed a demand for 4,600 tons per month in November 1939, rising gradually to 8,700 tons in November 1940, the Air Ministry were already, in January 1940, receiving 8,000 tons per month and clamouring for more.

At the end of the same year, when drop forgings were becoming an acute bottleneck, the Sub-Committee on Drop Forgings declared that it was 'still not entirely satisfied that, as a whole, departments have adjusted their requirements of drop forgings to fit in with the actual production forecasts'. Nearly a year later, an officer of the Iron and Steel Control expressed the view that:

I have never myself been impressed with the requirements which have been placed upon us by the Materials Committee because they have always been very seriously inflated.<sup>1</sup> . . . If we were to go to the departments through the Materials Committee there might be a danger that we should get requirements statistics as false as those which we have received in the past.

New problems arose with the entry of America into the war. Combined action and therefore combined planning came into view at once. To help establish such a combined policy, and to apply the lessons which had already been learned at home, the Joint War Production Staff was created in London in March 1942 to co-ordinate domestic, and to collaborate in inter-allied, planning. It was to work in close harmony with the Combined Production and Resources Board in Washington, with which body the Combined Raw Materials Board was of course associated. It had already been found, shortly before America's entry into the war, that 'given appropriate control of private use, the existing resources of the allied powers and the United States seem likely to be adequate'. But the report went on:

The only ground for doubt in this respect lies not in the extent of the resources or the means for exploiting them but rather in the possibility of other demands which may compete with the demands of the war effort.

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<sup>1</sup> That is, inflated by consuming departments.

After Pearl Harbour, American military demands went through the same inflationary process that had been experienced in England. As a result of their vastly expanding demands, the American planners were insisting 'that raw materials are the fundamental bottleneck in the United Nations' supply programmes' and were threatening to cut down exports to Britain. Both military and civilian consumption were high in the United States, but the estimates of the requirements of raw materials for this consumption seemed to be higher still. In August 1942 the C.P.R.B. declared that 'the major limitation upon the production programmes of the two countries in 1943 . . . will be the availability of raw materials'.<sup>1</sup> It must therefore do its best 'to get the United States Army programme cut down to reasonable proportions'. This was essential, especially as:

It has been clear for some time that a great deal of the shortage of raw materials and industrial capacity is being caused by the fact that a United States Army is being raised on a scale which bears no relation to what can be shipped to theatres of war, and that demands for equipment for this Army are therefore equally inflated. The production machine is thus being clogged by trying to manufacture excessive quantities of material which is not essential to the war effort.

What was required from the United States Chiefs of Staff (the report went on) was not a total picture of demand for such an Army but an ordered statement of the periods at which given quantities of equipment could in fact be consumed. Until that happened, strategically important American and British requirements would be squeezed out in favour of an over-equipped Army 'which bears no relationship to the amounts required for effective use against the enemy'.<sup>2</sup> The Allies were still a long way from combined planning. Yet, in spite of these

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<sup>1</sup> Some months earlier, the head of the American section of C.R.M.B. had put his finger on the real difficulty. In an 'off the record' speech he had observed: 'The United States will have enough raw materials for the war, but only if there is no waste, and if military specifications are redrawn in order to reduce use of critical materials'.

<sup>2</sup> The report in which this statement occurred exemplified the problem as follows:

(i) The President's objective in United States merchant shipbuilding for 1942 and 1943 is 24 million deadweight tons; if all shipbuilding facilities were fully developed it is believed that an output of 28 million would be possible. The allocation of steel to the Maritime Commission is below the requirement for full utilisation of shipbuilding facilities; this may result in loss of ships in the first quarter of 1943, and if continued may even endanger the attainment of the 24 million ton objective.

(ii) The forecast combined tank output for 1943 is expected to be nearly 90,000 tanks, of which one-third will be light tanks. This production is sufficient to provide unit equipment and 100 per cent. reserve on British scales for some 200 armoured divisions. Tank production is directly competitive with shipbuilding.

(iii) The combined provision of aircraft bombs is vastly in excess of the bombing capacity of the bombers in sight. H.E. and A.P. bombs will be produced in U.S.A. in 1943 at a rate of 180,000 tons a month; the peak month's expenditure of H.E. and A.P. bombs by the metropolitan R.A.F. has so far—up to July—been less than 7,000 tons.'

defects, the cloud of a general raw materials scarcity lifted in the course of the following twelve months and the United Kingdom found that supplies at source were adequate, provided that there were severe economies in use and that ships were available to carry the materials. Much remained to be done on the combined boards, but the experience of joint planning, though it could not bring equality of treatment, brought greater realism of approach. The American system of estimation was more inventive and elaborate than the British, but the control over requirements seems to have been closer in the United Kingdom than it was in the United States. Necessity proved a better teacher than invention.

Throughout the war the material available to consumers was therefore subject to two controls. One was in part voluntary, that is to say, it represented the willingness of the departments to limit their demands to a realistic minimum under the persuasive supervision of a central body such as the Materials Committee. The other control, which reinforced it, was compulsory, and it was wielded not simply by a department or inter-departmental body, but by scarcity. The Materials Committee was the inter-departmental body through which the demands for some, though by no means all, the materials were 'funnelled'. But the Materials Committee was only an advisory body. Executive power was vested in the ministerial chairman of the Materials Committee, answerable until 1942 to a Cabinet committee and from that date onwards to the Minister of Production. But the chairman was himself head or second in command of a consuming department and this perhaps imposed upon him a conflict of loyalties between his departmental and supra-departmental responsibilities.<sup>1</sup> Of this we shall have more to say later.<sup>2</sup> Early in 1942 there was erected upon this structure a Ministry of Production, but when it came into being the main lines of policy had already been laid down. Later still, there came the Joint War Production Staff, which added its share of vision and perspective to British programmes and policy. But of this an official memorandum observed after the war:

In point of fact, the J.W.P.S. never fulfilled the original conception. It came late into the field and . . . its activities were far more restricted than might have been expected from its terms of reference.

Yet, far from perfection as such a system was, it provided none the

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<sup>1</sup> The holders of the following offices were, in succession, chairmen of the Materials Committee: The Parliamentary Secretary of the Ministry of Supply, who subsequently became in turn, during the period when he was chairman, Parliamentary Secretary of the Ministry of Aircraft Production, Parliamentary Secretary of the Ministry of War Transport, President of the Board of Trade and Minister of Aircraft Production; the Minister of Works; and, during the last nine months of the war, the Ministry of Production officer who had previously been acting as adviser to the chairman.

<sup>2</sup> Chapter XXV.



less for those materials with which it was concerned, a skilful and efficient secretariat which obliged consuming departments to express their demands against the background of the national interest as a whole.

A cruder but more certain instrument for limiting consumption was scarcity. As supplies grew scarce, demands were forced down and the system of reduced allocations threw back upon the consuming department the responsibility for controlling and restricting the supplies of those claimants it sponsored. The evidence already examined shows that until Dunkirk the dangers of the unfolding situation were not fully assessed. The threat of scarcity loomed large to anyone who prepared a balance sheet of the foreign currency at Britain's disposal or who formed some measure of what our total munitions demands would amount to when all our Armed Forces were fully deployed; but scarcity was, except for materials like timber and iron ore, a threat not a reality. By June 1940 the conversion to war production was barely under way, at least as far as raw materials were concerned. A greatly expanded service programme was clearly visible, if the term programme may be applied to the crescendo of demands which had descended upon controllers, but export and home civilian needs were taking part in the general *mêlée*. Exhortation mainly, strengthened here and there by more purposive action by two or three vigorous controllers, was being directed towards the lowering of civilian standards. Details are scanty for the first six months of war, which itself reflects one of the great weaknesses of the position, but certain evidence is available. Thus, for the whole of 1940, at least two-fifths of the supply of steel were being consumed in the civil and export trades; since the allocation system for steel was tightened up in April 1940, it is reasonable to assume that before that, for the first seven months of the war, perhaps half of the supply of steel was going for purposes other than munitions. Even allowing for that proportion of it required for essential currency-earning exports, a very considerable amount of steel was left for civilian purposes which included, as we have seen, churches, cinemas and schools. On the other hand, the service consumption of aluminium during this period amounted to ninety-five per cent. and of flax to between sixty and seventy per cent. of the total. But in general the process of conversion was obstructed by the prevailing concept of making the switchover from peace to war as gradual as possible; by the unwillingness to believe that munitions requirements should and must completely distort the pre-war basis of consumption; by the current military hypothesis of static warfare on land, and by the absence of administrative machinery to keep the Government fully informed about the raw materials situation at home and abroad or to enable it to transmit directing policy through the controllers to the

consumers. As late as November 1940, one official expressed an opinion that:

The Board of Trade Order [for limitation of home supplies] is one of the very few effective measures which have been taken to release factors for the war effort.

But although for convenience sake the evacuation of Dunkirk is treated as though it represented the gateway from the old age of delay and hope to the new age of spartan realism, in the economic sphere no such rapid change could be introduced. An attempt to strike a new balance was made, but it took time to infuse a change in policy throughout the whole sphere of the raw material controls: indeed, some materials such as rubber, tin, kapok, cork, coir and a number of plastic materials were not even brought under control until a year or eighteen months after the last British soldier had left France. In these eighteen months between Dunkirk and Pearl Harbour, however, service demands expanded rapidly. Munitions requirements for steel, for example, rose from three-fifths to four-fifths of the increased total supplies; for aluminium they had risen still further both proportionately and quantitatively; in timber and cotton they were rising. In flax, significantly enough, they had fallen temporarily, but that is a reflection of the importance of the export drive; although the export drive slackened during 1941, for the year as a whole exports of flax had amounted to forty-one per cent. of total supplies. But now the overseas trade of Britain was on the brink of a steep decline. The general increase in munitions output (which was now more than halfway to the 1943 peak), and the concomitant supply of raw materials for the purpose, were obtained largely at the expense of civilian standards. This we can see both in the field of textiles, where there was a fall varying between twenty per cent. and forty per cent. of pre-war consumption, and in steel, non-ferrous metals and timber where substantial cuts had already been made and further cuts were being instituted. The main details of these changes we have discussed in the preceding chapters.

From the point of view of raw materials, Pearl Harbour is almost as important as Dunkirk. Though Britain had now acquired a great fighting ally in America she had also acquired a new and dangerous enemy in Japan, an enemy, moreover, who now cut her off from many of her tropical materials. The tightening still further of the control over requirements in 1942 grew apace with the approach of the military effort to its climax. During the next eighteen months munitions requirements advanced to their peak; in 1943, 84·8 per cent. of the total supplies of steel, 99 per cent. of the aluminium, 72·9 per cent. of the softwood, 71·0 per cent. of the plywood and 80·7 per cent. of the flax went to munitions. Exports for non-

munitions purposes had shrunk to tiny proportions; in 1942 they were 0.31 per cent. of the total supply of steel, 1.9 per cent. of the copper, 0.1 per cent. of the aluminium and 4.0 per cent. of the rubber; by 1943 for nearly all materials they were less still. Civil consumption had also sustained further cuts and in the summer of 1943 stood at its lowest point. A paper presented to the Lord President's Committee declared: 'By the end of 1943 we shall have reached a stage of total mobilisation which cannot long be maintained'. It was, in fact, scarcity of manpower rather than materials which in 1943 set a term to the expansion of munitions production.

In the case of raw materials, the climax was reached in 1943, a year before the assault upon France: but again that was to be expected. In other words, raw materials had to be available at least twelve months before the weapons could be placed in the soldier's hands. Because of this condition, it was possible for the Civilian Goods (Supplies) Committee to hold its first meeting on 7th July 1943 in preparation for the slow but unmistakable process of allocating less steel for swords and more for ploughshares. So munitions requirements, which had held so tenacious a lead in the demand for materials, and, from Dunkirk onwards, received so overwhelming a share of the available supplies, were obliged from the summer of 1943 slowly to yield a part of their predominance to the requirements of exports and the civilian population at home. The process was a slow one, and in 1944 reconversion had hardly begun. In considering the products which are the principal consumers of raw materials for civilian purposes, it can be seen from Appendix 16 that the fall in consumption of durable household goods continued in 1944, that no rise was recorded for 'other household goods' and that the rise in textile and paper-consuming industries was slight. In 1945 the increased allocations of raw materials for civilian purposes began to be felt, but only to a limited degree. Meanwhile some users had adopted substitute materials which were as good as, or even superior to, the original materials and these users therefore had no desire to retrace their steps.

In 1944, as may be seen from Chapter VI, munitions demands with very few exceptions were making a diminishing call upon materials. But the conversion from war to peace presented even greater difficulties than from peace to war: the target was less certain, future demand was difficult to assess, the concentration upon victory had now to be dispersed in many directions; international co-operation began to evaporate; controls were slowly being relaxed yet essential supplies had to be assured. The uncertainties and dangers which had delayed the evolution of a forceful and concentrated war programme before Dunkirk returned to haunt the post-war planners.

PART III

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The Supply of Raw Materials



## CHAPTER X

# IMPORT LICENSING AND STATE PURCHASING

**T**HE flow of raw materials to Britain during the war was governed by the supply of materials at source; by the requirements for those materials; and by the capacity to pay for and import them. In the early period, as we have seen,<sup>1</sup> the consumers' demands over many fields, for munitions, exports and civilian goods, were not dammed and the strain upon capacity to import was heavy. In other words, scarce currency and potentially scarce shipping proved no barrier to the flood of expanded demands. It is doubtful, indeed, whether the uncorrelated claims for raw material space in ships could be dignified by the title of import programme. The purchasing power of sterling was falling in the markets of the world but the illusory abundance of ships slackened the tension of war programming, at least in the case of raw materials. The gap between minimum requirements and actual *demands* yawned wide.

The following chapters will show that the gap was in part narrowed in successive stages of the war by shortages of currency as well as by the depletion of supplies at source. More important than either of these, especially from 1941 onwards, was the shortage of ships to carry whatever supplies could be made available. Indeed, at the very time when Congress was passing the Lend-Lease Act, in the spring of 1941, the Battle of the Atlantic was entering upon its most bitter and critical period. The virtual solution of the dollar problem was thus accompanied by the worsening of one far more intractable—that of ships. Even after this development certain materials remained, or became, more scarce at source than the means of conveying them, particularly after Pearl Harbour; of these, hard hemp was the outstanding example, with rubber and tin following behind, while steel and other materials were short intermittently. But the decisive limiting factor was undoubtedly ships; and the large amount of space occupied by many bulky raw material imports intensified the effects of these shipping shortages. The consistency and force of this limitation from 1941 more or less breaks our narrative in two in that year: in the early period we are concerned more with currency and supplies, in the later period much more with their transport. But no phase in

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<sup>1</sup> See Chapters V-IX.

the history of the war possessed a character exclusively its own: ships were short at the beginning, currency was still scarce at the end. For convenience sake, however, we may consider the growth and exposition of import policy and programmes within the framework of certain periods, which were determined largely by conditions not directly arising from the raw material situation.

The first of these periods began with the outbreak of war and ended roughly with the withdrawal from Dunkirk in June 1940. We may call it the time of improvisation. The second covered the nine months ending with the Lend-Lease Act of March 1941. For obvious reasons long-term programmes in this phase were less important than the getting of supplies with all speed and by all means, whether they conformed to a preconceived programme or not. The third, from March 1941 until December of that year, saw the recognition of the full gravity of the battle of the ships and the emergence of true programming as pressure on supplies at source increased while shipping on the high seas diminished. The Japanese attack upon Pearl Harbour in December 1941 inaugurated a new stage. Tin, tungsten, rubber and other materials were in a short space lost to the Allies and the need for a strict planning of imports was even more intensified. We may broadly say that this period of extreme gravity lasted approximately a year until the Anglo-American attack upon North Africa in November 1942. In itself this event was of no great importance in the history of raw materials. But it symbolised a coming change. For the first time since the outbreak of war sources of raw materials were reopened, and although phosphates and iron ore did not begin to flow in abundance, the tide was beginning to turn; after North Africa there was Italy and the slow reconquest of Pacific sources of materials. This period may be extended over eighteen months until June 1944, when the opening of the second front changed the character and speed of the struggle as a whole. The final phase lasted from this date until the end of the war in August 1945. But by now raw materials programmes were beginning to assume something of their peace-time dress.

These periods must be considered separately and in detail; but before doing so there is one component of war-time purchasing policy which must be examined independently of the other issues because of its general character and the special part it played in all programmes. Throughout the war it was claimed that state purchasing of materials, wherever practicable, made possible economies in currency, in ships, in time and in manpower, and was a notable contribution towards the establishment of efficient and far-reaching controls in the field of imports. In many cases a system of import licensing had been built up at the same time as the fuller authority of state purchasing was being assumed. It is to the problems of import licensing and of state purchasing, therefore, that we must first turn.

## IMPORT LICENSING

When, before the war, plans were made for establishing a licensing system for raw materials, the main reason behind this policy was the need to economise in currency.<sup>1</sup> Accordingly, licences were proposed for those materials imported in considerable quantities, such as steel and timber, or materials coming from places like America where scarce dollars were at stake. These dangers were, of course, increased by the likelihood of competitive purchases by British nationals abroad which would have forced prices up; but, as will be shown, import licensing alone could not eliminate this danger.

Since the term 'import licence' was used with different meanings in different contexts we must pause for a moment to define our terms. The Government might prohibit the import of a commodity either to stop its coming in altogether or to bring the imports under control and determine how much should come. In its simplest form an import licence opened the door to a purchaser to buy a certain quantity of the goods in spite of the general prohibition. But sometimes other forms of licensing were called for. Where an importer was given authority to import not simply one parcel but a specific quantity of materials over a period he would be given what was called a *blanket* or *block licence*. Alternatively, he might be granted an *open licence* to import the commodity freely, though the control of course retained its authority and could eliminate unauthorised and uncontrolled imports. These were hardly blank cheques since the importer derived his ultimate authority from the control, but he, and the departments concerned, were free of the burden of determining whether each single item be licensed. In other circumstances when the purpose was simply to reduce or eliminate imports from hard currency areas, the device employed was to grant an *open general licence* to importers from all areas within the Empire and France. By this device imports from hard currency areas could be kept out.<sup>2</sup> Thus we must bear in mind these distinct connotations of the term import licence, particularly as they do not always mean what they appear to mean.

In a sense licence control attacked the problems of imports from two angles: it exercised a supervision over the more essential materials so that it could restrict the expenditure upon a commodity for which there was a mounting demand; and it tried, at the same time, to restrict the import of the less essential materials which might be purchased on behalf of luxury industries. Thus, on the same date, 5th

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<sup>1</sup> The subject of import licensing is more fully covered in E. L. Hargreaves and M. M. Gowing, *Civil Industry and Trade*, H.M.S.O. (1952), Chapter II.

<sup>2</sup> Canada was a hard currency area but within the British Empire. This meant that an *open general licence* could not be granted if any notable quantity of the material was likely to come from Canada.



September 1939, both timber and silk were brought within the framework of the licensing system.<sup>1</sup> On that day also paints, hides and skins and a number of chemicals, including dyestuffs, were added to the list.<sup>2</sup> In November flax and paper-making materials were brought under licence.<sup>3</sup> This was a significant proportion of imports both in terms of currency and shipping tonnage. But the transfer from the pre-war system of largely uncontrolled imports, subject, of course, to customs duties, to a system of import prohibition except under licence could not be achieved overnight and the process continued at an uneven speed.

On the basis of the existing data we may look at the position in November 1939, three months after the outbreak of war. Figures for total imports in terms of tonnage are unfortunately not available but Appendix 17 gives the import figures for many strategic materials.<sup>4</sup> This table reveals that, of the total quantity of materials included in that list, amounting to 1,623,600 tons for that month, the licensed materials accounted for 337,500 tons, that is twenty-one per cent. of the total.

Progress had thus been made amidst the serious complications of rapidly changing demands; but many commodities were continuing to arrive unknown to, and uncontrolled by, the Ministry of Supply or the Board of Trade. In other words, a foreign exporter could ship his wares to a British port whether Britain's war economy had need of them or not. Even if seized they were paid for in sterling, at that time freely interchangeable abroad for other currency. Unlike the Germans, we did not at this stage exercise an additional control on currency to reinforce that resulting from licensing.

At the beginning of the new year a ministerial committee voiced the need for much fuller control. It recommended that, where the Ministry of Supply or the Ministry of Food was the purchaser of an imported commodity, import should only be permitted under licence, that is, no private purchaser should compete with a ministry; it added that the import licensing system should be extended to other commodities as well. The principle governing the licensing policy of the controls until now had been interpreted by an inter-departmental committee on economic policy as follows:

A control of importation has in general been imposed only when the purchasing programme of the control made it necessary to prohibit competition.

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<sup>1</sup> S.R. & O. (1939), No. 1892. Silk might, of course, be used for essential articles such as parachutes.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Ibid.*

<sup>4</sup> The main conclusions to be drawn from this table are summarised in Table 24, later in this chapter.

Thus the primary object had been economy in currency with shipping an accidental beneficiary. Referring to the unlicensed imports which were continuing at this date, the committee declared that it was:

absurd that we should go without munitions and raw materials for military purposes or supplies of essential goods for civilian purposes because our limited resources of exchange and shipping space are taken up by non-essential goods.

Competition for shipping space by importers also tended to force up the freight rates of neutral shipping.

A large accession to the schedule of licensed materials had meanwhile occurred in the middle of December, when iron ore, scrap iron and steel, ferro-alloys and certain other commodities were put on the list;<sup>1</sup> and on 1st February an additional group of materials joined them, namely aluminium and aluminium alloys, waste and dross.<sup>2</sup> The figures in Appendix 17 show that, during February, of a total of 1,518,100 tons, 1,077,400 tons were licensed, i.e. seventy-one per cent. This represented notable progress but even now, after six months of war, nearly one third of the imported materials were coming without licence. The advance to complete prohibition was still at this stage meeting serious resistance. It was simple enough to urge the extension of the import licensing system but it was more than doubtful whether the existing machinery of the Import Licensing Department would be able to endure the full strain. Nor was the Ministry of Supply easily convinced that it should or could bring the immense variety of materials under full control; the Minister, early in the new year, felt 'loath to increase the number of controllers'. He preferred 'the control of imports not subject to controllers to be exercised by the banks'. He could not think of any further commodity 'to which control could usefully be extended'.

During the next three months the extension of the system was, nevertheless, more rapid. On 3rd March paper and paper boards were brought under licence.<sup>3</sup> In the middle of April, copper, lead and zinc and their alloys,<sup>4</sup> sulphur and sulphur ore and mineral phosphates of lime,<sup>5</sup> chromium ore and concentrates and magnesium compounds<sup>6</sup> all joined the licensed materials. In May a number of others<sup>7</sup> came in, of which the most important were cotton, cotton

<sup>1</sup> Viz. silicon and silicon alloys, cemented carbide metal, manganese, molybdenum, niobium, tantalum, tungsten and vanadium ores and metals (S.R. & O. (1939), No. 1892).

<sup>2</sup> S.R. & O. (1940), No. 92.

<sup>3</sup> S.R. & O. (1940), No. 176.

<sup>4</sup> S.R. & O. (1940), No. 534.

<sup>5</sup> S.R. & O. (1940), No. 535.

<sup>6</sup> S.R. & O. (1940), No. 550.

<sup>7</sup> Myrobalans, tanning extract of chestnut (S.R. & O. (1940), No. 652); chromium compounds (No. 656) and rosin (No. 752).

linters, waste and thread.<sup>1</sup> We must, however, omit these from the month's totals of licensed materials since licensing did not begin until 30th May. If we now look at the position, in the month of May 1940, we find that licensed materials accounted for a total of 1,473,700 tons out of the 1,746,500 tons covered by the table, that is, the proportion had now risen to eighty-four per cent.

But the month of May was of historical importance in this context for another reason. We have until now spoken of the shortage of currency as the goad which drove raw materials along the road to an import licensing system. A shipping scarcity had for some time begun to cast its shadows over the import programmes, but when exactly it intervened in the counsels of the planners we may never precisely know. What we can say, however, is that in May 1940 a memorandum drawn up by the Import Licensing Department explicitly stated, with regard to cotton, that import licensing was necessary because economies in shipping space upon the Atlantic (as well as currency economies) must be sought. For the present, shipping became a partner with currency in setting a limit to imports and in exposing the need for licensing. Meanwhile the process was quickening and on 4th June all imports were prohibited except under licence,<sup>2</sup> the prohibition to take effect on 10th June. Three months earlier all food imports had been prohibited without licence, and now, on the day after the last soldier left the beaches of Dunkirk, the unlicensed importation of materials (as of other commodities) came to an end.

We can, of course, only use Appendix 17 (and the summary in Table 24) as a rough guide since they omit materials of considerable economic and strategic significance. For example, in terms of tonnage only some nine-tenths of total raw material imports for each of the three months considered are covered,<sup>3</sup> but the list includes the majority of the materials which were most important from the point of view of shipping space. Nor may we assume that import licensing meant invariably the *restriction* of imports to the minimum. We shall see that, in the case of silk,<sup>4</sup> imports remained as high as before the war, although a large proportion was going into the home civilian trade; imports were in this case *sheltered* by the import licensing scheme. But even with its limitations Appendix 17 shows that, in the third month of the war, only just over one-fifth of the imports were subject to governmental licence; in the sixth month this proportion had risen to over two-thirds; but it was not until the ninth month of the war that over four-fifths of the listed raw material

<sup>1</sup> S.R. & O. (1940), No. 805.

<sup>2</sup> S.R. & O. (1940), No. 873.

<sup>3</sup> The exact proportion covered varies slightly from month to month; in November 1939 it is eighty-seven per cent., in February 1940 ninety per cent., and in May 1940 eighty-six per cent.

<sup>4</sup> See Chapter XII, p. 180.

imports came under this control. But, even then, sixteen per cent. of the materials given in Appendix 17 were free of licence. This conclusion, however, gives a false impression about the adequacy of import controls if it is allowed to stand unmodified by the parallel development of state purchasing, which calls for separate treatment.

#### THE GROWTH OF STATE PURCHASING

Import licensing formed for some materials a kind of prelude to the fuller measure of government purchasing although, in some cases, government purchasing was already under way at the time when licensing was being introduced. State purchasing, sometimes loosely called bulk purchasing, is a broad, vague term which in fact covers a multiplicity of arrangements in peace and war arising from a variety of causes. In the Second World War it meant, in its simplest form, the purchase by a government agent of one parcel or a certain quantity of materials for some specific purpose; in its fullest sense, it embodied an undertaking given by one government to another to purchase all the available supplies of a commodity for the duration of the war and even longer. No satisfactory terminology has so far been evolved which defines these various types of purchase and recent controversies have not carried the process of definition any further.<sup>1</sup> In view of this, we shall use the term state purchase rather than bulk purchase where it is state monopoly purchase with which we are specifically concerned, it being understood that the phrase does not cover all gradations of purchase on public account, from the acquisition of a single parcel to the long-term agreement to import all available supplies. In our context it means only state monopoly purchase. In the field of import programmes it is monopoly purchase which is our chief concern as representing the trend towards the fullest control. The economic consequences which flow from bulk purchasing in its various shapes raise large and complex issues, which unfortunately cannot be considered here, and which only a series of economic monographs may one day help to resolve.

The advance to state purchasing went at no uniform pace for all commodities. In the case of wool, the Government almost at the beginning of the war reached agreement with the Australian and New Zealand Governments, and shortly after with the South African Government, to purchase all their exportable surplus for the period of the war and one crop year afterwards. In the case of another textile, cotton, governmental purchase was much slower in development, and it was not until April 1941 that the Government became the sole importer. For most metals a system of state purchasing was introduced almost from the beginning. To understand the diversities

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<sup>1</sup> See e.g. *The Times*, correspondence of May-June 1949.

of the situation we must first study the originating causes of this form of bulk buying.

The pressure to introduce such a system came from various sources. The most important incentive initially was the fear that supplies from overseas might fail to equate demand. Physical shortages, in other words, drove the Government along the road of state intervention, sometimes speedily, as we shall see in the case of wool, sometimes at a slower pace, as the story of cotton reveals. But the physical exhaustion of supplies was only one blow, although admittedly the gravest, which might have descended upon the consumer. There were other dangers. Some materials, though still available at source, faced a steep rise in prices which made it economically impossible for the commercial consumer to purchase them. Sometimes the development of a new area, which could only produce the materials uneconomically, obliged the consumer, that is the Government, to undertake to purchase in bulk. So price policy in many cases determined some measure of state intervention and was a contributory cause in all the schemes which the war germinated. From another angle, the desire to build up strategic stocks within Britain led to precautionary purchases, which only a government department could undertake or sustain. Alternatively, the fact that munitions requirements were demanding a predominant share of an imported material, sometimes led the Government, for administrative convenience as well as to achieve economies in cost and manpower, to centralise its purchases through one agency. But behind these various causes was one which in a sense comprised them all and governed them all: the slow but irresistible growth of planning as such. As the Government found itself obliged to plan its imports to save currency or shipping, so its plans demanded that it should know what it was buying, where it was buying it and how much it was paying. For this no import licensing system or other mode of partial intervention was enough; *pari passu* with the growth of controlling bodies and overall plans went the principles and practices of state purchasing.

We may first examine an important instance where, long before such plans either existed or were sought, a large scheme of bulk purchasing came into being. Wool was expected to meet a three-pronged pressure of demand: from the growing armed forces, needing not only uniforms but blankets; from exporters, who held that British textiles would make a notable contribution to the purchase of munitions overseas; and from civilian requirements. The supplier, on the other hand, saw that bulk purchasing arrangements would safeguard him against acute fluctuations in demand and the growth of unwieldy stocks. Moreover, the control in this case was equipped with the experience of state purchasing during the First World War and had made its preparations to adapt this experience for current needs.

Thus, before the war, negotiations had already been more or less completed with the Australian and New Zealand Governments for them to requisition all wool and sheepskins and to sell all their exportable surplus to the United Kingdom Government at prices to be agreed; parallel arrangements had been made for the British Government to requisition all domestic supplies from growers and holders in this country. The transition to war-time conditions was therefore remarkably smooth. The Dominion Governments at once began to requisition supplies, and by November 1939 the full agreements for the purchase of all surpluses for the duration of the war and one year beyond had been signed.<sup>1</sup> In South Africa the process was slower. The normal wool auctions went on without interruption, but the British Government undertook to purchase all wool, subject to an agreed maximum quantity, which did not reach a certain average price at the sales. In the event, these initial arrangements merely prepared the way for more far-reaching plans; and in August 1940 the Governments of the two countries signed an agreement on similar lines to the earlier ones with Australia and New Zealand, except for certain differences of organisation and practice which excluded the use of requisition. At the same time, a comparable contract was signed with the growers of the Falkland Islands.

The terms of these wool contracts may be regarded as the classic examples of state purchasing in war. All the arguments and all the experience pointed to such arrangements, and the quantities which came from the other sources, South America and Kenya, under less complete control, were negligible during the war, about three per cent. of the total.

The advance to the bulk purchasing of the other important textile material, cotton, was much more piecemeal in character. Yet, curiously enough, the state purchasing of this material for strategic reasons had been foreshadowed before the war by the cotton-rubber barter agreement of June 1939, which provided Britain with 600,000 bales of cotton in return for approximately 130,000 tons of rubber supplied to America. The policy of the next eighteen months, however, seemed to confirm that the pressure for this contract had come from the American prepossession with the rubber problem rather than from any British perturbation over raw cotton, and it is known that the barter agreement was unpopular with both the rubber and the cotton interests in this country. The first instances of governmental purchases occurred at the turn of the year 1939/40 when the whole of the British West Indian staple cotton crop, and the Gash and Kassala cotton crops handled by the Sudanese Government, were purchased. A year later, in January 1941, the Government again

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<sup>1</sup> See Chapter III, pp. 57-58.

negotiated a special purchase, this time of Peruvian cotton. But for the rest, the Liverpool Cotton Market, with its long experience and complex machinery for matching supply with demand, felt itself able to handle the general situation in close liaison with the Cotton Control and within the licensing system which came into force in June 1940. But the winter of that year brought heavy bombing to the port of Liverpool; and this disaster not only destroyed 28,000 tons of cotton in store but also contributed to the supersession of the Liverpool Cotton Market. More important, however, the passage of the Lend-Lease Act, which canalised British purchases of American cotton through American government channels, necessitated some uniform and centralised system of purchasing by Britain; this process was in its turn hastened by the increased control over the spinners and therefore the centralisation of *demand*. For all these reasons, the Liverpool Cotton Market was closed down in March 1941 and replaced by Cotton Importers and Distributors Ltd. (composed of members of cotton-importing firms) to act as an agent of the Government for the purchase and distribution of cotton. In that month also the Ministry of Supply, through this agency, became the *sole* importer of cotton. For reasons which need not be considered here, Cotton Importers and Distributors Ltd. gave place a year later to a system of direct purchase by the Control.

The difference in approach to the two major textiles, wool and cotton, may be attributed in part to the existence and resistance of a powerful cotton organisation, which claimed that the futures market in Liverpool served not only British but world demand, and, in the process, increased British revenue from re-exports. By contrast, the wool bought by British buyers was largely for British needs and could therefore be brought more easily within a centralised scheme of purchasing. Secondly, in the case of cotton, no comparable governmental organisation in the producing areas existed, or could easily have been created; in other words, the sellers of the raw material were not yet in a position either to suggest, or to demand, state purchasing in their own interests.

There were no such striking contrasts in the field of metals. The non-ferrous metals under control at the beginning of the war, copper, lead and zinc, were at once excluded from the sphere of the private purchaser and so remained throughout the war. This development followed logically from their pre-war history. The British Metal Corporation had since 1918 acted as the purchasing organisation for the consumers of these materials in the United Kingdom. Similarly its liaison with the producers in Malaya was close. The speedy translation of the personnel and organisation of the B.M.C. into the Non-Ferrous Metals Control determined that the system of bulk purchasing already in existence should be taken with it into the Ministry of

Supply. When after the outbreak of war in the Pacific, tin and the other metals joined copper, lead and zinc under control, the purchasing arrangements already made were simply extended to include them. Steel and steel-making materials followed a similar process. The British Iron and Steel Corporation was able to apply its experience and authority, gained in peace-time, to governmental purchases and, apart from speciality products, all steel and steel-making materials were from the outset centrally purchased by agents on behalf of the Government. The ore importers were not so highly organised, but similar machinery was at once created and private purchasing excluded. The extreme importance of aluminium to the aircraft industry determined that this metal, and its raw material bauxite, should also be purchased solely by the Government from the outbreak of war.

We have been considering so far the bulky materials demanding in general the greatest share of shipping and, usually, of currency. One more commodity belongs to this series, timber. A remarkable feature of the timber industry was the speed with which a central organisation of control was built up early in the war. In peace no similar structure existed, but from the First World War there remained the experiences of both shortages and of organisation. The control was thus able to embark straight away upon a scheme of state purchases, with the exclusion of private buyers from both the domestic and overseas markets. The only exceptions to this rule were pitprops for South Wales, which, until overseas purchases virtually ceased in the spring of 1941, were bought on private account, and other specialised items such as matchwood, stoolwood, canes and willows.

The numerous other materials which were adapted, sooner or later, to a system of state purchasing we cannot examine in this chapter. We may, however, exemplify some of the trends already described by reference to certain other commodities. For example, the approach to bulk purchase for strategic reasons is best brought out in the case of rubber. For reasons considered elsewhere, Britain began the war with inadequate stocks of rubber. After hostilities had begun, British producers overseas were asked to send their unsold stocks to this country; and manufacturers and dealers were asked to increase their reserves. These appeals were largely a failure. Growers did not normally hold stocks in this country and, with the best will in the world, had neither the organisation nor the storehouses to keep any quantity of rubber here; manufacturers, faced with grave economic uncertainties, could hardly be expected to tie up much of their capital in stocks; while dealers for precisely the same reasons were anxious to sell while prices favoured them. In May 1940, therefore, the Ministry of Supply began its first purchase of a reserve amounting to 20,000 tons. Other supplies were subsequently bought, but state



purchasing was not fully introduced until May 1941, and British rubber stocks after Pearl Harbour were in a perilously low condition. Bulk purchasing in fact did not seriously begin until shortly before the period when there was little natural rubber to bulk purchase.

On the other hand, for strategic reasons and because there were virtually no stocks in the country, the Ministry of Supply soon became the sole purchaser of bromine, in February 1940, and of the various types of hemp, Indian and true hemp from September 1939, manila from October 1939 and sisal from November 1939. We may perhaps see in the arguments leading to the government purchase of molasses, presented in a paper drawn up early in 1940, an *exposé* of the general approach.

The case for taking over stocks [it was held] and for future government purchase of molasses rests on the following grounds:

(a) [The company concerned] claim that they have no commercial incentive to continue importation to this country unless the maximum price is raised very substantially, both to cover increased shipping charges and the amount of risk in maintaining an expensive stock here. If stocks are pooled, and the element of risk accepted by the Government, the increase in price can be much smaller.

(b) They also contend that they cannot face the risk involved in making future purchases abroad, with the prospect of violent movements in values between the purchase of the crop and its resale. There is, therefore, a serious risk that stocks available abroad may become seriously depleted.

(c) It is desired to even out as far as possible the wide difference in the prices at which molasses is at present sold to various consumers, which make the smooth working of controlled prices almost impossible.

(d) Since in any case the control exercised by the Controller of Molasses and Industrial Alcohol over [the company] must be considerable the most economical plan would be for the Ministry of Supply to become sole holders and purchasers of molasses, using the company as agents, but taking full advantage of their expert knowledge and of their buying, storing, and distributing organisation.

It is impossible to estimate with any exactitude, at successive dates, what proportion of our total imports came under this form of government control, though such information would shed valuable light upon our use of shipping and currency. We can, however, on the basis of Appendix 17 broadly state for a fairly wide selection of materials<sup>1</sup> what proportion of imports fell within the governmental sector of purchasing and what proportion was being privately bought.

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<sup>1</sup> See p. 142, footnote 3.

Table 24 gives a brief summary of the main conclusions to be drawn from the detailed survey.

*Table 24. Proportion of raw material imports in November 1939 and February and May 1940 covered by import licence and state purchase (Summary of detailed table in Appendix 17)*

Thousand tons

	Nov. 1939	Feb. 1940	May 1940
Total of raw material imports covered by table in Appendix 17 . . . . .	1,623·6	1,518·1	1,746·5
Total of materials covered by import licence	337·5	1,077·4	1,473·7
Total of materials covered by state purchase	1,295·2	1,246·7	1,522·6
Total of state-purchased and licensed materials	1,309·1	1,262·9	1,582·0
Total of 'uncontrolled' materials . . . . .	314·5	255·2	164·5
Licensed materials as percentage of total . . . . .	21%	71%	84%
State-purchased materials as percentage of total . . . . .	80%	82%	87%
State-purchased and licensed materials as percentage of total . . . . .	81%	83%	91%
'Uncontrolled' materials as percentage of total . . . . .	19%	17%	9%

The conclusions we may draw from this table considerably modify the impression which a study of import licensing alone would produce. We see from the composite table that already by November 1939 eighty per cent. of the imports were government purchased. Between this date and February 1940 there was no appreciable change, but by May 1940 the proportion had risen to eighty-seven per cent. The total of materials either state purchased or import licensed was at this latter date four per cent. higher, ninety-one per cent. Thus only nine per cent. of the materials covered by the table were coming in 'free'. Certain of the remaining materials still being partially or wholly purchased on private account were later brought under complete government control. Cotton and rubber, as we have already seen, were added to the list in March 1941 and May 1941 respectively; similarly a large proportion of our imports of hides and skins were government purchased from the late autumn of 1941, although certain types of skins remained on private account until as late as May 1944. Mica was added to the list at the end of 1942.

We have seen that reasons which could be put forward in peace to prove that private purchasing might be more in the national interest than government bulk purchasing lost much of their virtue as military events took their course. Against governmental purchasing it was claimed that the appearance in the market of a buyer known

to be anxious to place a large contract on behalf of his government led to severe price rises against him. Indeed this argument was put forward by the British Iron and Steel Corporation, which, although a government agent, retained as long as it was able the semi-private character of its trade negotiations. It was argued also that governmental purchasers might well be inexperienced in their work; and steam roller tactics would fail to take cognisance of the immense variety of demands. This argument, however, could be used both ways; and those favouring government purchasing in war held that only a governmental or semi-governmental body could be a really satisfactory channel for the enormous varieties in requirements. It was added that only a government control could reduce the number of these variations in the interests of economy and planning, and only the Government could reduce the total demand made by all consumers. The state alone, it was also argued, could afford to buy strategic reserves. State purchasing moreover eliminated competition by British buyers abroad and therefore lessened the pressure of rising prices. Above all, shipping programmes and import programmes were difficult to evolve and enforce until the majority of the materials were centrally purchased. There remained, however, a small field for private purchasing, as in the case of certain types of timber:

where the Control has not the technical knowledge to deal with the specialised requirements as economically as the actual users and is satisfied that to allow import by the latter ensures that the timber is used to the best advantage.<sup>1</sup>

Whatever the pros and cons of this debate, the arguments in favour of private purchasing in time of peace were held with diminishing force in time of war; Dunkirk damaged the case against government purchasing and the lend-lease machinery gave it the *coup de grâce*.

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<sup>1</sup> The following extract from a report made at the end of 1944 on cotton purchases reveals the variety of methods which could be brought within the scope of state purchasing. 'The methods of cotton buying may conveniently be summarised as follows: (i) United States, acquired under lend-lease; (ii) British West Indies, British West Africa, Sudan and British East Africa: in the first three cases the Ministry purchased the entire crop under long-term agreements with the territories concerned, while in the case of British East Africa the Ministry reserved their requirements and in addition undertook to purchase any part of the crop remaining unsold at the end of the season; (iii) Brazil, Egypt and Peru; purchases were made in the open market by overseas representatives or agents of the Ministry; (iv) India: purchases were made from Liverpool merchants acting on behalf of Indian shippers.'

## CHAPTER XI

# OVERSEAS SUPPLIES: SOURCES

### PRE-WAR SOURCES OF RAW MATERIALS

**I**N war, as in peace, the United Kingdom could only satisfy her raw material requirements from home sources to a very limited degree.<sup>1</sup> She was richest in iron ore but could mine only enough to keep fifty per cent. of her plant in production; moreover, most of this ore was both low grade in terms of metal content and high in phosphorus, and for the latter reason unsuitable for use in the production of acid open-hearth steel.<sup>2</sup> In addition, Britain had indigenous resources of some non-ferrous metals, including lead, tin, tungsten and zinc, as well as supplies of timber, wool and flax, but these could make only a small contribution towards meeting total needs. Home-grown timber, for example, accounted before the war for about four per cent. of total consumption. The needs of British industry for other materials were met almost entirely by imports.

The areas from which Britain normally drew her raw materials may be considered in three main geographical divisions: in the first place, the European continent; secondly, Africa, Asia and the Antipodes, in which areas lay most of the British Commonwealth and colonial sources; and, lastly, the American continent. The table in Appendix 18 sets out in broad outline the distribution of raw material resources between these three divisions. It shows that, *inter alia*, Europe (excluding Germany and Austria)<sup>3</sup> provided three-quarters of the world's mercury, half its bauxite, pyrites and soft hemp, a third of its iron ore and a quarter of its flax and potash. On the other hand nearly all the world's jute, rubber and silk, four-fifths of its chrome, manganese and tin, seven-tenths of its flax and tungsten, half its phosphates, wool and cotton and notable quantities of bauxite, vanadium, iron, lead, hemp and pyrites came from the area comprising Africa, Asia and the Antipodes. The American continent provided nearly all the world's molybdenum, four-fifths of its nickel and sulphur, three-fifths of its copper and vanadium and half its antimony, lead, zinc and cotton. One general conclusion may perhaps

<sup>1</sup> In this chapter, as throughout the volume, we exclude coal from consideration.

<sup>2</sup> This type of steel was generally preferred to basic steel for many vital engineering parts and formed, moreover, the basis of most alloy steels manufactured in open-hearth furnaces. Of the total alloy steel output sixty-five per cent. came from open-hearth furnaces.

<sup>3</sup> Germany and Austria produced three-fifths of the world's potash, two-fifths of its magnesite and smaller quantities of various metals including iron ore, lead, manganese, zinc and pyrites.

be drawn from the table. In quantitative terms, the most important area as a source of raw materials was that which included Africa, Asia and the Antipodes, the least important at that time was the American continent.

This was the general situation as it affected allies and enemies alike. We may now look at it specifically from the British viewpoint. Table 25 shows British imports of the main raw materials in 1938 subdivided between the three chief areas of supply. (German and Austrian exports are excluded from the European percentages.)

*Table 25. United Kingdom raw material imports in 1938: percentages drawn from certain areas*

Material	Total 1938 imports	Percentages <sup>1</sup> of total drawn from:		
		Europe	Africa, Asia and Antipodes	American continent
Iron ore . . . . .	5,164,149 tons	55	43	1
Iron and steel . . . . .	1,340,680 tons	57	12	24
Antimony ore . . . . .	10,625 tons	—	15	76
Bauxite . . . . .	249,598 tons	91	8	—
Aluminium and aluminium alloys	1,036,024 cwt.	35	—	62
Magnesite . . . . .	57,057 cwt.	51	9	6
Magnesium . . . . .	32,232 cwt.	3	—	13
Chromium ore . . . . .	37,638 tons	6	90	—
Copper (unwrought) . . . . .	54,665 tons	—	27	72
Ferro-alloys . . . . .	47,595 tons	85	2	7
Iron pyrites . . . . .	401,358 tons	91	7	—
Manganese ore . . . . .	192,715 tons	1	98	—
Molybdenum ore . . . . .	38,463 cwt.	—	—	97
Tin ore and concentrates . . . . .	55,492 tons	1	29	68
Tin (metal) . . . . .	11,744 tons	26	72	—
Tungsten ores . . . . .	10,933 tons	7	82	5
Zinc ore . . . . .	157,319 tons	2	69	29
Zinc (unwrought) . . . . .	165,049 tons	26	12	58
Lead (unwrought) . . . . .	407,173 tons	—	61	38
Nickel ore . . . . .	29,569 tons	—	—	100
Nickel (unwrought) . . . . .	410,969 cwt.	8	—	91
Raw cotton . . . . .	12,067,830 centals of 100 lb.	—	46	54
Raw wool . . . . .	8,813,254 centals of 100 lb.	3	82	13
Raw silk . . . . .	6,833,788 lb.	7	86	4
Flax . . . . .	57,567 tons	85	10	1
Hemp—soft . . . . .	17,654 tons	37	51	5
Hemp—hard . . . . .	69,410 tons	—	100	—
Jute . . . . .	195,515 tons	—	99	—
Raw rubber . . . . .	3,793,102 centals of 100 lb.	—	99	1
Timber—softwoods . . . . .	5,054,110 tons	56	19	25
Timber—hardwoods . . . . .	859,191 tons	22	23	52

Source: Based on *Annual Statement of the Trade of the U.K.*

<sup>1</sup> Percentages are only approximate as the sources of small quantities imported are not always specified.

From Europe, it will be seen, Britain normally drew a large proportion of her metal supplies, including iron ore, semi-finished and finished steel, bauxite, magnesite and ferro-alloys. Nearly all our iron pyrites and flax<sup>1</sup> also came from this area, together with substantial quantities of timber, true hemp, sulphur and potash. From the African and Pacific areas came all our hard hemp, jute, rubber and manganese, nine-tenths of our chrome, four-fifths of our silk, wool and tungsten, three-fifths of our lead, half our soft hemp and nearly half our cotton and iron ore. From the American continent we drew all our nickel and molybdenum, three-quarters of our antimony and copper, and half our cotton and hardwoods. But once again the broad outline was the same. Though Canada and America had a wealth of natural resources, for us the most important area was that comprising Africa, Asia and the Antipodes, the least important, the American continent. Indeed, this was true for us to an even greater degree than it was for the world at large.

The war, however, changed all this. If we look at the position in greater detail we see that with the outbreak of war Europe became at first the most attractive area of the three. France was an ally and trade relations with most other countries were good; in addition European currencies gave rise to relatively few problems and the shipping hauls involved were short. But, as Table 25 shows, the countries of Europe, particularly of the western half of the continent, were unable to supply us with many of the important materials we needed. For these it was necessary to look further afield, to North Africa, particularly for iron ore and phosphates, to Nigeria for tin and to Egypt for cotton, to India for jute, soft hemp and mica, to Australia and New Zealand for wool and zinc, and to Malaya and other Pacific territories for rubber, hard hemp, tungsten and hardwoods. But journeys to these sources became long and hazardous, and imposed a heavy burden upon the diminishing supply of ships. There was lastly the American continent: Canada, rich in timber and non-ferrous metals, particularly nickel and aluminium, and the United States with its cotton, timber, sulphur, steel, non-ferrous metals and other materials.<sup>2</sup> The American continent was nearer than the Pacific countries, but the dollar shortage inhibited many of our purchases at source and the Atlantic sea lanes later became the scene of long and bitter naval warfare. The changing fortunes of war forced us, however, to divert many of our raw material demands to this area, particularly those hitherto satisfied in Europe, to a degree and in a manner which could not have been dreamed of by the pre-war planners.

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<sup>1</sup> If we include Russian flax which, of course, belongs partly to the Asiatic area.

<sup>2</sup> From South America we imported little in the form of raw materials.

## THE OUTBREAK OF HOSTILITIES

The declaration of war meant of course the immediate loss of German and Polish supplies, and the subsequent closing of the Baltic blocked the transport of materials through that area; but the total effect on supplies was not serious. Britain, it is true, normally drew most of her potash imports from German sources, and until 1937 a quarter of her magnesium metal requirements also. The loss of potash was not however irreparable; increased French shipments enabled a stock of several thousand tons to be built up before the German occupation and regular consignments on a rising scale came from Palestine. The loss of German magnesium raised greater problems. British production had been expanded during 1938 and 1939 but it was quite inadequate to meet the requirements arising from war; shortage of capacity and lack of technical experience imposed limits and even at the peak of expansion we remained dependent for over fifty per cent. of our requirements on imports of ingot metal and bomb castings. From the United States alone could these supplies come, but here similar factors limited expansion and, until mid-1942 at least, a definite shortage existed. We lost also the rich magnesite deposits of Austria, which supplied twenty-five per cent. of our 1938 imports; but Greece, although a smaller producer,<sup>1</sup> was normally our most important source of supply and soon doubled her exports. Poland was not important to us in the field of raw materials, although certain types of timber were normally sent to Britain in appreciable quantities.

German control of the Baltic had more serious consequences, and timber imports in particular suffered from the dislocation of trade with the Scandinavian and Baltic countries. In 1938 seventy per cent. of British softwood imports had come from this area,<sup>2</sup> but supplies were soon reduced to a trickle, largely of Swedish timber, coming out through Norwegian and Swedish ports. Apart from small quantities obtained at the end of 1939 under a barter agreement, no Russian timber was received until the autumn of 1941. Alternative supplies were available in Canada and the United States, but these increased the pressure upon our dollars and our shipping space. German domination of the Baltic also struck at our flax imports since approximately half our pre-war supplies came from Russia and the Baltic States. Russia had prohibited flax exports at the end of 1938, and the few parcels of Baltic flax still reaching Britain, often by lengthy and tortuous routes, were practically the only overseas supplies available to us of the coarse types of fibre needed by the Services for heavy linen goods.

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<sup>1</sup> Greek production in 1938 represented about fourteen per cent. of total world supplies.

<sup>2</sup> Including the U.S.S.R.

THE GERMAN OCCUPATION OF NORWAY, APRIL 1940

As the war spread northwards our problems grew apace. A little timber had been coming through the gap in the German blockade, but now the gap was decisively closed and we had to look across the Atlantic, to Canada for more than four-fifths of our softwood supplies, and to the United States and Brazil for nearly all the rest.<sup>1</sup> We now had also to look to North America for our woodpulp supplies. The iron ore situation was nearly as bad. We lost resources which had supplied almost a third of our 1938 and 1939 imports and from which we had recently been obtaining some 200,000–300,000 tons a month; the loss appeared doubly grievous when we considered that these Scandinavian deposits consisted largely of high-grade magnetite, the richest and purest iron ore containing the least sulphur and phosphorus and therefore of particular value in the manufacture of acid steel. Gone too were Norwegian pyrites, used mainly to manufacture sulphuric acid, though we were already using sulphur for this purpose to a greater degree. It was hoped also that the loss of pyrites might prove less serious in that the greater part of Britain's imported supplies came from Spain and some could also be purchased in Portugal, Cyprus and Italy; yet here was doubtful comfort, for the Mediterranean might soon be a theatre of war and no one knew what might happen in the Iberian peninsula. So we had to turn wherever possible to producing sulphuric acid from sulphur rather than from pyrites.<sup>2</sup> Scandinavian ferro-alloys, which had supplied a large part of our wants, met the same fate as pyrites, but here we had more successfully prepared for the worst. We had bought American ferro-alloys, we had built up stocks and home production was expanding.

THE CONQUEST OF EUROPE, MAY 1940–APRIL 1941: THE END OF THE 'NEAR' SUPPLIES

And now German arms turned westwards into the Low Countries and France, and then southwards into Yugoslavia, while the Italians crowned an ignominious campaign with a belated victory in Greece in the spring of 1941. The Axis powers were masters of all Europe except Sweden and the Iberian peninsula. In the field of materials the British position mirrored the gravity of her strategic plight.

Let us look at iron and steel. Already, before these disasters broke upon us, we had been reducing allocations to consumers in view of declining imports, but after Dunkirk we had to face increased requirements with important supplies gone. Iron ore imports were badly hit

<sup>1</sup> Small shipments also arrived from the U.S.S.R. from September 1941 onwards.

<sup>2</sup> This development was not entirely due to the supply position of pyrites. Sulphur is in any case the most satisfactory raw material and the plant designed to use it is cheaper and more quickly erected. The percentage of sulphuric acid produced from pyrites was reduced from 40·6 per cent. in 1939 to 25·8 per cent. in 1944.



and of these steel furnace ores worst of all. French supplies were at an end, and so too were the more valuable hematite ore imports from French North Africa; meanwhile the German occupation of the French Atlantic seaboard sealed off Spanish supplies from Bilbao and Santander and made even imports from Southern Spain and Spanish Morocco, to say the least, doubtful. In a word, the German push to the west had cost Britain at a minimum six million tons of iron ore a year. Perhaps we might make good a part of this loss by increased supplies from Brazil, Sierra Leone and South Africa and by expanding home production;<sup>1</sup> but in one far-reaching respect the loss was irreparable. The full replacement of the low phosphoric ores was out of the question and consumers must somehow get used to basic steel where they had hitherto considered acid steel indispensable. As against iron ore, the loss of steel supplies (mainly semi-finished) from France and the Low Countries, grave though it was, was softened by the belief that American production would suffice for both domestic and British munition needs, provided that home consumption in the United States could be held in check.

Our light metal supplies presented also a disquieting picture. For bauxite we were thrown back upon imperial sources as first France and then Greece succumbed. We increased production in British Guiana and on the Gold Coast, but British Guiana had to supply Canada, so we later decided to confine our demands as far as possible to the Gold Coast. But just as the pressure of events was making us turn from the raw to the processed material, in the case of iron ore to steel, so we turned also from bauxite to aluminium. In other words we had to look to Canada. We continued to make small additional purchases of bauxite from other sources such as Brazil and India, and we later developed deposits in Ireland.<sup>2</sup> There was also a reserve stock of some 350,000 tons of bauxite. But we produced only about one-sixth of our aluminium from bauxite, with an additional third from scrap as secondary metal: the other fifty per cent. of our requirements were imported as metal or powder. And Canada met our needs in a truly remarkable fashion. Greek magnesite was also lost, but we could get some supplies in India and, to a lesser extent, in Australia, Russia, South Africa and the United States.<sup>3</sup> Mean-

<sup>1</sup> Imports from Brazil, which in 1939 totalled only just over 31,000 tons, reached a peak of over 261,000 tons in 1943. Similarly, imports from Sierra Leone rose from 190,000 tons in 1939 to 920,000 tons in 1941, and, although they declined from this peak figure, were in 1944 still over 482,000 tons. Imports from the Union of South Africa and South-West Africa Territory rose from approximately 2,000 tons in 1939 to over 247,700 tons in 1941, after which they declined steeply. Home production reached its peak figure of practically 20 million tons in 1942, as compared with the 1939 level of just over 14 million tons.

<sup>2</sup> The metal content of Northern Ireland bauxite was in general equivalent to only fifty per cent. of that of overseas supplies.

<sup>3</sup> Certain technical difficulties were, however, caused by the changeover to what were in some cases less suitable types of material.

while we pressed on with the production of magnesium from magnesia extracted from sea water, but, for reasons which we have already considered,<sup>1</sup> the war had run half its course before we felt reasonably secure in our magnesium supplies. The only other important non-ferrous metal to be markedly affected was zinc. Europe, in particular Belgium, had supplied Britain in 1938 with a quarter, and in 1939 with a sixth of her total imports of unwrought zinc, but we largely made good the loss of these supplies by increased imports from the United States.

From munitions we must turn to food, or rather the means of growing it. Of fertilisers, French potash and, particularly, French North African phosphates were grievous losses to endure. We increased potash imports from Palestine and shipped substantial quantities from Spain, while from 1941 onwards some Russian supplies began to appear via Murmansk. But as we grew more food at home during the later war years, so we had to make additional purchases of fertilisers from the United States. If the phosphates from Florida were from our point of view not as suitable as those from North Africa, they played none the less a significant part in fertilising our lands.

In textiles and hardwood, the blows, though heavy, could be more easily borne. True, the loss of Belgian and Dutch flax was particularly grave, as practically seventy-five per cent. of Britain's imports in the first seven months of war had come from this area. This loss we never made good, either as regards quantity or quality, in spite of the expansion of production in the United Kingdom itself and in areas which had previously produced little flax, such as the dominions and Egypt. True hemp, which came almost entirely from Italy, Hungary, the Balkans and Chile, was the other textile loss. Fortunately it formed normally only a small part of total hemp imports,<sup>2</sup> but it was nevertheless important for certain cordage purposes and also as a possible substitute for flax. By mid-1941 the only remaining dependable source was Chile, but there were sufficient supplies of Indian soft hemp to replace to some extent the true hemp we had lost. The entry of Italy into the war also cut off the last remaining sources of European hardwoods in the Balkans, but the amounts imported from this area had not been large.<sup>3</sup> Moreover, home felling was increasing and from 1941 onwards we met a large part of our requirements from indigenous hardwood resources.

What, then, was our position by the middle of 1941? We had lost

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<sup>1</sup> See p. 154.

<sup>2</sup> Average 1935-38 imports of soft hemp were just over 15,000 tons (true hemp 7,408 tons, Indian hemp 8,648 tons), while 1935-38 average United Kingdom imports of hard hemp were just over 74,000 tons (including sisal).

<sup>3</sup> Less than ten per cent. in 1938.

all our 'near' sources of supply with the exception of the Iberian peninsula; and it would have required a very tough vein of optimism to have reposed much confidence in this source. Let us see what these developments meant in quantitative terms (Table 26).

*Table 26. The loss of European<sup>1</sup> supplies of raw materials, September 1939–April 1941 (in terms of 1938 imports)*

Countries	Principal materials lost	Quantity imported in 1938	Percentage of U.K. imports for 1938
German control of the Baltic	Flax	21,003 tons	36
	Timber—softwoods	1,401,625 tons	28
Scandinavia	Ferro-alloys	38,694 tons	81
	Iron ore	1,854,276 tons	36
	Timber—softwoods	989,248 tons	20
	Iron pyrites	33,238 tons	8
	Iron and steel	123,874 tons	9
	Nickel (unwrought)	34,938 tons	8
The Low Countries, France, French North Africa and Italy	Bauxite	207,944 tons	83
	Iron and steel	622,043 tons	47
	Flax	28,068 tons	48
	Iron ore	2,170,709 tons	42
	Zinc (unwrought)	39,877 tons	24
	Hemp—soft	1,654 tons	9
	Raw silk	365,682 lb.	5
South-East Europe	Magnesite	27,272 tons	48
	Hemp—soft	4,899 tons	28
	Bauxite	20,864 tons	8
	Timber—hardwoods	68,962 tons	8
	Chrome ore	2,302 tons	6

Source: Based on *Annual Statement of the Trade of the U.K.*

<sup>1</sup> Including French North Africa.

Where imports from any of these areas comprised less than five per cent. of the 1938 total we have ignored them for the purposes of this table. We must remember also that we had from the start lost German and Polish supplies,<sup>1</sup> and that supplies from Russia, particularly of softwood and flax, were virtually eliminated.

The loss of European supplies may be examined from a different viewpoint. Table 27 shows on a percentage basis the total losses of important materials, irrespective of area, which befell us during the first eighteen months of the war, from September 1939 to April 1941. If we look at the table purely in quantitative terms, we suffered our greatest losses in bauxite, ferro-alloys and flax. But to the economic strategist softwoods and iron ore were at least as important. In the first place, European supplies of these and of flax could not be

<sup>1</sup> See p. 154.

Table 27. Total losses of European supplies, September 1939–April 1941 (in terms of 1938 imports)

Principal materials lost	Percentage of U.K. imports for 1938
Bauxite . . .	91
Flax . . .	84
Ferro-alloys . . .	81
Iron ore . . .	78
Iron and steel . . .	56
Softwoods . . .	48
Magnesite . . .	48
Soft hemp . . .	37
Unwrought zinc . . .	24
Iron pyrites . . .	8
Unwrought nickel . . .	8
Hardwoods . . .	8
Chrome ore . . .	6
Raw silk . . .	5

Source: Based on *Annual Statement of the Trade of the U.K.*

fully replaced from alternative sources. Moreover, such supplies as could still be obtained abroad had now to be brought from more distant places, and iron ore and timber were among the most bulky imports. So the import programmes and the ships which implemented them would suffer greater strain. Indeed, it was in its effects upon shipping and, to a lesser extent, upon currency, that the German conquest of Europe had its most significant consequences. It is true that only in the case of timber, iron ore and flax did the end of European supplies mean an immediately serious scarcity as such, but the difficulties of bringing adequate supplies of many other materials were considerably increased. For a few commodities the gap was partly bridged by increased home production, but in the majority of cases supplies had to be sought farther afield. As long as exchange difficulties made increased purchases from the dollar area undesirable, these alternative supplies were bought as far as possible in the Empire and other relatively soft currency countries; but in some cases, particularly timber, woodpulp and phosphates, we had no alternative but to look to Canada and the United States. Our increased dependence on these countries coincided, however, with the rising consumption of certain materials in both their munitions and civilian industries. A new factor therefore began to threaten British raw material imports, shortages arising from the competing demands of North American production. For this reason we must pause to see what was happening across the Atlantic before we carry our story farther.

## NORTH AMERICAN SUPPLIES, JUNE 1940–DECEMBER 1941

During the eighteen months between Dunkirk and Pearl Harbour the dwindling number of ships at our disposal severely cut our import programmes; and raw material imports fell from 22·3 million tons in the first year of war to 15·2 million tons in 1941. But at the same time the loss of European sources forced us, as we have seen, to turn to North America for increasing quantities of those raw materials which could not be obtained from other alternative areas, especially steel, ferro-alloys, timber, woodpulp and phosphates. North American raw materials were not, however, needed solely to replace European losses, but also to satisfy the needs of the *expanding* British munition industries. The economic and administrative implications of this major development we must consider separately,<sup>1</sup> but we must survey briefly here the purely supply aspects of these questions.

## THE UNITED STATES

Table 28 gives a statistical summary of the imports of American materials in the years 1939–41 and provides a comparison with the imports of a pre-war year, 1937.

*Table 28. United Kingdom imports of raw materials from the United States, 1937–41<sup>1</sup>*

	Thousand tons			
	1937	1939	1940	1941
Iron and steel . . .	315·4	146·3	2,685·6	3,349·6
Iron and steel scrap . . .	706·3	498·7	896·1	529·6
Paper and pulp . . .	49·7	73·2	356·3	177·9
Timber . . .	503·7	470·3	375·3	159·9
Alcohol and molasses . . .	59·9	101·8	24·9	57·7
Chemicals and fertilisers . . .	191·9	194·7	530·7	1,000·9
Non-ferrous metals . . .	48·7	20·9	163·1	134·7
Cotton and naval stores <sup>2</sup> . . .	453·1	361·3	389·5	190·9
Rubber . . .	3·3	1·8	1·0	2·8
Miscellaneous . . .	4·9	5·5	5·9	10·8
<b>TOTAL . . .</b>	<b>2,396·9</b>	<b>1,874·5</b>	<b>5,428·4</b>	<b>5,614·8</b>

<sup>1</sup> The figures for the years 1941 onwards cover commodities government procured (whether by lend-lease or for cash) and exclude those small quantities of materials which were procured *commercially* for cash. Figures for the earlier years cover as far as possible the same range of items.

<sup>2</sup> Gum rosin, wood rosin, vinsol, truline binder, liquid rosin, pine tar retort, tarene, pine tar kiln and tarol, pine tar oil, pitch pinene, dipentene and turpentine.

As we should expect, the greatest increase in imports took place in steel and non-ferrous metals, but the rise in chemicals and paper-making materials was also marked. These increases show two things:

<sup>1</sup> Chapter XVII.

the effect of the loss of European sources and the overall rise in certain direct war requirements. On the other hand, imports of some other materials, such as raw cotton, actually decreased as civilian consumption in the United Kingdom was cut. Shipments of raw materials from the United States reached their war-time peak in 1941, although total purchases of materials other than iron and steel were at their highest in 1940. The figures of raw material imports by themselves, however, do not give a completely accurate impression of the changes which took place after Dunkirk. The need to conserve shipping space prompted a shift in emphasis from raw material imports to finished products.<sup>1</sup> By these means we hoped also to ensure that even if our own capacity to produce munitions was reduced by enemy attack imported munitions would fill their place. Thus the proportionate increase in purchases of munitions and other finished goods was far greater than the increase in raw material purchases. So, although from June 1940 onwards we relied upon the United States for greatly increased amounts of raw materials, the most important American contribution lay in the sphere of finished products. Throughout the war, and before 1942 in particular, the greater part of British raw material requirements were supplied from other areas, especially the various Empire countries, as Table 29 shows.

*Table 29. United Kingdom dependence on American raw materials, 1939-44*

	Million tons		Imports from United States as percentage of total
	Total imports of raw materials from all sources	Imports of raw materials from the United States <sup>1</sup>	
1939	24·8	1·9	8%
1940	22·1	5·4	24%
1941	15·0	5·6	37%
1942	11·5	3·8	33%
1943	12·8	4·1	32%
1944	11·8	2·7	23%

<sup>1</sup> See Table 28, footnote 1.

Undoubtedly the American contribution to our raw material supplies rose impressively: from less than one-tenth in 1939 to over one-third in 1941. But the full story of the Combined Raw Materials Board will also show that the United States had, as far as her imported materials

<sup>1</sup> Similarly within the range of raw materials an increasing amount was imported in the form of semi-finished or finished materials. This was particularly so in the case of steel and non-ferrous metals; but it should be remembered that finished steel was itself a difficult cargo both to carry and handle at port.

were concerned, to draw heavily upon British Empire sources or sources controlled by the British.<sup>1</sup> In this early period direct raw materials requirements from America were, with a few outstanding exceptions such as steel and timber, of secondary importance to munitions and food.<sup>2</sup>

The German occupation of western Europe not only increased British requirements of American materials; it threatened the available supplies by quickening the pace of American rearmament. In July 1940 the United States Government brought the export of many important materials under control, and a few months later the Americans began to build up stockpiles of various materials against an emergency. Sometimes, as happened with wool, the British Government was in a position to provide materials for these stockpiles, although in the case of one raw material at least, mica, American requests for aid if fully met would have reduced supplies essential to Britain.<sup>3</sup> In general, however, the American rearmament programme did not limit British purchases of American materials before the end of 1940, although difficulties occurred from time to time with specific materials, such as alloy steel, certain chemicals and some semi-manufactured copper derivatives.<sup>4</sup> Certain of the stockpiles built up in America during these months did in fact later act as a valuable buffer against losses incurred in the Pacific area.

By early 1941, however, the combined raw material requirements of the Allies and the United States, where civilian consumption was still at a very high level, had begun to exceed available supplies in certain spheres. It became necessary for the American Government to assume greater control and establish some sort of priority system, but, as we shall see, the complexities of the system bore heavily upon British imports. The Lend-Lease Act, in spite of its supreme importance in the history of raw materials and the history of the war, naturally injected new problems of its own in the spheres of politics and administration.<sup>5</sup> Apart from problems of this sort, however, the pressure of combined home and overseas requirements now began to be felt in the United States; for example, we had already encountered difficulties in July 1941 in obtaining various important metals, including copper, aluminium and zinc,<sup>6</sup> and a month later

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<sup>1</sup> The United States was to a considerable extent reliant on imports for chromium, industrial diamonds, lead, tungsten, nickel and tin from outside sources, and almost entirely dependent during the war on imports for natural rubber and bauxite.

<sup>2</sup> In fact, until the B.R.M.M. was established in January 1942 there was no British organisation in the United States concerned specifically with the purchase of raw materials, but many of them were under the aegis of the British Purchasing Commission.

<sup>3</sup> See Chapter XVII, p. 268.

<sup>4</sup> See Chapter XVII, p. 266 *et seq.*

<sup>5</sup> Controversies arose, for example, over the eligibility of various raw materials to be included in lend-lease and the degree of control to be exercised over their end use.

<sup>6</sup> In the case of aluminium most of our imports came from Canada.

there was considerable uncertainty about cotton supplies. There was as yet, however, no evidence of an overall scarcity of raw materials in America; the greatest limiting factor to the expansion of American war industries was still a shortage of machine tools.

#### CANADA

In peace-time Canada had shared with Europe the task of providing us with much of our timber and non-ferrous metals and was our major source of aluminium and nickel in particular. With the occupation of Europe, Canada became the most important source of supply for these materials; indeed, in the case of softwoods, as we have already seen, purchases were substantially increased very soon after the outbreak of war. In 1939 we imported more than in 1938, and in 1940 more still. Yet although British imports of Canadian raw materials rose after Dunkirk the total increase in shipments did not display the same spectacular rise as did American supplies. There were various reasons for the difference. In the first place, in the sphere of timber and woodpulp there was considerable scope for cutting consumption in Britain, and we were therefore not forced fully to replace European losses. In addition Canada was both supplying the other Dominions with increasing quantities of raw materials for their war industries and rapidly expanding her own armament production;<sup>1</sup> in these circumstances we turned to the United States for some of the supplies, particularly of non-ferrous metals, which we might otherwise have purchased from Canada. In the case of steel, for instance, rising Canadian demands set a limit to British purchases even before Dunkirk.<sup>2</sup>

Table 30 shows, however, that, in spite of the various limiting factors, 1940 and 1941 shipments of timber, ferro-alloys, woodpulp and non-ferrous metals, particularly aluminium, were substantially above the 1938 and 1939 levels. Supplies of abrasives and asbestos, although on a smaller scale, also increased.

Viewing the position as a whole on the eve of Pearl Harbour, it is clear that the loss of Britain's 'near' sources of supply raised many problems. Consumption in some cases had been forced down and more cuts were coming, but, with a few important exceptions, we could look for replacements to more distant sources, particularly the North American continent. In the autumn of 1941 shortages at

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<sup>1</sup> Some idea of the trend of Canadian war production can be gained from the comparison of munitions production indices for the United Kingdom, United States and Canada given in Chapter VI, Table 16.

<sup>2</sup> See Chapter XVII, p. 255.



source were not envisaged as the main limiting factor to the British munitions programme.<sup>1</sup> A few months later, however, these calculations were to be profoundly altered by the consequences of the Japanese offensive.

*Table 30. United Kingdom imports of raw materials from Canada, 1938-41<sup>1</sup>*

	Thousand tons			
	1938	1939	1940	1941
Iron and steel and manufactures thereof <sup>2</sup> . . .	93·7	125·2	209·6	270·3
Non-ferrous ores and scrap	29·6	32·3	31·7	31·1
Aluminium and aluminium alloys . . . . .	31·7	36·3	53·1	138·9
Other non-ferrous metals . . . . .	328·4	332·9	404·2	316·1
Hides and skins . . . . .	1·6	1·6	1·6	—
Abrasives . . . . .	5·0	3·7	12·4	9·7
Asbestos . . . . .	22·4	27·5	48·9	25·9
Softwoods . . . . .	1,009·6	1,486·1	1,872·8	1,070·1
Hardwoods . . . . .	154·8	119·9	176·3	102·5
Paper-making materials . . . . .	47·0	52·9	132·3	199·7
Paper, cardboard, etc. . . . .	200·0	225·9	227·0	116·9
<b>TOTAL . . . . .</b>	<b>1,923·8</b>	<b>2,444·3</b>	<b>3,169·9</b>	<b>2,281·2</b>

Source: *Annual Statement of the Trade of the U.K.*

<sup>1</sup> This table does not represent total raw material imports but covers most of the main commodities.

<sup>2</sup> Including ferro-alloys as follows: 1938 3·6 thousand tons  
 1939 9·5 thousand tons  
 1940 51·5 thousand tons  
 1941 85·5 thousand tons

#### FROM PEARL HARBOUR TO THE END OF THE WAR

Any hopes which existed of stabilising the existing supply situation were destroyed by the speed and extent of the Japanese advance. Soon the enemy was in control of many valuable Far Eastern sources of supply; and, to make matters worse, this happened just as the curve of Allied munition demands was turning steeply upward with the rapid and vast expansion of American war production. But Pearl Harbour and subsequent developments also made necessary and possible the creation of comprehensive co-ordinating machinery to handle Allied problems as a whole. This last development was in many ways the most far-reaching: the setting up of the Combined Raw Materials Board and the adoption of the principle of pooling resources meant that, from 1942 onwards, British supply problems

<sup>1</sup> Optimism concerning the adequacy of the combined resources of the Allies and the United States was, however, tempered with certain misgivings about the competing demands of American domestic consumption, particularly with regard to aluminium and steel.

could no longer be considered in isolation but against the background of the larger problems of the Allied nations as a whole. Although it will be necessary in the following pages to touch on these larger problems, the work of the C.R.M.B. will be examined fully in other volumes in this series and will only be considered here in so far as it formed an integral part of the British supply story.<sup>1</sup> We must determine in the first place how far British supplies were depleted by the loss of Pacific sources as well as by increased total Allied demands for raw materials. We must then examine the concomitant expansion of British demands upon the main areas of supply still available, the British Commonwealth and Empire, the North American continent and, from 1943 onwards, French North Africa. Finally we must attempt a brief summary of the supply situation as it was at the end of the war.

#### THE LOSS OF PACIFIC SUPPLIES

The Japanese offensive focused attention on raw material shortages in a far more spectacular way than any of the earlier strategic developments of the war. Within four months the balance of supplies as between the Allies and Japan altered completely in the case of three important materials: rubber, hard hemp and tin. In the Philippines Japan gained the only source of manila hemp, and in Malaya, the Netherlands East Indies and neighbouring territories ninety per cent. of the world's crude rubber resources, just over sixty per cent. of its tin and a significant quantity of sisal, a substitute for manila hemp in many uses. The Allies' losses of tungsten, chromite and silk were less overwhelming but nevertheless serious, and imports of other materials such as antimony and hardwoods were likewise reduced, although to a lesser extent. An item on the credit side was the existence of stockpiles in the United States of many of the materials affected, but these could do little beyond softening the first blow. Moreover, as long as the Japanese retained the initiative and the extent of their advance remained uncertain, the fate of several other materials, particularly mica, shellac and jute, of which India was the largest producer, hung in the balance.

Of these losses rubber and hemp were the most serious, not only because of the quantities lost but also because the potential output from alternative sources was limited, at least for some time. Both materials come from plants which take several years to mature. The only rubber producer of any size left was Ceylon, and although efforts could be made to increase output here and in relatively unimportant producing areas such as South America and Africa, bulk

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<sup>1</sup> See the forthcoming volumes in this series by H. Duncan Hall.

supplies could only come from a rapidly expanded synthetic rubber industry. Even these measures, backed by the available stocks of crude rubber in existence at the beginning of 1942, were unlikely to satisfy essential requirements. Hemp presented very similar problems, and again the gap between demand and supply seemed unbridgeable. Japan now controlled the only source of manila hemp and about a third of total world supplies of sisal. Although these two main types of hard hemp are not completely interchangeable, the chief hope of replacing Far Eastern supplies lay in increasing sisal production in British East Africa, the largest remaining source.<sup>1</sup> But no speedy rise in output could be expected in this area; production had greatly exceeded demand in recent years and consequently new planting had been restricted and equipment allowed to decline to a low level of efficiency.

The problems to be faced in the case of tin were not quite the same. In addition to the loss of Far Eastern tin ore, the available smelting capacity, already reduced by the loss of Belgium, was considerably depleted; until a new smelter under construction at Texas came into operation the Allies were dependent on plants capable of dealing with only about half their total demand for pig tin and unable to handle even the reduced output of tin concentrates available. The problem was therefore a double one: to increase the production of tin ore in the remaining sources of supply, chiefly Nigeria, the Belgian Congo and Bolivia, and to bring the Texas smelter into full operation as quickly as possible.

Rubber, hard hemp and tin were, then, the most serious Allied losses; no other material raised comparable problems. Although China, Burma and other Far Eastern countries produced between them about half the world's normal supplies of tungsten, there were resources capable of development in the American continent and the British Empire,<sup>2</sup> as well as stocks covering practically a year's Allied requirements. With chrome ore also other sources and heavy stocks promised relief. The loss of raw silk from Japan and China could largely be met by the substitution of other fibres, such as nylon and rayon, and in addition silk production could be expanded to a certain extent in various minor sources of supply, such as Syria, the Lebanon and Cyprus. The cessation of Far Eastern hardwood exports did not raise any very great problems as various other sources existed; Britain, in any case, could at this stage of the war meet most of her requirements by increased felling at home.

Table 31 summarises the effect upon Britain of the losses that we have been considering:

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<sup>1</sup> Small quantities were also produced in Portuguese Africa and South America.

<sup>2</sup> Particularly in the United States, Argentine, Peru, Mexico and Australia.

Table 31. United Kingdom raw material losses in the Far East, 1941-42 (in terms of 1941 imports)

Material	Chief exporting countries	Quantity imported in 1941 from area subsequently occupied by Japanese	Percentage of total 1941 imports
Rubber . . .	Malay States, Straits Settlements	Tons 157,621	87
Raw silk . . .	China, Japan (via United States)	1,576	91
Tungsten ore . . .	Burma, Straits Settlements, Malay States	9,634	77
Hard hemp . . .	Philippines	21,208	24
Antimony ore . . .	Burma	473	7
Lead . . .	Burma	14,356	10
Hardwoods . . .	Thailand, Japan, Philippines, Burma, Borneo	74,698	22

Source: Based on *Annual Statement of the Trade of the U.K.*

The problems resulting from the Japanese victories in the spring of 1942 differed in one significant respect from those which arose from the German conquest of Europe. In 1940 we lost important sources of a large number of materials: European supplies could in the majority of cases be replaced elsewhere, but the consequent strain upon our foreign currency and shipping resources was often severe. The Japanese victories, on the other hand, although dramatically robbing the Allies of their chief sources of certain materials vital to the war effort, of which rubber is the outstanding example, left the balance of supplies for the majority of materials unaltered.

#### THE PRESSURE OF INCREASING REQUIREMENTS

Military reverses were not, however, the only factors which intervened at this stage. With Pearl Harbour the European war became a global struggle, and America's participation led to an immediate expansion of her war industries just as the British and Empire munitions programmes were nearing their peak consumption of raw materials.

The uncertain and fluctuating nature of American requirements during much of 1942 added to the difficulties experienced by Britain in obtaining raw materials both from the United States and from overseas sources. While the British and Empire war industries were by this time consuming materials at a fairly steady and predictable rate, the United States had suddenly to adjust to total war an economy where civilian consumption was at a record level, and the process was bound to be a protracted one. At the same time they had to draft and redraft their military programmes at a moment when

the Services were presenting requirements far beyond their capacity to consume. Now total demands for many of the basic materials, especially metals, ascended to a level where they threatened to out-run supplies, even where these had not been depleted. Steel, aluminium, copper, nickel, vanadium, tungsten and molybdenum all gave cause for anxiety at some time during the next eighteen months and fully taxed the skill of the C.R.M.B. and C.P.R.B. in their schemes for allocation, conservation and substitution. With renewed urgency the question was asked: what help in the field of raw materials could the British Empire bring to the hard-pressed Allies? It became the task now of Britain, under the surveillance of the C.R.M.B., to expand production and organise the purchases in the Eastern Hemisphere while the United States assumed similar responsibility for the other half of the free world.

#### THE PARTIAL REPLACEMENT OF FAR EASTERN LOSSES FROM EMPIRE<sup>1</sup> SOURCES

The Empire was normally a major source of both British and American supplies of many raw materials, but after the Allies' Far Eastern losses the remaining Empire territories acquired a new importance as potential alternative sources of some of the scarcest materials.

Only within the Empire were there any real hopes of expanding the production of natural rubber and hard hemp, the two materials where losses were most acutely felt, but even here the hopes were slender. The Ceylon plantations and the wild rubber resources and small plantations of Africa<sup>2</sup> were subjected to intensive efforts born of desperation; but the return was small. In Ceylon production had by 1943 risen some 6,000 tons above the 1941 level of 99,500 tons, but, after this, bad weather, labour shortages and the effects of intensive tapping resulted in a sharp fall in output. In British East and West Africa the difficulties were still greater and even by 1944 exports for the year were only 13,700 tons. In Abyssinia the most heroic (and costly) efforts, including the use of a military unit, yielded next to nothing. Similarly, the attempts to increase British East African sisal production brought at first scant relief and the full benefits did not begin to be felt until 1944 when output was some thirty per cent. above the 1941 level.

With these two materials, therefore, Allied shortages persisted and Britain was unable to do more than partially replace her Far Eastern losses from Empire sources. But when one bears in mind the crippling nature of these losses, this was no mean achievement. The same holds

<sup>1</sup> The word 'Empire' in this section does not include Canada.

<sup>2</sup> India also produced a certain amount, but throughout the war practically the whole output was consumed by India's own industries.

good for tungsten ore, for which military demands rose steeply. Tungsten was, however, only one of a number of alloying elements affected by increased demands, and in 1942 a reduction had to be made both in the number of specifications for alloy steel and in the quantities of alloying elements used in their production. We also had to exploit every opportunity for substituting less scarce for scarce alloying elements. A similar development occurred in silk, where relief was found in nylon and rayon substitutes. On the other hand Empire resources of antimony ore and lead were more than sufficient to replace Burmese supplies, while Nigeria and other Empire countries supplied the tin ore lost to the Allies in Malaya, upon which Britain was not in any case dependent.<sup>1</sup>

We may now consider in Table 32 how British imperial countries responded to the challenge of the Pacific losses as well as other shortages.

Table 32. United Kingdom imports of main raw materials from Empire sources, 1941-45,<sup>1</sup> indicating quantities and percentages of total for each year (excluding Canada and Empire countries occupied by the Japanese)

Thousand tons

Material	1941		1942		1943		1944		1945	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%
Antimony ore	0.8	13	1.3	11	2.9	32	5.4	58	4.2	44
Bauxite .	67.8	78	45.1	94	187.5	78	161.9	94	159.4	98
Chrome ore	40.5	72	63.6	64	22.1	60	91.5	98	50.2	99
Silk, raw and waste .	0.1	7	0.4	57	0.3	38	0.1	17	0.2	30
Flax .	3.3	36	5.8	47	9.8	46	12.4	62	11.6	50
Hemp, hard	66.1	75	62.9	87	48.7	95	81.2	100	68.5	100
Rubber .	20.5	11	15.6	23	65.1	90	27.5	70	21.6	53
Lead .	67.8	49	116.8	50	92.3	41	142.9	64	107.6	61
Tin ore	16.3	25	18.7	43	19.1	37	17.5	53	15.1	34
Tungsten ores	0.7	6	0.9	13	1.1	17	1.4	23	1.6	42

Source: Based on *Annual Statement of the Trade of the U.K.*

<sup>1</sup> Imports of bauxite and flax, in particular, reflect the fruition of efforts to replace resources lost before the outbreak of the Pacific war.

So, in spite of setbacks, some truly impressive results were achieved. For all but two of these materials, chrome ore and hard hemp, the 1943 figures were well above those of 1941. By 1944 these two had passed the 1941 level. In all the materials but one, tungsten, we were by 1943 getting at least a third of our supplies from these areas; and in most cases 1944 saw a further rise. By that year we were almost entirely dependent on the Empire for our hard hemp, chrome ore and bauxite.

<sup>1</sup> Although Britain had in 1939 imported most of her tin metal and some of her ore supplies from the Far East, she was by 1941 importing very little in the form of metal and getting her ore requirements largely from Bolivia and Nigeria.

## THE EXPANSION OF NORTH AMERICAN SUPPLIES AFTER PEARL HARBOUR

## THE UNITED STATES

From one point of view the Japanese conquests had little immediate effect on British requirements of American materials. We could not turn to the United States in 1942 to recoup our losses as we had done in June 1940; the Americans were our partners in a joint disaster. They, as well as we, had lost materials in the Pacific which were not normally to be found in America. Synthetic rubber, replacing the natural product, was the only significant exception and here our purchases were a direct consequence of the Pacific losses.<sup>1</sup> But, as our munitions production approached its peak, we depended to a greater extent on the basic materials of war which America had already been sending in large quantities, particularly iron and steel, non-ferrous metals, timber, paper and woodpulp, various chemicals, molasses and industrial alcohol.<sup>2</sup> Intensified American demands, and the war at sea, set limits to these supplies. But total shipments in 1942 of materials other than steel were none the less second only to those of 1940, the year of Dunkirk.

Most of our imports of materials were affected by the combination of rising American consumption and shipping shortages during 1942, but some were more severely hit than others. Steel, particularly alloy steel, was under heavy pressure from rising American demands; and expanding requirements soon resulted in the virtual breakdown of the priorities control system. British allocations were frequently revised downwards, and, as the bulky nature of the material also accentuated the effect of the shipping shortage, shipments fell sharply in the last quarter of the year.<sup>3</sup> Aero timber was another victim of the twofold impact of shipping difficulties and increased American demands, and copper and magnesium also caused considerable anxiety. Various chemicals were affected by the increased requirements of the synthetic rubber programme.

The summer of 1943 may be taken as the turning point in our efforts to obtain American supplies. By now America had still further raised her output of many raw materials, while her munitions production was already at its peak. The limits of her manpower would dispose of any larger ambitions in this field. At the same time she had gained valuable experience in drawing up programmes and adminis-

<sup>1</sup> Hardwood losses led to higher imports of American hardwoods, but by this time the bulk of our requirements were being met from home resources.

<sup>2</sup> Imports of molasses and industrial alcohol from America increased greatly during 1942, although our total imports of these materials declined. This increase was partially accounted for by the fact that the United States purchased the entire crop of Cuban molasses for 1942 and allocated supplies to Britain under lend-lease.

<sup>3</sup> Shipments fell from over 935,000 tons in the third quarter to about 366,000 in the fourth.

tering controls. The benefits derived by Britain from these developments were partly offset at first by disputes among the American agencies engaged in directing various aspects of the war, and by the first shadows on the political scene of the approaching Presidential election, which resulted in the general tightening up of lend-lease procedure and the complete removal of one or two materials from its provisions.<sup>1</sup> There were two important exceptions, however, to the general improvement in supplies. One was synthetic rubber, where shipments were, by the end of 1943, 11,314 tons in arrears of the C.R.M.B. allocation. The other was timber, which became increasingly difficult to obtain as production suffered from the drain on manpower and, in addition, from discouraging official price ceilings. Total shipments of materials for 1943 were above the 1942 figure, although the increase was largely accounted for by steel from accumulated seaboard stocks, which partly reflected the improved shipping position.

After 1943 British requirements of American materials declined and few supply problems as such were encountered. Synthetic rubber production reached the target level towards the end of 1944 and there was a further improvement in supplies of most materials. Lack of manpower was still affecting timber production, however, and spread also to the steel mills, so that in 1944 monthly allocations of carbon steel to Britain had to be cut. At the beginning of 1945 the majority of raw materials were removed from the scope of lend-lease.

Table 33 shows the trend of American supplies to Britain during the latter half of the war.

*Table 33. United Kingdom imports of raw materials from the United States, 1942-45<sup>1</sup>*

	Thousand tons			
Materials	1942	1943	1944	1945
Iron and steel . . . . .	2,082·1	2,452·8	1,475·6	117·4
Iron and steel scrap and waste . . . . .	8·9	0·2	0·4	—
Paper and pulp . . . . .	258·3	138·5	91·5	157·8
Timber . . . . .	212·3	264·2	273·7	276·2
Alcohol and molasses . . . . .	292·9	159·1	246·6	156·6
Chemicals and fertilisers . . . . .	575·2	544·1	348·5	256·2
Non-ferrous metals . . . . .	225·6	212·5	63·6	20·4
Cotton and naval stores . . . . .	142·9	316·2	134·7	114·6
Rubber . . . . .	15·5	14·3	93·1	24·1
Miscellaneous . . . . .	13·1	54·5	8·9	3·1
TOTAL . . . . .	3,826·8	4,156·4	2,736·6	1,126·4

<sup>1</sup> See Table 28, footnote 1.

<sup>1</sup> The B.R.M.M. was asked to discontinue the bulk shipment of alcohol and acetone and instead to pay cash for Cuban molasses, which were considered an 'offshore' purchase.



## CANADA

Canadian and American contributions to the Allied war effort during the second half of the war continued to differ in many respects. The United States, although an important source of many raw materials, played their supremely important part in the provision of finished munitions. Canada, on the other hand, produced in 1943 only about five per cent. of the total munitions output of North America,<sup>1</sup> but a very much higher proportion of many materials; for supplies of non-ferrous metals in general, and nickel and aluminium in particular, the Allies drew to an increasing extent on Canadian sources.<sup>2</sup> To Britain there came increased quantities of aluminium and other non-ferrous metals, including lead and cobalt, ferro-alloys, paper-making materials and abrasives, while shipments of timber and asbestos remained at a high level. Table 34 shows the trend of Britain's main raw material imports from Canada after Pearl Harbour.

*Table 34. United Kingdom imports of raw materials from Canada, 1942-45<sup>1</sup>*

	Thousand tons			
	1942	1943	1944	1945
Iron and steel and manufactures thereof <sup>2</sup>	126·4	106·4	86·8	64·5
Non-ferrous ores and scrap	31·4	21·9	21·9	20·2
Aluminium and aluminium alloys	137·0	209·1	152·0	21·8
Brass and copper alloys	1·7	0·8	—	—
Copper	82·5	55·1	85·9	26·2
Lead	112·4	134·2	81·9	68·7
Nickel	1·6	0·4	0·4	0·2
Zinc	106·5	106·5	60·8	64·5
Cadmium	0·4	0·1	0·1	0·2
Cobalt	0·3	0·3	0·4	0·2
Magnesium	0·1	2·1	3·9	—
Hides and skins	—	—	—	0·1
Abrasives	14·7	18·6	14·2	3·4
Asbestos	22·5	28·7	18·7	32·4
Softwoods	685·8	1,182·7	971·8	1,134·6
Hardwoods	82·0	90·9	105·5	125·2
Paper-making materials	227·6	213·1	236·2	235·6
Flax	2·5	3·7	3·6	2·0
Paper, cardboard, etc.	87·1	56·9	75·6	113·7
<b>TOTAL</b>	<b>1,722·5</b>	<b>2,231·5</b>	<b>1,919·7</b>	<b>1,913·5</b>

Source: Based on *Annual Statement of the Trade of the U.K.*

<sup>1</sup> This table does not represent total raw material imports but most of the main commodities are included.

<sup>2</sup> Including ferro-alloys as follows:

1942	62·2 thousand tons	1944	53·2 thousand tons
1943	99·0 thousand tons	1945	42·1 thousand tons

<sup>1</sup> See *The Impact of the War on Civilian Consumption in the U.K., U.S. and Canada* (H.M.S.O., 1945).

<sup>2</sup> 95 per cent. of the United Nations' nickel requirements, 30 per cent. of their aluminium, 20 per cent. of their zinc, 15 per cent. of their lead, 12½ per cent. of their copper, and 75 per cent. of their asbestos came from Canada.

Thus British munitions production in the non-ferrous metal sector rested squarely on Canadian resources. The greatest increase took place in aluminium supplies, which reached their peak in 1943 with exports over six times greater than the 1938 level, and in ferro-alloys which also reached a high level in 1943. Exports of steel, on the other hand, dropped and were particularly small in 1943. In 1944 the decline in British munitions demands for Canadian materials was marked, and there was a sharp fall in shipments of aluminium and other non-ferrous metals and of ferro-alloys. But there was a rise in copper, magnesium, paper and paper-making materials.

#### THE RECONQUEST OF SOURCES AND THE ENDING OF THE WAR

Before the developments sketched out in the preceding pages had worked themselves out the tide had turned. The occupation of French North Africa by Allied troops in the autumn of 1942 presaged a change in the raw materials situation; for the first time since the fighting began in the spring of 1940 the Allies emerged from a campaign with augmented rather than depleted supplies of raw materials. The most important exports from North Africa before the war had been phosphates and iron ore, but esparto, cork and various non-ferrous metals had also come our way. Britain was allocated supplies of iron ore, pyrites, phosphate rock, superphosphates, zinc ore and concentrates and lead, while Madagascar was able to make a considerable contribution to Allied graphite supplies. From now onwards growing mastery on land, sea and in the air was to bring also mastery over the world's resources of raw materials, though large amounts were not to come in time to alter the economic strategy of the struggle.

During the last three years of war the change in the general supply situation was gradual. In the early months of 1942 metals had on the whole presented the most pressing problems to the Allies; by the end of 1943 the majority of these problems had been solved or were well on the way to solution, and the decline in military requirements eased the position still further. On the other hand, agricultural products were heavily hit by the increasing drain of manpower to the Services and munition factories, and output figures began also to reveal the cumulative effects of intensive cultivation. So the most critically scarce materials of 1944 were timber, paper-making materials, crude rubber and jute; and, as the remedies were mainly of a long-term variety, shortages were expected to grow more rather than less severe in the immediate future.

Nor could Britain hope automatically to revert to her pre-war sources of supply with the end of hostilities. Until the full effect of the years of enemy occupation had been assessed it was impossible to foretell how soon or how fully the liberated areas would be able to

resume their exports of materials, or indeed what demands they would make on Allied resources for the immediate work of reconstruction and rehabilitation. In spite of the reappearance of the dollar problem, Britain was compelled to turn to the United States for at least some of her supplies of the many materials which she normally obtained from other sources, particularly Europe; the fact that she would not be alone in doing so, and that the trend in the United States was towards the speedy removal of controls, meant that these supplies might actually be more difficult to obtain in peace-time than during the last year or so of the war. A further element of uncertainty arose from the decision to terminate the C.R.M.B. by December 1945, although some sort of control was to be retained over a few of the outstandingly scarce materials.<sup>1</sup>

These were the general conditions governing Britain's raw material supply prospects at the end of the war, but requirements were also changing. Extraneous factors such as the manpower situation limited total consumption of materials, but within these limits the emphasis shifted from materials needed for specialised war purposes, such as magnesium and many of the ferro-alloys, to those commodities, including timber and lead, which were the basis of the housing programme and other aspects of reconstruction. Steel, of course, would continue to be required in great quantities. Broadly speaking, available supplies seemed likely, with a few important exceptions, to be adequate to cover these requirements. Of the metals, lead was the only one likely to be really short; in some other cases, including aluminium, substantial surpluses existed. The textile situation was also fairly favourable; there were surplus stocks of wool and of most grades of raw cotton, although flax and jute<sup>2</sup> were still scarce and rope fibres would be short until the Far Eastern countries were exporting on a normal scale again. This generally optimistic picture of the immediate future was, however, marred by a serious shortage of two basic materials, natural rubber and timber. The rubber problem could not be fully solved until the Far Eastern plantations were in full production again, although synthetic rubber was now being produced in the United States in bulk. Softwood supplies, virtually indispensable in the early stages of the building programme, showed little sign of increasing before the spring of 1946 at the earliest, in view of the continuing labour shortage in North America and the limitations inevitably imposed by the weather on autumn and winter shipments of Scandinavian and Baltic timber. And greater than all these problems was that of currency, whose scarcity had marked the

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<sup>1</sup> These materials included hides and leather, rubber and tin.

<sup>2</sup> Jute supplies were linked with the revival of Burmese rice production. As long as India had to grow for herself rice she would normally have bought from Burma her jute acreage suffered.

opening phases of the war and was to dominate the anxious years of peace.

The story we have told in this chapter has been, first, of a succession of disasters in Europe and the Far East which bore heavily on our raw material supplies; and while supplies were falling the pressure of demand intensified as the whole world took up arms against the Axis. It was not until the autumn of 1942 that the enemy grip upon sources began slowly to be loosened, but the release of supplies was perforce slower still. Yet, even though during the first three years of war the available quantity of raw materials fell steeply, and sometimes alarmingly, we have not found any clear instances where scarcity of supplies *at source* brought essential production to a standstill. This is not to say that we were free from periods of crisis; an involuntary reduction of demands by Britain was itself usually a demonstration of some breakdown either at source or *en route* to this country. Apart from this, the British Government was also in the early stages much exercised on purely monetary questions. For all these reasons we must look at the problem from other angles: first, currency and then the import policy and programmes which governed the movement of materials to this country both before and after they had been acquired. Ships were to prove scarcer than supplies.

## CHAPTER XII

### OVERSEAS SUPPLIES: CURRENCY

**T**HE physical shortage of materials was one aspect only of the supply problem. The burden of providing foreign exchange to pay for those imports which *were* available presented in the early part of the war a much more acute difficulty. Nor could the United Kingdom be treated in this respect as a separate financial unit; her foreign exchange problems had to be considered within the framework of the sterling area. This loose financial union was virtually co-terminous with the British Empire, except that it excluded Canada, Newfoundland and Hong Kong and, on the other hand, included Egypt, Iraq and the Anglo-Egyptian Sudan.<sup>1</sup> The exchange of supplies *within* this area raised no serious difficulties. An adverse balance of one constituent nation with another did not limit its imports and was merely reflected in the accumulation of sterling by the creditor country.<sup>2</sup> The existence of the sterling area was in fact a great stabilising force in British purchasing policy, and in view of our heavy dependence upon the Empire for raw materials this consideration was doubly significant.

But there were also non-sterling purchases, and these had often to be made in the 'hard' currency countries, the countries with which we had an adverse trade balance. The term 'hard' currency did not cover any consistent group of nations; the list varied with the changing conditions of British overseas trade. Broadly speaking, however, in the early period of the war the term was applied to the currencies of the United States and Canada, the Argentine,<sup>3</sup> Switzerland, France, Belgium, Norway, Sweden, Holland and Japan. The German occupation of western Europe meant in effect that by June 1940 the currency problem resolved itself into a dollar problem; and Britain's capacity to wage war in the future depended upon how far a solution could be found in Washington to this fundamental currency issue. The solution was found in the 'Lend-Lease' Act of March 1941, although its fruits did not become immediately avail-

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<sup>1</sup> S.R. & O. (1939), No. 1168. This was the position at the end of September 1939. A number of other countries joined the sterling group during 1941, some of whom left it later during 1944.

<sup>2</sup> The accumulated sterling balances credited to sterling area countries by the United Kingdom amounted at the end of the war to £2,723 millions (Cmd. 6707).

<sup>3</sup> A payments agreement was however made with Argentina on 27th October 1939 whereby imports from that country were paid for with blocked sterling. Later amended, it became a model for payments agreements concluded with other neutrals.

able. We shall accordingly deal in this chapter mainly with the impact of those financial problems which arose between September 1939 and March 1941. After that the storehouse of American supplies was unlocked, and the dollar problem, though always present, receded to manageable proportions.

With the purely financial expedients to which the Government resorted in tackling its problems we are not concerned in this volume. The sale of our capital assets, which continued at an increasingly rapid pace the process of disinvestment, which had begun before the war, and the varying fortunes of the export drive are discussed more appropriately in other contexts. Undoubtedly they were major contributions which enabled Britain to survive a succession of military and economic crises; but at most they were devices to gain time. Within a year the bottom of our currency barrel was coming into sight, and the export drive would sooner or later have faltered as a dwindling supply of raw materials was absorbed by expanding munitions demands. This danger, at least, the pre-war planners had foreseen, and the purchasing policy of the early phases of the war had been written around a central concept: that the currency situation must determine the place and the quantity of the purchases. Nothing was so important as this; and the Government was prepared, as it were, to 'sell' shipping space to buy currency.

Upon this governing principle the twin pillars of British purchasing policy were built. In the first place imports were sought primarily in the sterling area: wheat from Australia rather than Canada, steel from India, if possible, rather than from the United States. Secondly, imports, particularly from hard currency areas, should be nearest to their raw state, that is unprocessed rather than finished, because they cost less: iron ore rather than finished steel. Both these approaches were extravagant in shipping, but of that the policy makers were fully aware. Yet even when the policy was adopted, it was not always easy to apply it with consistency and success. For example, Canada was a dollar country, but the bulk of the commodities normally imported from that source were needed for defence purposes. Aluminium was an outstanding instance of this and so, shortly after, was timber. Alternative supplies of aluminium did not exist elsewhere and the aircraft programme could not be halted for currency considerations.

Nor was the machinery of import control always adequate to enforce the policy. An ideal government fighting, as it were, an ideal war would have had fully effective exchange control, full shipping control and full import control from the start of war. None of these existed in September 1939 nor, naturally enough, could they be called into being at a moment's notice. Import licensing, one method of restricting currency expenditure, was, as we have seen, far from

complete for many months. The Bank of England, which was responsible for issuing the currency for unlicensed imports, hardly possessed the knowledge or instructions to discriminate in the interest of production strategy. On the other hand, as was pointed out early in the war, if a controller was responsible for determining imports on grounds of supply or requirements, he could hardly at the same time keep himself *au fait* with the changing currency situation, though the Treasury was able to give him, and in fact did give him, general guidance. Nor was he necessarily aware of alternative, and perhaps more urgent, requests for purchases from the same hard currency area which other controllers had presented. Competitive purchasing overseas added to British difficulties in a seller's market and therefore increased still further the pace of currency consumption.

Nor were there yet any restrictions preventing the consignment of goods here by exporters. Even if the goods were requisitioned on arrival, the sterling paid for them could be turned into dollars or any other scarce currency. In spite of the fact that the depreciation of sterling, and price control in the United Kingdom, diminished the incentives to foreign exporters to this country, their activities were not entirely inhibited. The incomplete control of imports meant also greater competition for freight space and therefore a higher expenditure of currency upon foreign ships. Meanwhile the whole principle of hoarding scarce currency had at times to be abandoned for political or other reasons; imports unnecessary on supply grounds had sometimes to be arranged in order to deprive the enemy of a strategic material. For this reason purchases of chrome ore were made in Turkey, Greece and Jugoslavia. On another occasion the Board of Trade and the Foreign Office recommended the purchase of hides from, *inter alia*, Guatemala, Colombia and Uruguay to facilitate other commercial negotiations. Or again, dollars could be drained away even though American goods were not being bought. For example, in October 1939, the Treasury had to intervene to discourage agents from accepting dollar invoices for timber from Jugoslavia, for peppermint oil from Russia and for rosewood oil from Brazil. Apart from all these matters, there remained legal and other technical considerations about treaty obligations and most-favoured-nation clauses which made currency control schemes complex and hazardous.

Except for the fairly strict control over American imports there is no evidence amongst the raw material records that shortage of money seriously restricted purchases in the early months of the war. Of the scarce currencies other than dollars we may eliminate for our purpose Swiss francs since, in any case, it was not proposed to import raw materials from that country. We are left then with the currencies of France, Belgium, Norway, Sweden, Holland, the Argentine and Japan. So urgent was the need for some of the materials obtainable in

these areas that the imports either showed little change from the pre-war rate or were actually larger. Table 35 compares the imports of certain materials for the eight months September 1938 to April 1939 with imports for the first eight months of the war.

*Table 35. Imports of certain raw materials: the first eight months of war compared with similar period of previous year*

Country and material	Imports Sept. 1938- April 1939	Imports Sept. 1939- April 1940
<b>FRANCE</b>		
Iron and steel and manufactures thereof	80,396 tons	259,623 tons
<b>BELGIUM</b>		
Iron and steel and manufactures thereof	151,213 tons	243,924 tons
Sheep and lambs' wool . . . . .	2,662,000 lb.	700,000 lb.
Flax . . . . .	17,632 tons	16,117 tons
<b>SWEDEN</b>		
Iron and steel and manufactures thereof	61,429 tons	57,846 tons
Ferro-alloys . . . . .	13,078 tons	7,133 tons
Woodpulp . . . . .	374,677 tons	370,912 tons
<b>NORWAY</b>		
Iron and steel and manufactures thereof	25,591 tons	34,094 tons
Ferro-alloys . . . . .	16,901 tons	26,797 tons
Woodpulp . . . . .	137,635 tons	229,089 tons
<b>ARGENTINE</b>		
Cotton . . . . .	10,362 centals of 100 lb.	129,355 centals of 100 lb.
Raw wool . . . . .	72,470,000 lb.	10,158,000 lb.
<b>HOLLAND</b>		
Flax . . . . .	1,674 tons	2,343 tons
<b>JAPAN</b>		
Raw silk . . . . .	2,388,023 lb.	2,806,403 lb.

Source: Based on *Trade and Navigation Accounts*

It has not been possible to obtain figures of monthly imports by source for every material. Wherever possible we have selected the materials which came in the greatest quantity, but those included in the table do not invariably represent the most important or the largest imports from the country indicated.<sup>1</sup> Also, although we have chosen similar periods of the year, they are not always precisely comparable since some of the purchases in the earlier period were exceptionally heavy.<sup>2</sup> Bearing these limitations in mind, it appears from our figures

<sup>1</sup> For example, bauxite from France, iron ore from France, Sweden and Norway and hides from the Argentine have had to be omitted.

<sup>2</sup> It is perhaps noteworthy, for example, that purchases of wool from the Argentine were extremely high during the first four months of 1939: 54,490,000 lb., that is two-thirds of the total for the period considered, were imported between January and the end of April 1939. In a normal period of eight months the purchases might therefore have been less than the total for September 1938 to April 1939.



that, save in the case of wool from Belgium and the Argentine and ferro-alloys from Sweden, imports during the first eight months of the war were at a rate approximately equal to, or considerably in excess of, those of the previous year. And this occurred in spite of the fact that the respective currencies of all these countries were considered to be difficult, and that the need to husband our scarce currencies took precedence over shipping considerations. Moreover, all the materials, with the one exception of silk, were brought within the framework of either state purchasing or import licensing in the earliest stages of the war.<sup>1</sup>

As far as the European countries were concerned, the raw materials which they had to offer were so important to our defence needs that our purchases were in most cases continued to the limits imposed by shipping difficulties. This was certainly true of iron and steel from France, Belgium, Sweden and Norway. It was planned to obtain nearly the total requirement of imported finished steel and fifty per cent. of our imported semi-finished steel from France and Belgium alone. The import programme of the first year of war also provided for large supplies of woodpulp from Norway and Sweden, which we succeeded in obtaining in spite of shipping difficulties in the Baltic. Our imports of ferro-alloys from Scandinavia were also maintained at a high level, although the Ministry of Supply had to ask the Contraband Control to cease interference with supplies of raw materials to Scandinavia in order to speed up production and shipments of ferro-alloys to the United Kingdom. Purchasing policy with regard to flax was even more explicit: whatever the price and source as much as possible was to be obtained. Rapidly rising prices on the Belgian market, however, enforced a temporary modification of this policy in the opening months of 1940; in collaboration with the French we worked out a co-operative buying policy and checked the rise in prices by combined action in reducing purchases for a while.

The story of other textile imports from 'hard' currency countries is somewhat different, although here again there is no evidence that scarce currencies were denied for essential purposes. Purchases of Japanese silk from the outbreak of war until June 1940 were authorised up to the pre-war rate of 5,000,000 lb. a year. The importance of maintaining an export trade justified imports of silk on currency grounds though service demands were small; and the availability of almost unlimited raw materials clinched the argument. Moreover, it was considered undesirable to interfere with civilian trade and thereby cause unemployment, but it should be noted that civil requirements accounted for about sixty-five per cent. of the total consumption.<sup>2</sup>

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<sup>1</sup> See Chapter X above.

<sup>2</sup> About fifteen per cent. was used for government purposes, fifteen to twenty per cent. for the export trade and the remainder for civilian purposes.

After mid-1940, more restrictions were placed on silk imports because of currency difficulties.<sup>1</sup> Cotton purchases remained unrestricted until June 1940. In fact, we bought twice as much cotton from the Argentine in 1939 as in the previous year, but after 1940 we took no more. From elsewhere only the most essential types were admitted after June 1940. In the case of wool, only certain kinds not available in the Dominions were purchased from other sources, except that under our agreements with France, whereby our wool supplies were pooled, both countries made purchases from South America in view of the size of the joint demand.

The data we have examined leads to one general conclusion. With one important exception, currency difficulties did not interfere seriously with raw material imports during the early months of the war. The exception was of course North America.

#### NORTH AMERICAN PURCHASES

In one respect, at least, the story of raw material purchases from North America is simple to outline. The officially stated policy was to reduce imports to the minimum for reasons of currency. Yet the steel purchasing programmes clearly revealed how difficult it was to implement the policy in this field:

At first [reported an official of the Ministry of Supply] the Iron and Steel Control hoped to get along almost without purchases of pig iron and steel in the United States.<sup>2</sup> In the estimates dated 20th October the total purchases (including scrap) in the United States were given as £3,500,000. The most recent estimates dated 22nd December [1939] give £7,350,000 . . . The estimated requirements of iron and steel have been steadily rising, and will probably rise further.

Until the early summer of 1940, our expenditure in North America was limited to those essential materials unobtainable elsewhere. This policy applied particularly in the United States, and the only raw material imports from that country during the first nine months of the war were considerable quantities of American cotton, a material nowhere else available, a small quantity of iron and steel, approximately 100,000 tons a month, a small amount of timber and a few miscellaneous materials.<sup>3</sup> The first overall statement of British requirements in the United States made on 30th January 1940 showed a figure of £48 millions to be expended on raw materials, out of a total

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<sup>1</sup> When, after Pearl Harbour, we were no longer able to obtain silk, the Treasury regretted that they had not permitted larger imports to enable stockpiling.

<sup>2</sup> Eight months later steel was 'the heaviest drain on our dollar resources of all the raw material import programmes'.

<sup>3</sup> See Chapter XVII. In addition, a cotton-rubber barter agreement had been made with the United States.

of £197 millions; but on the raw materials side more than half, £26 millions, was to be spent on cotton. In the case of steel, this policy of restricting American purchases set an upper limit, therefore, to the total amount which could be received from all sources. It had been pointed out as early as December 1939 that any increase in total steel imports would have to be of semi-finished steel, which could only come from the United States:

Even a comparatively small increase in the total purchases of iron and steel would, therefore, cause the expenditure in the U.S.A. to rise quite steeply.

Canada provided us with a large proportion of our non-ferrous metals, some timber and small quantities of other materials. But these Canadian supplies could not have been obtained from other sources, and purchases were made easier by an agreement under which we paid partly in sterling and partly in Canadian dollars at an agreed exchange rate.

The military events of May and June completely changed the supply situation. Armed with the directive 'that the general policy of the Cabinet is to secure such munitions as can be obtained quickly from the United States irrespective of their dollar cost', the Minister of Supply at last could begin to buy heavily on the American market. The United States were now the one remaining source for augmenting the supply of iron and steel, and our requirements were at once raised on 13th May from 130,000–135,000 tons to 155,000 tons a month, while a further quantity of 300,000 tons was ordered at the end of the month. The capitulation of France in June led to still greater purchases of iron and steel from the United States; and, as we became more and more dependent on Canada for aluminium and pitprops, our purchases in that area showed a clear upward trend. But more than the replacement of lost European supplies was involved. The virtual destruction of all our military equipment meant that we must re-equip the Army. So this forced up still further our requirements of essential raw materials. But time was also a precious and scarce commodity, after Dunkirk the most precious and most scarce of all. In our purchases the emphasis therefore fell upon finished munitions, and, within the raw materials sector, upon processed materials, for example steel rather than scrap and pig iron. Now, also, we took over the French contractual liabilities for armaments in the United States to the tune of \$600 millions.<sup>1</sup> This act, as it were, symbolised the complete reversal of our policy of frugal expenditure in America, and we may sum up the developments in a sentence. Expenditure on raw materials in the United States was nearly doubled in the nine months

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<sup>1</sup> E. R. Stettinius, Jr., *Lend-Lease—Weapon for Victory* (Penguin Books, 1944), pp. 40–41.

after the Dunkirk period, but expenditure on finished products was more than trebled.<sup>1</sup>

Viewed in this way we can see how the balance in purchasing was turning against raw materials. But we must not over-emphasise this process. Raw materials, as such, were being bought in greatly increasing quantities. Indeed, we began to purchase materials from America which we had not purchased at any time since the beginning of the war, for example, phosphates. But, although it was becoming more and more certain that the American administration was preparing to give Britain 'all aid short of war', we still had to keep solvent and the Treasury urged upon the Ministry of Supply the constant need to explore alternative sources with easier currencies. Meanwhile the occupation of Europe and the danger of bombing to our east coast ports had resulted in a switch-over of ships to the west coast; and it appeared for the time being at least not to matter from a shipping point of view whether our supplies were drawn from North America or farther afield, since the new and predominant shipping difficulty was unloading. So the Chancellor of the Exchequer pressed that we should, if supplies were available, switch our demands from North America to the British, French and Dutch Empires, and, more especially, to Australia and New Zealand, where we should not only save foreign exchange but would receive repayment for our loans to their expeditionary forces.

The rest of the story, though it is an exciting one, can be briefly told. It was thereafter a race against time: would British currency resources and saleable securities<sup>2</sup> be exhausted before the Lend-Lease Act was passed and the New World brought its overwhelming economic power to bear upon the Old? Our foreign exchange position steadily worsened as the year 1940 drew to a close, but the Treasury allowed currency to flow freely for essential purposes as an increasingly optimistic note crept into Anglo-American economic relations. By the beginning of 1941 we had committed nearly all our available dollars and were later obliged to make emergency transfers of South African gold to America. Even after the passage of the Lend-Lease Act on 11th March 1941 we continued almost until the end of 1941 to pay dollars for the major part of our supplies from the United States.<sup>3</sup> Raw materials imported under lend-lease did not begin to flow in any considerable quantity until October 1941, the one important exception being steel, which was released in large amounts under lend-lease from July. After 1941 United Kingdom imports were speedily switched from cash to lend-lease, but even now certain

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<sup>1</sup> See Chapter XVII, pp. 262-264, and also Table 37.

<sup>2</sup> There were still securities to be sold, but they would have had to be disposed of in extremely adverse circumstances.

<sup>3</sup> See Appendix 19.

highly specialised products and orders costing less than 1,000 dollars could not be brought under the lend-lease umbrella. (The exclusion of 500-dollar purchases had been made in July 1941, but by October the minimum figure for lend-lease requisitions had been raised to 1,000 dollars.) But apart from the relatively tiny proportion of our raw material imports which was found ineligible or unsuitable for lend-lease, we still had, until the eve of Pearl Harbour, to find currency for the Empire and for our allies. The strain upon our resources therefore continued to be heavy. We were bearing the brunt of the war expenditure in India, the Middle East and in our colonial possessions; we were also sending supplies to our allies, Russia and China, and we were financing several of the exiled armies. But towards the end of the year, the shelter of lend-lease was extended to cover both more countries and more raw materials. Though our general overseas financial position remained weak, our raw material imports were, for the moment, free from the threat of a dollar famine.

North America should not be considered solely in terms of supplies from the United States. We have seen already that Canada was making a noteworthy contribution, in some instances a predominant contribution, in the form of raw materials. But currency issues never became acute, as in our relations with the United States. Canada was not a member of the sterling area and had made no provision for giving us financial assistance on lend-lease terms. Her help had taken another, and no less impressive, shape. She had not in the first place been bound by any restrictive legislation similar to the United States Neutrality Acts. We could, therefore, secure loans backed by British-owned securities in Canada, which meant that Canada was in effect financing the deficit of the sterling group in Canada by holding sterling. But this method of financing United Kingdom requirements could not be maintained indefinitely, and early in 1942, when our resources in Canada were practically exhausted, we received the first thousand million Canadian dollar gift. This, and subsequent gifts, marching in parallel with lend-lease, freed us from the continuing struggle to obtain dollars by exports and released the whole of our energies for war production. The annual figures of raw material imports from Canada will be found in Tables 30 and 34.<sup>1</sup>

Cash purchases in North America in 1942 and 1943 were down to an irreducible minimum, but towards the end of 1943 we took the first step in the partial resumption of cash payments when some items, for example raw copper and zinc, were made ineligible for lend-lease for supply and political reasons. The scrutiny of applications for lend-lease was intensified as the end of the war came into sight and the Americans became naturally concerned about their

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<sup>1</sup> See also Appendix 20 for a comparison of post-Dunkirk imports of raw materials from Canada with those of the first ten months of war.

post-war export prospects. For us there was no simple road back to the revival of our export trade; even if we could find the cash for the purchase of raw materials for use in exports, we were still tied by the 'White Paper' provision of 'scarcity in the United States' and the possibility that we would receive similar materials on lend-lease account. The Americans observed also that our dollar balances were increasing, partly through money spent by American soldiers and airmen in the United Kingdom and other parts of the Empire, and partly because we and the Empire were receiving dollar payments from the United States for raw material sales. In July 1943 we therefore agreed to supply raw materials under reciprocal aid to the United States from the United Kingdom, Southern Rhodesia and the colonies; Australia, New Zealand, South Africa and India were left to negotiate their own arrangements with the American administration. On the British side it was argued that our acceptance of the American proposal was based not simply on fiscal issues but on the fundamental principle of the pooling of resources.

During 1944 a gradual increase in our cash payments for materials took place, although the total for the year was for less than four per cent. of the tonnage of raw material imports from the United States. Lend-lease, it was thought, would continue until the complete cessation of hostilities, but this was uncertain and the various British and Empire missions in the United States began to prepare themselves for a rapid resumption of cash payments. In March 1944 the British Raw Materials Mission expressed the view that all raw materials might well be purchased for cash if the magnitude of the surplus of our dollar funds warranted this changeover. Amongst other missions it was felt, however, that if our dollar balance was to be called into service, the residue of manufactured goods should be switched over to cash before raw materials. Another approach lay in making ineligible certain items which might cause difficulty in a presidential election year; some measure of agreement on this had indeed been reached with the Foreign Economic Administration in March, but the only important *raw material* affected was Cuban molasses. The Treasury summed up its attitude as follows:

1. Where goods were essential but clearly ineligible, then cash should be paid.
2. Where some doubt had arisen and there was reason to urge aid, then every effort should be made to secure the goods on lend-lease account.

The American attitude remained somewhat ambiguous, but it was generally understood that the sole, though increasingly stringent, test of eligibility for any commodity was to remain its necessity for war purposes. While, therefore, requisitions for some materials were re-

jected on the grounds of their partial consumption for civilian purposes, raw materials generally never presented political difficulties comparable to those encountered with finished goods. But, from the middle of 1944, the American attitude towards this problem was naturally and increasingly coloured by the expectation that the war was drawing to a conclusion, and by doubts as to the position of lend-lease stocks in the United Kingdom. For example, the War Production Board was extremely anxious that the existing British stocks of lend-lease steel should be consumed before further requisitions were made, lest they should be subsequently used to compete with American steel in export markets. As a consequence, shipments of carbon steel to the United Kingdom were reduced in the latter half of the year from 100,000 to 60,000 tons a month; but this was also part of the effort to meet American military demands.

The second half of the year marked a further, and for many commodities the final, stage in the history of lend-lease. While we should continue to need assistance from the United States in the form of foodstuffs and raw materials, as well as munitions, for the war against Japan when the European struggle was at an end, it was clearly equally important that the restrictions imposed by the 1941 White Paper on Export Policy<sup>1</sup> and by the lend-lease system itself should be speedily removed. A compromise was eventually reached whereby the United Kingdom agreed to pay cash for all raw materials likely to cause difficulty in the export field and in return was given complete export freedom, except in the case of lend-lease commodities or their substitutes. This export freedom was not formally operative until the end of the European war, but arrangements were made to give practical effect to the agreement in the New Year. From 1st January 1945, therefore, all raw materials, with certain important exceptions, were put on a cash basis. In general the remaining commodities approved for lend-lease in 1945 were agricultural and forest products and a special group of materials, such as nylon, certain chemicals and all tropical packaging materials, which were exclusively for final military use. Lend-lease supplies of the materials transferred to a cash basis were cut off at midnight on 31st December 1944, but large shipments were made before this date; for example the large seaboard stocks of steel which had helped to regulate the flow of imports were down to 1,500 tons by the end of December. Unfulfilled requisitions, if ineligible for lend-lease, were either converted to cash or cancelled.<sup>2</sup>

In this chapter we have been concerned only with those countries

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<sup>1</sup> See Chapter XVII, pp. 278-279.

<sup>2</sup> For figures of British imports of American raw materials divided between cash and lend-lease see Appendix 19.

whose currencies caused us anxiety or difficulty, and have therefore given little space to the enormous contribution made by the sterling group. Some idea of its scope may, however, be gauged by the figures given in Table 32 on page 169 and elsewhere in this volume. For some essential raw materials, i.e. wool, mica and jute, we were able to draw upon the sterling area for all or nearly all our imports. For many commodities the degree of our dependence upon sterling countries naturally rose as other sources were denied us. Amongst these were some kinds of timber, magnesite, asphalt and bitumen, non-ferrous ores and scrap and flax. The most striking of the materials in this context were flax and bauxite. When European supplies were lost, the expansion of flax cultivation in the Dominions and Egypt resulted in the proportion of imports from sterling countries rising from 2.5 per cent. in 1939 to a peak of 82.7 per cent. in 1943 although, quantitatively, we did not fully replace our losses. A similar story could be told about bauxite.

We may now briefly summarise the main phases of our narrative. The financial prudence of the first nine months of the war was based on a set of military hypotheses which had to be abandoned after our early disasters. The second phase, which lasted from Dunkirk until the introduction of lend-lease, was characterised by efforts to build up our military strength, whatever the cost, before any further blows were struck. Financially it was the critical nine months in which we had to use every device to gather dollars for essential purposes and restrict dollars to essential needs. But where we felt that the need *was* essential we spent our dollars freely. By the time lend-lease was brought into operation, we had been stripped of all but direct investments in the United States and even a few of these were sold for about half their value. Although the passage of the Act did not immediately and magically smooth away all our problems, there is no doubt that without American aid we could not have continued the struggle. Once lend-lease was assured we were able to sacrifice, and for a number of reasons were obliged to sacrifice, most of our export markets and concentrate on our military requirements. Most important of all, it justified the faith in which we had reversed our economic policy after Dunkirk. From March 1941 until the end of 1944 our major currency problem, that of dollars, was virtually non-existent. This was true not only in our relations with the United States but also with Canada, who came to our aid with the first of her thousand million dollar gifts at a time when our resources in that country were well-nigh exhausted. The fourth phase, which officially began on 1st January 1945, had its origins in the second half of 1944 when the political repercussions of lend-lease began to impinge on the revival of our post-war trade. The last eight months of war witnessed a gradual resumption of cash payments for raw materials, but more than two-



fifths of our raw material imports during 1945 as a whole still arrived under lend-lease.

One final question remains to be considered. Did currency shortages in fact diminish essential imports of raw materials? We have seen that, as far as European supplies were concerned, the limits imposed upon our imports were determined by shortages at source rather than by considerations of currency. With a plenitude of Scandinavian currency we might in the early months of war have got more timber or iron and chartered, irrespective of cost, more ships to carry them. We might also have bought ships. Apart from these exceptions there is no reason to believe that financial policy restricted our essential imports of raw materials during this period. It is doubtful whether we could have got more steel from Belgium, though we might have bought more flax. We could probably not have got more bauxite, pitprops, iron ore or phosphates from France or French North Africa; in any case from the beginning of the war these supplies were no longer checked by currency as the Anglo-French agreement came into operation.<sup>1</sup> In the case of Canada again no financial stringency checked our purchases; but in the United States it clearly did. With dollars we could have bought more steel, more timber and paper-making materials, more cotton and perhaps also the ships to carry them. But, if we had done so, our dollar resources would have been consumed well before March 1941, so the total amount could not have been increased.<sup>2</sup> It may be that the Lend-Lease Act would in that case have come more speedily, but it is hard to see that it could have come less than five months after the Presidential elections of November 1940: it could certainly not have preceded that date. To consider this further would enter upon the field of pure hypothesis. But one thing was not hypothetical. Long before the passage of the Lend-Lease Act the shipping shortage was casting its shadows over our purchases in all spheres and was setting the limit to our imports. It is to this consideration that we must now turn.

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<sup>1</sup> A provisional agreement of 8th September 1939, later ratified, under which each government advanced a sum of its own money for the use of the other.

<sup>2</sup> It is, in any case, doubtful whether by the autumn of 1940 sufficient alloy steel would have been available in the United States for increased purchases or the shipping situation permitted additional timber imports.

## CHAPTER XIII

# IMPORT POLICY AND PROGRAMMES UNTIL PEARL HARBOUR

**I**N a planned economy, it was observed in an official survey soon after Dunkirk, statistics assumed the rôle played by competition under private enterprise. A programme of imports was of necessity the ultimate link in a statistical chain which began with a shell, an aircraft or a battleship and spanned all the production stages until it reached back to the supply of the raw material at its source. But when many of the statistical links were missing the chain lost its character and failed to fulfil its function. The student of the early import programmes of the Raw Materials Department is at once brought into contact with the serious statistical handicaps under which the department laboured.

### THE FIRST YEAR OF WAR: REQUIREMENTS BY GUESSWORK

Too many imponderables weighed upon the planners in the first months of the war. No one knew how many ships would be available or how many would be sunk; whether by a swift assault of the enemy the ports would be battered into chaos or the arteries of inland communication severed; whether centres of production would operate to the full and consume all the raw materials they demanded; whether all the service departments had programmes of consumption and, if they had, whether they would abide by them; how long the scarce currencies would last. These were merely a few of the many incertitudes which were scattered over the whole field of production, some of which were perhaps inevitable in a democratically organised nation moving reluctantly into war. The first import programme of November 1939 reflected the mood of the period as well as the concept that safety lay in over-estimation. In the five years before the war imports of raw materials had averaged 30 million tons annually, that is 55 per cent. of the total dry cargo of 54½ million tons. In November 1939 the Minister of Shipping estimated that he would be able to import 47 million tons in the first year of war; and of this total the Ministry of Supply was allocated 23·9 million tons, 51 per cent. of the whole. The full discussion which led up to these figures has not survived, but it may be that after consideration it was found most practicable to allocate to raw materials the pre-war percentage of the diminished tonnage of imports now anticipated. If, moreover, we

allow for the paper and other imports which were not included in the raw materials estimates<sup>1</sup> but which in fact were expected to amount to 900,000 tons during the first year of war, the margin of difference between the pre-war and war-time proportions is even less. This ratio then had shaped the broad outline of the first programmes drawn up a month before, 'in a hurry under conditions of very great general stress'. Within this total, allocations for each commodity took account of pre-war consumption and rough estimates of service needs.

*Table 36. The raw material import programme for the first year of war drawn up in October 1939*

	Tons		Tons
<i>Iron and steel, etc.</i>		<i>Timber</i>	
Iron ore . . . . .	7,000,000	Softwoods	} . 6,500,000
Pig iron . . . . .	291,000	Pitprops and pitwood	
Iron and steel scrap . . . . .	300,000	Hardwoods	
Steel . . . . .	1,730,000	Plywood	
Manganese ore . . . . .	180,000	Boxboards	
Wolfram . . . . .	8,000	Other	
Ferro-silicon . . . . .	33,000		
Ferro-chrome . . . . .	7,000	<i>Hides, skins and tanning materials</i>	
Chrome ore . . . . .	16,000	Hides and calf skins, un-	
Vanadium ore . . . . .	1,350	dressed leather and goat	
Molybdenum ore (Molybdenite)	2,000	skin leather . . . . .	106,000
<i>Non-ferrous metals</i>		Dressed leather . . . . .	21,000,000 <sup>1</sup>
Aluminium . . . . .	81,000	Goat skins . . . . .	9,000,000 <sup>2</sup>
Bauxite . . . . .	280,000	Tanning materials and extracts	108,000
Cryolite . . . . .	2,500		
Cobalt . . . . .	245	<i>Materials for making sulphuric acid</i>	
Copper . . . . .	450,000	<i>and fertilisers</i>	
Lead . . . . .	330,000	Pyrites . . . . .	418,000
Magnesium . . . . .	3,300	Sulphur . . . . .	149,000
Magnesite . . . . .	38,000	Phosphate rock . . . . .	300,000
Nickel metal . . . . .	5,800	Potash . . . . .	40,000
Nickel matte . . . . .	38,000		
Tin . . . . .	34,800	<i>Miscellaneous</i>	
Zinc . . . . .	215,000	Abrasives . . . . .	8,000
Zinc concentrates . . . . .	130,000	Asbestos . . . . .	78,000
<i>Textiles</i>		Calcium carbide . . . . .	79,000
Wool . . . . .	665,179	Carbon black—acetylene . . . . .	20,950
Silk . . . . .	469	Hair bristles and fibres . . . . .	1,250
Flax . . . . .	15,000	Rubber balata . . . . .	120,000
Jute . . . . .	425,000	Miscellaneous . . . . .	522,000
Hemp . . . . .	112,000		
Cotton . . . . .	735,500		

<sup>1</sup> Square feet.

<sup>2</sup> Number of skins.

It was a programme which was conceived in optimism and born in buoyant hopes for the safety of the sea lanes. With the reasons

<sup>1</sup> These imports appeared in the 'miscellaneous and unallocated' items of the Board of Trade programme.

which generated the hopes that war-time dry cargo imports would be only  $7\frac{1}{2}$  million tons less than the peace-time figure we are not here concerned. But the mood was injected into the plans of the Ministries of Supply and Food and lasted, in spite of increasing difficulty, into the spring of 1940. As late as April 1940 a senior adviser of the Admiralty expressed the opinion that<sup>1</sup> 'unless some catastrophe occurs a figure approaching 47,000,000 tons is likely to be attained'. The only serious note of gloom came in successive months from the Ministry of Shipping. In November it was emphasising the potential dangers of the shipping position and urging that departments should take the earliest opportunity to cut internal consumption to the minimum. In the middle of December 1939 it pointed out that imports for the first three months of the war had been at the rate of only 36 million tons per annum, not 47 million tons; and within that 36 million tons were apparently many inessential imports which had, in any case, not been allowed for in the 47 million ton programme. In December 1939 the Cabinet itself recognised that the country must be prepared to face a reduction in the efficiency of its shipping services and referred also to the need to reconsider home consumption as well as the co-ordination of service and civil needs. Early in February 1940 it was shown that for the first four months of war the annual rate of importation had been only 38·7 million tons, although it was hoped that this rate would substantially rise. It was felt, however, that it would obviously be imprudent to base programmes on the assumption that 47 million tons would be available for consumption. It was urged, therefore, that consumption by departments should be reduced by at least 10 per cent. and that, as an assurance against a hazardous future, stockbuilding should begin forthwith. Later in the same month the attention of Ministers was drawn to a likely shortfall of imports for the first year of war to the tune of 2·3 to 5·3 million tons, and once again tighter controls over both imports and consumption were called for.

In spite of this growing pressure from the Ministry of Shipping, the 23·9 million ton programme for raw materials survived through five months of war. It was not until 1st March 1940 that a special committee was established, under the chairmanship of the Permanent Secretary to the Treasury, to review the existing import programmes; and it was at the first meeting of this committee a few days later that reductions in the programmes of the Ministry of Supply, the Ministry of Food and that for 'miscellaneous and unallocated items', the three divisions of the 47 million ton programme, were proposed. The main principle of the new scheme was an overall cut of 10 per cent., and a

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<sup>1</sup> A month or so earlier, however, the First Lord had drawn attention to the inadequacy of the existing port arrangements.

redistribution of part of the 3·3 million tons, hitherto called 'miscellaneous and unallocated items', amongst the Ministries of Supply and Food. The upshot of this was that the basic programme of the Ministry of Supply absorbed 0·8 million tons of these items and was raised to 24·7 million tons, less 10 per cent., while that of the Ministry of Food absorbed 0·2 million tons and was raised to 20 million tons, less 10 per cent. It was hoped moreover to cut the remaining 'miscellaneous and unallocated items' by 10 per cent. and to re-allocate a further 0·67 million tons either to the Ministry of Food (Allocation A) or the Ministry of Supply (Allocation B). The results may be summarised thus:

	<i>Ministry of Supply</i>	<i>Ministry of Food</i>
Basic programmes . . . . .	24·70	20·00
Less ten per cent. . . . .	22·23	18·00
Allocation A . . . . .	22·23	18·67
Allocation B . . . . .	22·90	18·00

In other words the Ministry of Supply programme would be reduced from 24·7 million tons to either 22·23 million tons or 22·9 million tons. The main cuts, however, which the Ministry offered to make were as follows:

Paper and paper-making materials . . . . .	250,000 tons
Iron ore . . . . .	300,000 tons
Cotton . . . . .	50,000 tons
Manganese ore . . . . .	50,000 tons
Bauxite . . . . .	50,000 tons
Lead . . . . .	50,000 tons
	750,000 tons

After discussion these proposals were somewhat modified and the total saving estimated at 800,000 tons, which was less than half the 10 per cent. cut proposed a month earlier. It was also decided that, as molasses were normally imported in tankers, they should no longer be taken into account when considering dry cargo shipping requirements, and the Ministry of Supply programme was accordingly reduced by 0·5 million tons. The new programme,<sup>1</sup> drawn up at the beginning of April, stood as follows:

Ministry of Food . . . . .	19·00-19·95 million tons
Ministry of Supply . . . . .	23·64 million tons
Other goods . . . . .	1·15 million tons
	43·79-44·74 million tons

After further discussions the Ministry of Supply programme was reduced to 23·27 million tons in May 1940.

<sup>1</sup> The Ministry of Supply had itself revised its basic figure of total requirements slightly.

But now events were moving swiftly. Within a month western Europe had fallen to the enemy. The whole shipping and supply position had radically altered, and many vessels, until recently neutral, were in British ports. For the moment there was the possibility that there might be a surplus of ships. In any case, during the 'respite' before the Germans could mount an all-out attack on British ships, ports and installations, it was necessary to bring to these shores as much as possible as quickly as possible. We shall never know whether the 23·9 million ton programme, or its subsequent variations, could have been fulfilled or not. At the end of May the import programmes as they then existed disappeared in an immediate and urgent effort to load every ship with the available supplies.

A significant feature which emerges from this brief sketch of the first import programme is that the Ministry of Supply was largely successful in resisting the repeated calls of the Ministry of Shipping that cuts should be made. A comparable degree of success attended the efforts of the Ministry of Food. The Ministry of Supply defended its claims with the argument that the 23·9 million ton programme was in any case an under-estimate of its minimum requirements by about  $3\frac{1}{2}$  million tons. To that extent it would have to draw upon its depleted stocks at home and therefore increase the dangers of the future. In particular, imports of steel and steel-making materials would be down by 1·3 million tons and timber imports by 1·7 million tons.

The Ministry supported its thesis with specific references to the shortage of iron ore. As early as 2nd November 1939, the Controller of Iron and Steel reported to his Minister that anxiety had existed for the last six weeks about the adequacy of the ore supplies for the blast furnaces. The situation showed signs of improvement a week later; but in February 1940 the position had sufficiently deteriorated for it to be necessary 'to inform a number of pig iron makers that it is not possible to maintain for them supplies of ore sufficient to keep all their blast furnaces in operation'. Stocks of ore had fallen since the war from  $1\frac{1}{2}$  million tons to 660,000 tons, imports were averaging 380,000 tons per month and, in spite of increasing home production, imports would have to be raised to 550,000 tons per month or it would 'be necessary to close down plant and to reduce steel production'. A few days before this the Government had been informed that in some places furnaces were actually being damped down. The available statistics show that weekly output fell slightly in February 1940 as compared with the preceding month, but the March figures were above those of January. It may be that output would in any case have dropped in February on account of weather conditions, transport handicaps and for other reasons, but the effect of this is difficult to estimate. How real the dangers were it is thus not possible to say

with any precision; but certainly the nightmare of a stoppage in the steel industry frequently intervened in ministerial deliberations.

The Ministry of Supply further sustained its case by pointing out that a reduction of shipping for the import of raw materials would not necessarily release an equivalent amount of space for other imports. For example, Sweden and Finland had, at great risk, sent their own ships through the Baltic to bring supplies to Britain. Clearly a reduction of pulp and paper imports would not release these ships to Britain for other purposes. Similarly, wool came from Australia in liners. To reduce imports of wool would not therefore release ships to carry iron ore from North Africa or timber from British Columbia. From another point of view it was shown that a reduction of pulp-wood and newsprint imports from Newfoundland might play havoc with the economy of that country, heavily dependent as it was upon the British market. Apart from all these considerations it was felt in some quarters of the Ministry of Supply that the Ministry of Shipping estimate could not in any case be assumed to be a final statement of what was likely to be imported.<sup>1</sup>

But even when it is recognised that the Ministry of Supply was largely successful in its resistance to the cuts proposed by the Ministry of Shipping, there is a still more important question to consider. How far was the Ministry of Supply successful in its own interests? To what extent did the Ministry devote its available imports to the most essential uses by close control over its consumers, and to what extent did it increase its supplies by the development of alternative sources at home? In this context we must enquire how far its import programme was suited and adapted to the part that Ministry was to play in the war effort.

An answer to at least some of these questions will be found in the earlier chapters<sup>2</sup> of this volume, which deal with the changing character of British requirements for raw materials. The story of this period as recounted there is one of a gradual recognition of the extent to which less essential consumption was to give place to needs more essential to war. It is not necessary to recapitulate that account here, or to examine the causes of the slow process of conversion to war production which marked the first period ending roughly at the time of Dunkirk. In brief, service demands were expanding at a rapid though unco-ordinated pace and included requirements scarcely relevant to a fighting force stripped for war. Yet civil demands were not contracting at any comparable rate. To take but one example, during the first seven months of war nearly half of the steel consumed was being used for purposes other than munitions. Admittedly

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<sup>1</sup> Cf. above, pp. 93-94.

<sup>2</sup> Chapters V-IX.

exports were absorbing a notable proportion of supplies, but only in the case of a few materials did exports in 1940 play an important role. Certain exports, for example semi-finished steel, were, moreover, wasteful of shipping space in the interests of currency. Steel was exported during this period on a scale equal to one-tenth of the national steel output, although the iron ore required for its manufacture had to be imported at considerable cost in shipping space.

Until the controls and plans could be tightened up and centralised, the nation continued to live on its capital. In spite of repeated jeremiads from the Ministry of Shipping, stocks of raw materials continued to fall, and the process was not arrested until after Dunkirk. Between August 1939 and May 1940 total stocks of raw materials fell from 13·1 million tons to 11·1 million tons.<sup>1</sup> Admittedly stocks fell to some extent during the winter months owing to the formation of ice in the St. Lawrence and the Baltic; but it is also significant that in the comparable period August 1940 to May 1941, under tighter controls, stocks rose. Inadequacies of stock not only presented a future danger: a shortage might seriously jeopardise current production where stocks fell below the amount necessary to maintain a continuous flow of materials to industry. As the Central Priority Department reported in February 1940,

We started the war with a ten weeks' reserve of iron ore in this country. The reserve is now down to five weeks, which is exceedingly insecure, and does not even allow of smooth working. It is already reducing production.

We have seen<sup>2</sup> also that the Ministry of Supply expected that even the 23·9 million ton import programme would oblige it to draw upon home stocks of raw materials to the extent of 3½ million tons.

The danger implicit in such a situation was in part relieved by the increased supply of raw materials from domestic sources. Of these materials two groups were of outstanding significance, steel-making materials and timber, which between them required two-thirds of the 23·9 million ton programme. The expansion of home production we shall consider elsewhere<sup>3</sup> and here only a few summary words are possible. Timber presented the greatest difficulty on account of shortage of equipment and labour, not surprising in a country which had hitherto imported all but a tiny part of its total requirements of this material. But in the ten months, September 1939 to June 1940, a total of 1,400,000 tons of timber were produced in the United Kingdom as compared with 3,067,000 tons imported during the same

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<sup>1</sup> See Appendix 22.

<sup>2</sup> See p. 193.

<sup>3</sup> Chapters XX and XXI.



period.<sup>1</sup> Iron ore showed also a rapid expansion of production, though in part this was based on the pre-war developments at Corby. In August 1940 home ore production had reached the average weekly rate of 357,600 tons, compared with the output of 247,100 tons per week in September 1939. But hematite, which was such an important and essential constituent of the import programme, failed to respond to the pressure for increased domestic supply. In one other respect the position might have been alleviated: by the salvaging of used material, metal scrap, waste paper, etc. But of this aspect there was little to record in the first year of war. It was not until after Dunkirk that the first salvage schemes were inaugurated.

How far then did the import programmes and policy of the first year of war respond to the gathering crisis? The view of one Minister at the end of 1939 that the restrictions upon inessential imports, already in operation, were more thorough than at any time in the First World War was an opinion hardly applicable to raw materials. A less optimistic view pointed out that existing import programmes included many commodities not essential to the conduct of the war. The current import programme (47 million tons) was contrasted with that of 1917, which amounted to 34 million tons. Nor were ministries altogether happy about the existing methods by which the Materials Committee endeavoured to allocate the available supplies amongst the principal consumers. Meanwhile the Lord Privy Seal early in the new year urged that 'the Ministry of Food and the Ministry of Supply should between them exercise a complete control' over their imports, especially as 'the present programme of imports contemplated by the departments was probably optimistic'. At the same time the Services were being asked to give greater attention to the 'discovery and utilisation of alternatives or substitutes'.

The import and consumption programmes of the first six months of war, because they could not be based upon any coherent estimate of minimum requirements, used shipping space and consumed stocks, in other words future shipping space, to satisfy needs which might well have gone unrequited. Much has been said on this subject elsewhere. In this place one quotation must suffice. It was reported to a committee of Ministers:

To quote but one or two examples, the production of women's shoes during the first six months of the war was substantially in excess of that a year earlier; furniture is still being manufactured upon a very large scale; the output of private motor cars for the home market has been allowed to continue at a substantial level, using up vital supplies of raw materials and skilled labour.

It may perhaps be said that a consumption programme which

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<sup>1</sup> See Appendix 27.

involved the depletion of stocks to the tune of  $3\frac{1}{2}$  million tons while such demands were being satisfied was a programme not yet identified with the stark realities of the situation.<sup>1</sup> But with the spring of 1940 shipping was coming to be recognised as perhaps the greatest limiting factor over the whole war effort and, as such, was postulating much more complete controls over the programmes of the Ministries, a process which was hastened by the imminent congestion at the ports. Other influences came to the aid of the Ministry of Shipping. The succession of defeats on the continent of Europe prepared the mood of ministers and public for more drastic cuts, while the losses of sources of supply themselves obliged a fundamental re-examination of existing import programmes. In June the departments agreed

if necessary to base releases for consumption during the twelve months beginning 1st July 1940 on not more than 35 million tons of imports.

Any excess available was to be used for stockbuilding and urgent war production 'in preference to maintaining civilian consumption'. Preparations were being made to modify the import programme as a whole to bring in more processed commodities at the expense of the bulkier, unprocessed commodities such as iron ore; home production was to be pressed on at a greater pace, and a widespread salvage campaign was to be inaugurated. At the same time the whole scale of consumption, both civilian and service, was to be entirely overhauled. The effects of these decisions we must examine in the next section; but the acceptance of the 19 million ton programme by the Ministry of Supply, involving a reduction in steel imports from an original estimate of 13.3 million tons to 9 million and timber from 7.4 million tons to 4 million, was indicative of the changing mood.

#### NEW PROGRAMMES AND POLICIES: SEPTEMBER 1940—PEARL HARBOUR, DECEMBER 1941

Already, as early in February 1940, departments had been advised that their programmes for the second year of war should be prepared on the hypothesis that in that year our capacity to import might be seriously curtailed. But once again the Ministry of Supply was uncertain on what basis it should operate. 'Requirements [wrote one official to his colleague in the Ministry] will clearly depend so much upon policy that estimating is, I suppose, practically sheer guessing'.

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<sup>1</sup> The same applied to export policy. It was, for example, stated in February 1940 that 'the Iron and Steel Control has been animated hitherto by the not unnatural desire to hold an even balance between different exporting trades, so that each may maintain trade connections that will be of value when the war is over'.

He added that: 'an attempt to work up a calculation item by item might well be waste of time, and might even be misleading'. But a programme was asked for and 'it is a case where a guess must be given however bad'. He observed also that estimates of steel requirements, for example, would be prepared on a 'realistic' basis, that is, 'on the way that steel purchases actually appeared to be going rather than on, for instance, a 20-division or a 55-division Army'. Some months later, in July 1940, the Minister of Supply officially drew attention to the many problems which determined that 'a detailed programme for so far ahead as twelve months is difficult to prepare and is exceptionally liable to amendment'.

By now indeed the Ministry of Supply had been asked to reduce its import programme to 19 million tons. The total estimated dry cargo imports for the second year of war, amounting to 35 million tons, were to be divided as follows:

Ministry of Supply	.	.	19 million tons
Ministry of Food	.	.	15 million tons
Board of Trade	.	.	1 million tons
			<hr/>
			35 million tons
			<hr/>

This, the Ministry of Supply showed, meant a heavy cut in steel and timber imports: these two 'bulky' imports were between them to contribute about 7.7 million tons. The remaining economies were to come from textiles, hides and leather, paper and paper-making materials, abrasives and other commodities. For the present, however, the position was much happier and total dry cargo imports were coming in at the rate of 50 million tons a year. It was decided, therefore, that if there was at any stage a temporary shipping surplus it should be used to bring in raw materials.

This combination of a temporary abundance with a gloomy forecast induced the Ministry of Supply to base its calculations, in effect, upon three different programmes. The basic programme was the '19 million ton programme'; but, as the Ministry felt unable to cut steel demands further, it took 20½ million tons as the basis of *its* calculations. In August 1940 this programme was set out roughly as follows:

	<i>Tons</i>
Iron and steel, etc.	10,519,500
Non-ferrous metals, etc.	2,023,200
Textiles	702,000
Timber	4,000,000
Hides, skins and tanning materials	200,780
Paper and paper-making materials	800,000
Materials for sulphuric acid and fertilisers	1,481,400
Miscellaneous	784,850
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TOTAL	20,511,730
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But by now indeed the prospect existed of importing in all 42 million tons of dry cargo, and the Ministry of Supply was therefore allowed 23 million tons. This was the 'supplementary' programme, with the additional 2½ million tons allocated between a number of commodities, as follows:

	<i>Tons</i>
Iron ore . . . . .	1,700,000
Timber . . . . .	250,000
Fertilisers, etc. (pyrites) . . . . .	200,000
Textiles . . . . .	150,000
Paper, etc. (newsprint) . . . . .	100,000
Miscellaneous . . . . .	100,000
TOTAL . . . . .	2,500,000

Thus iron ore claimed more than half of the additional shipping space. Beyond this there offered the distant prospect of what was called the 'optimum' programme of 28–29 million tons. Should this ever materialise iron ore imports were to be raised by a further 3,200,000 tons.

The 42 million ton programme survived into November 1940, although the imports for September and October showed that the 'windfall' period inaugurated in the summer was drawing to a close. Early in November it was urged that the total estimate of imports should in fact be scaled down to 35 million tons, and the War Cabinet decided that the whole programme should be overhauled along these lines. A few days later, at a meeting of ministers, it was stressed that the imminent cuts in the import programmes should not be cushioned simply by an equivalent cut in stocks. To the drastic proposals as a whole the Minister of Supply felt obliged flatly to reply: 'I have found it impossible to produce a practicable programme on that basis'. Having made what he considered the most stringent cuts, and with the intention of reducing all stocks to the minimum safety level except for those materials 'immediately essential to our direct war effort', he still felt that he must ask for a minimum of 21 million tons for the second year of war. Requirements of imported steel and steel-making materials now stood at 11.9 million tons, but requirements of timber had been forced down to as low as 3.1 millions. He was hoping for a greatly increased rate of home timber production, but in spite of this stocks would fall to a dangerous level. If he were forced to go below 21 million tons, then any further cut would have to be in the import of fertilisers, which might modify the existing schemes for the production of food at home. The only other alternative was a cut in steel, which might jeopardise the whole war production programme. Shortly afterwards the Minister of Food stated that, al-

though invited to cut his programme to 15·42 million tons, he could not in fact reduce it below 15·7 millions.

Although its inability to make such substantial reductions was stressed by the Ministry of Supply, it none the less was recognised within the department that imports would in fact have to be severely cut. It was feared indeed that imports for the period December 1940 to February 1941 might not exceed  $1\frac{1}{4}$  million tons per month, that is, a rate of 15 million tons per year. As the situation deteriorated and the military demands for ships moved upwards, the Ministry of Supply import programme was submitted to a searching analysis by the Director General of the Ministry of Shipping. In particular he drew attention to the steel programme, and pointed out that 'our ports are already congested with steel which receivers are unable to remove'. He estimated that at 'the current rate of consumption, about one-fifth of the import of steel is intended for stock'. Less impressive savings could be expected from other materials, but in all the Director General proposed a total cut in the 21·2 million tons programme of ten per cent. After discussion the Minister of Supply replied that, because 'it is reasonably certain that during the early months of the year the rate of consumption [for essential purposes] will not reach the level provided for in the programme', he was accordingly prepared to accept a cut *for the next four months* in the import of iron and steel, copper, lead and zinc, which would bring the total import down to the rate of 19 million tons per year. He asked however that the Prime Minister's 'special attention' should be drawn to the proposed reduction in the import of iron and steel.

With the turn of the year the system of programming changed its basis. Henceforward the estimates were calculated not according 'to the year of the war' beginning on 1st September, but according to the calendar year. For the remainder of this section we are concerned therefore with the programme for the year 1941 as a whole, not the period September 1940 to September 1941; but to the programme for the second year of war, as such, we shall briefly revert in a moment. At the same time, in December 1940, to ensure a firmer grasp on import policy the Import Executive was established at ministerial level. That such a need existed was confirmed by a report presented in January 1941 by the chairman of the Materials Subcommittee of the Production Executive.

From my experience as chairman of the Production and Materials Committee for the first sixteen months of war [he reported] I know that departments, almost without exception, ask for more materials than they can use.

He found that, even with greater knowledge and more careful estimation, current consumption of steel and copper was 'at least

twenty-five per cent. below requirements submitted by departments as a whole'. Even for the future he considered that, until full night shifts came into operation, steel and copper consumption would be twenty per cent. below estimates. He pointed out, in conclusion, that estimates of requirements of materials and manpower were incomplete without adequate information about 'how far departments have the capacity in use or in sight to utilise the labour and material for which they ask'.

Early next month this report was given added point as estimated total imports for the second year of war were put at 32 million tons and the Ministry of Supply share at 17 millions. Indeed, because of the need to raise Ministry of Food shipments to the scheduled figure by the end of April, the Ministry of Supply had to agree to transfer some of its ships to that Ministry. As the outlook darkened the President of the Board of Trade drew attention to the perilous stock position and expressed the opinion that 'we appear to have adopted a policy which will lead us straight to very severe shortages in the third year of the war'. He questioned whether the current allocation to the Ministry of Food of as high a proportion as  $\frac{19.42}{35}$  of current arrivals paid due regard to the gravity of the position. In March, with the situation still deteriorating, a new division was made of the available tonnage. On the basis of an estimated import of 31 million tons, food imports were not to be allowed to fall lower than 15 million tons, the Board of Trade was to receive its one million tons and the Ministry of Supply was to be satisfied with 15 million tons. If total imports fell still lower than 31 million tons then the cuts were to be borne by the Ministry of Food and the Ministry of Supply on the basis of one ton cut in food to two tons in supply. If they exceeded 31 million tons, the benefits were to be shared in the same proportion. This severe reduction of four million tons in the original allocation to the Ministry of Supply was to be met from ferrous materials, timber and pulp. Steel was now available in the United States and it must no longer be regarded as indispensable to keep the whole of the existing steel industry in operation. Materials were to be imported in the most concentrated forms and over the shortest routes.

Without challenging the basic framework of this policy, the Minister of Supply was impelled to emphasise the dangers implicit in a decision under which virtually the whole of the latest cut was imposed on raw materials and semi-manufactures. Some materials, he admitted, could be cut, but this did not apply to war metals at a time when the output of munitions was expected to rise steeply during the coming year, or to fertilisers. With the possibility that dry cargo imports might not rise above  $28\frac{1}{2}$  million tons, raw material imports, on the basis of the latest directive, would not exceed  $13\frac{1}{2}$  million tons, a grim prospect if compared with the

30 million tons which came before the war. Even as late as 10th May, however, it was hardly thought likely that total imports would exceed 28 million tons; but a little later in the month the Minister of War Transport introduced a note of cautious optimism, accompanied by a warning that very many uncertainties remained. Shortly afterwards the Prime Minister confirmed to his colleagues that all plans should assume that at least 31 million tons would be imported in 1941; and by midsummer the whole position was showing a notable improvement. By now also imports of raw materials were fully meeting the estimates of 15 million tons out of the 31 million ton programme; and by August the Ministry of Supply was benefiting from the ratio laid down for imports exceeding 31 million tons. Indeed, by October the position had so far improved as to call once again for a reminder, this time from the Lord President, that the improvement in the position should be used 'not so much to increase consumption as to increase stocks of all kinds, particularly stocks of raw materials'. By the end of the year, however, renewed shadows were appearing in the shape of a diversion of some American shipping to Russia, to make up for shortfalls in deliveries there, and there were also demands for ships in the Middle East. In the event total imports for the second year of war (September 1940–August 1941) amounted to 31½ million tons, of which the Ministry of Supply received 16½ million tons, while for the year 1941 as a whole total imports reached 31 million tons, of which the Ministry of Supply received 15 million tons.

This approximation of imports to the lowest estimate of 15 million tons calls however for somewhat more detailed examination. It represented a fall of fifty per cent. on normal pre-war imports and as much as a 33⅓ per cent. drop on imports for the first year of war. Great as this reduction was, however, its severity was modified by an important consideration.

The principle behind the directive of March 1941<sup>1</sup> that goods should be imported, so far as possible, in a processed rather than an unprocessed form was indeed being applied from the period after Dunkirk, but more particularly after the Lend-Lease Act of March 1941, when currency conditions no longer determined that goods must be imported in the cheapest, that is the least processed, form. Thus, the implicit conflict between currency and shipping needs, which had lasted through the first eighteen months of war, was now resolved. In the interests of shipping, as well as for other reasons, goods were being carried in a more finished form. Table 37 indicates the change which was taking place as far as the United States was concerned.

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<sup>1</sup> See p. 201.

Table 37. *Raw material imports from the United States for periods II (July 1940–March 1941) and III (April–December 1941) given in percentages of period I (September 1939–June 1940)*<sup>1</sup>

(Period I (September 1939–June 1940) is 100 per cent.)

Material	Period II July 1940– March 1941	Period III April– December 1941
Iron ore and scrap . . . .	181	133
Iron and steel . . . . .	842	822
Non-ferrous metalliferous ores and scrap . . . . .	51	71
Non-ferrous metals . . . . .	322	188
Wood and timber . . . . .	126	81
Wood and timber manufactures . .	201	88
Raw cotton and cotton waste . . .	36	39
Industrial pulp and other textiles .	63	30
Hides and skins . . . . .	11	5
Leather . . . . .	5	2
Paper-making materials . . . . .	221	149
Paper, cardboard, etc. . . . .	125	35
Cotton yarn and manufactures . . .	196	138
Chemicals . . . . .	115	76
Miscellaneous . . . . .	182	296
TOTAL . . . . .	165	139

Source: Based on the *Trade and Navigation Accounts*

<sup>1</sup> This table is based on average monthly imports in £ sterling.

A few examples drawn from this list will serve to show the character of these developments. It is true that iron ore and scrap imports rose in period II by eighty-one per cent., but in period III they were falling steeply. On the other hand iron and steel imports rose by nearly 750 per cent. in period II and almost maintained that level in period III. Again, raw cotton was less than two-fifths of the figure before Dunkirk while cotton yarn and manufactures, though small quantitatively, rose by nearly 100 per cent. in period II, but fell sharply in the next phase. A number of the other *raw* materials showed notable falls during the eighteen months after Dunkirk. To the extent that this change took place, and it is again not possible to express it in exact statistical terms, to that extent the 15 million tons of imports were worth more in terms of consumable goods ultimately than they would have been before the war.

This change in the structure of our import programmes ameliorated the losses we had to endure. But there was also something on the debit side. The 30 million tons of the pre-war period came across the seven seas and from near and distant sources. During 1940 and 1941 many of these sources were closed to us and those that we had lost were *near* or comparatively near: northern and western Europe. To



that extent the Ministry of War Transport had to cover more miles to bring the same tonnage of goods: the 15 million tons used the same shipping space over a longer period than 15 million tons would have required before the war. Since allocations of shipping space during the war were not made upon a ton-mile basis but solely on that of tonnage, no data exists from which any statistical conclusion can be drawn. But certainly it can be deduced that if the old sources had remained, then the Ministry of War Transport would have been able to offer a better return on each ship. In other words, more raw materials would have been brought by the same number of boats. The same applies, *mutatis mutandis*, to the Ministry of Food and the Board of Trade.

Meanwhile, the existing disposition of ships was not altogether a happy one for the Ministry of Supply. Too many appeared to be concentrated upon the Atlantic at a time when a good deal of the Ministry's imports were from sources other than North America. The only bulk imports which could fill the remaining space in Atlantic ships in 1942 were timber, steel, cotton, phosphate rock and sulphur. Timber imports were restricted as the result of high policy decisions. If American cotton replaced that coming from India, Brazil or Africa then the British export trade in goods using American-type cotton would have had to be abandoned under the conditions of lend-lease aid. Increased stocks of sulphur and phosphate rock would have been valuable, but lack of suitable storage capacity imposed limits. Steel, then, remained the best investment in existing shipping space, but even so it was felt in the Ministry of Supply that the Ministry of War Transport 'should be asked to alter their shipping dispositions' and release in 1942 sufficient shipping from the North Atlantic service to carry 400,000-450,000 tons of cargo from elsewhere. More specifically, shortages from these other sources existed in copper, lead (especially silver lead bullion), zinc, sisal and, most seriously, in chrome ore. But more fundamental changes in the distribution of ships were brewing as the last weeks of the year introduced a series of major military catastrophes. Before considering these developments, however, we must look at certain materials in greater detail.

#### IRON AND STEEL

The stresses which the import programmes had to endure were, of course, increased by the special claims which steel and steel-making materials made upon shipping space. For example, in the 19 million ton programme their share amounted to nine million tons, nearly half the total. To alleviate some of this pressure, as well as for other reasons, it was proposed to import these materials in as processed a form as practicable, though there were obvious limits to this con-

version as long as currency was perilously scarce. In spite of the fact that no currency solution was yet in sight, the process of modifying the import programme in this direction was already under way in the Dunkirk period, both to save shipping and to build up stocks in their most finished form. Along parallel lines instructions were given to reduce 'direct steel exports' from October 1940 since to export raw steel meant a waste of shipping space in both directions. This policy, however, had to be reversed temporarily a year later when the inability of the American steel industry to meet the enormous weight of current demands, largely through administrative difficulties, led to the 'repatriation' to this country of a considerable quantity of requisitions for India, the Dominions and the Colonies, requisitions which had hitherto been placed in the United States.<sup>1</sup> The period ended, however, with serious protests by the Ministry of War Transport against this policy; the 250,000 tons of iron and steel involved, 'if measured in terms of iron ore, represents the use of about 500,000 tons d.w. of shipping . . . at great risk and at the cost of exceptional strain to our ships'.

When the Battle of the Atlantic advanced to its peak the Ministry of Supply was pressed, as we have already seen, to cut its iron and steel imports in keeping with the overall reductions being imposed. It agreed in December 1940 to reduce steel imports by 155,400 tons per month for the next four months, that is take 620,000 tons off its annual programme. But it was pointed out in the same month, and again in January 1941, that steel consumption was in fact well below, and likely to stay well below, the current estimates of requirements. In December 1940, moreover, supplies of ferro-alloys at American ports were less than the ships available to carry them; by March 1941, on the other hand, the supplies of steel at American ports were 'getting up to about the top permissible limit of railway import storage'. But these were perhaps stresses and strains inevitably arising from the worsening shipping crisis.

To meet it the Ministry was now engaged in calling upon domestic sources more fully than ever before to come to the aid of imported supplies. The home production of ore was still rising and averaged 1,581,000 tons per month in 1941; home scrap (excluding scrap arising in works of steel-makers and steel-founders) rose to an average of 270,000 tons per month. Here were notable contributions to the total supply of steel. The limit to iron ore production was set by the labour supply position; scrap collections might have been increased, but this would simply have been to draw on capital needed for future

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<sup>1</sup> In October 1941 a request was made for 20,000 tons per month, but the Iron and Steel Control expressed its ability to send 40,000 tons per month for some months ahead. Authority was granted for the repatriation of such orders to the extent of 120,000 tons in the winter of 1941-42.

years. The supply of steel for less essential consumption was not yet cut to the bone, but it was nearing it.

#### TIMBER

Timber was the next important claimant upon shipping space, and this raised special problems with demand now largely concentrated upon Canada, except for certain types obtained from other sources. On the basis of the original programme for 1941 the minimum requirements were put at three million tons. Whatever may be said about the early programmes, it has been shown in Chapters VII and VIII that civilian and export consumption of timber was at an extremely low level by 1941; and, so far as the writer is aware, no evidence has been produced of any extravagance in its use during this period. Shortage of domestic supplies (i.e. mature trees), equipment and labour limited the extent to which the home production of timber could ease the pressure upon ships. But notable advances continued to be made. Softwood production increased by more than fifty per cent. in 1941 compared with 1940, hardwoods rose by thirty-three per cent., though mining timber fell slightly for the period. By the spring of 1941, however, virtually no timber was being imported for pitprops.<sup>1</sup> In the event less than two million tons of all timber were imported instead of the three millions proposed in the first programme of the year. Yet some measure of the price paid for these import economies is to be seen in the timber stock figures. During the first half of 1941 the stock position of raw materials as a whole began to decline somewhat, but improved again in the second half of the year. The timber position, however, continued to deteriorate throughout 1941.

#### OTHER MATERIALS

Of the remaining bulk materials, the requirements of phosphate rock and other substances used in the manufacture of fertilisers were determined by the food production plans. The original programme for the second year of war called for 1·57 million tons, the revised one (the 15 million ton programme) for 1·15 million tons and in fact 1·13 millions were imported. This notable cut was achieved in part by the increased use of blast furnace by-products and in part by a significant reduction in stocks of fertilisers. The demand for non-ferrous metals, of which copper claimed the lion's share, with bauxite and aluminium combined taking the second place, accounted for a total of two million tons in the first programme; the demand was raised in the second programme but imports for 1941 just reached the first estimate of two millions. The various schemes for the increased

<sup>1</sup> Compared with 71·1 thousand tons for the month of February 1941, only 100 tons came in August of that year.

home production of non-ferrous minerals contributed, as was to be expected, only small amounts of the total demanded by the war industries. The stock position varied for the individual commodities but taking the non-ferrous metals as a whole there was no striking fall nor any significant rise. The textile raw materials, including cotton, wool, hemp, jute and flax, accounted for 0·82 million tons in the first programme and for 0·91 in the second programme, but imports for 1941 reached only 0·76 million tons. Cotton shipments were in fact cut in the early summer to yield space for food. Stocks of these raw materials continued to fall during the year, further cuts in service consumption were made and the civilian clothes rationing scheme was introduced in June 1941. Rubber imports in 1941 accounted for 168,000 tons; but in view of subsequent developments it was unfortunate that the supply of shipping lagged behind the rate at which stocks of raw rubber were accumulating in the Far East.

The fall in imports of raw materials in 1941 to approximately half the pre-war figure obviously involved a serious change in the whole balance of production. An official estimate made in September 1941 argued that a saving of 14 million tons of imports as compared with the pre-war period had been achieved by the following economies:

(i) Reduction in materials required for exports of metal goods, textiles, paper, etc. . . . .	5 million tons
(ii) Economy in domestic consumption of timber . . . . .	7 million tons
(iii) Economy in domestic consumption of paper	2 million tons
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Total . . . . .	14 million tons
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In addition, it was claimed that supplies had been increased by six million tons through the increased production of timber and iron ore (four million tons) and by substituting steel for iron ore imports (two million tons). Thus 20 million tons in all had been saved, that is five million tons more than the cut in imports, and this had made possible increased war consumption of metals, rubber, fertilisers and other commodities. The general picture conveyed in Chapter VIII is that in 1941 civilian consumption had been very severely reduced, and certainly after that there could be no such impressive falls. Similarly, by then the home production and salvaging programmes were advancing to their peaks while, in general, stocks of raw materials were beginning to rise again. Over-estimation had apparently been going on, particularly in the case of steel, and especially in the early part of the year. But import programmes were well on their way down to the minimum, though not yet there, when the first shots were being fired in the Pacific.

## CHAPTER XIV

# IMPORT POLICY AND PROGRAMMES FROM PEARL HARBOUR TO THE END OF THE WAR

THE difficulties of forecasting with any exactitude Britain's shipping position for 1942 arose from a number of circumstances. Clearly her own shipping resources were inadequate to fulfil an import programme submitted even to a drastic shrinking process. She must look to America for assistance. But how much shipping space would America make available? That would depend upon the number of ships sunk, the number built and, an increasingly significant consideration, how many were drawn off for military operations. For Britain, more dependent than either of her two great allies upon overseas supplies of food, raw materials and the weapons of war, these incalculable factors presented grave and fundamental issues. With them the War Cabinet and the Ministry of War Transport were principally concerned although, of course, all consuming departments were bound to face the future with grim forebodings. But the Ministry of Supply was also exercised over another large question. Strategic considerations might well deflect ships from the intended ports of supply. Of those ships that *were* in fact made available, how many would appear at the right ports at the right time? The problem of the disposition of ships, no minor issue in earlier periods, loomed larger still as the supply of ships, and programmes of imports, began seriously to assume austerity lines.

### THE CRISIS OF 1942

The first provisional import programme for 1942 was drawn up in September 1941, when the amount of American assistance in prospect was still very uncertain. The Ministry of War Transport estimated that with the continuance of the current measure of American aid we could import in all 31 million tons of goods during 1942, although it was hoped that additional American help would raise the total to 33 million tons. This hope was reflected in the first programme, amounting to nearly 33 million tons, divided as follows:—

	<i>Thousand tons</i>
Ministry of Supply . . . . .	16,500
Ministry of Food . . . . .	15,000
Board of Trade . . . . .	329
Munitions and Aircraft . . . . .	950
	<u>32,779</u>

With the addition of various items of 'lesser priority'<sup>1</sup> the total programme reached 35·3 million tons. But the Import Executive, when putting forward the lower estimate of 33 million tons, calculated that if necessary both supply and food programmes could be cut by one million tons 'without any adverse effect on direct munition production during 1942'. When, however, the Lord President suggested that a 33 million ton programme appeared over-optimistic, the chairman of the Import Executive explained that the American Government took the view that we needed to import between 33 and 35 million tons annually and was anxious to help us to secure at least the lower of these two figures. But even the 31 million tons which the Import Executive thought 'would suffice to meet our minimum needs' was not a level of imports which must be achieved at all costs; the Executive pointed out that it had 'not attempted at this stage to set out a minimum figure for essential imports' and that it could make a further report when it knew more about shipping requirements for military purposes.

All these discussions took place before the end of 1941 and before Pearl Harbour, when the European war assumed global dimensions. Far more flowed from this event than can be considered in the limited context of import policy and programmes. But, apart from all else, Pearl Harbour stifled the note of modified optimism which had been heard in the earlier discussions. Even in mid-November, before Pearl Harbour, mounting Russian and Middle Eastern demands for supplies and a decline in American shipping assistance had resulted in a review of the import programme and its reduction at the beginning of December to 28 million tons, of which raw materials still claimed roughly a half. The Ministry of War Transport, in fact, refused to commit itself to any definite estimate for 1942 as a whole but warned departments not to count on more than seven million tons during the first quarter of the year. In February 1942, when the full effects of Pearl Harbour were becoming obvious, estimated import requirements were reduced to 26 million tons. Raw material programmes came tumbling down from 16·5 million tons originally to 12·2 million in February 1942, and by March, R.M.D. was acting on the assumption that only 10·5 million tons would be received. The worst fears were not realised and imports for 1942 reached 11·5 million tons, one million more than the lowest estimate, but well below what had been originally hoped for.

Before we consider what these developments signified in detail we must discuss one other consequence of Pearl Harbour on a different plane. By early November the decline in the shipping space at our disposal had brought into sharp focus one important administrative

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<sup>1</sup> Amounting to one million tons for the Ministry of Food, 1·5 million tons for the Ministry of Supply and 15,000 tons for the Board of Trade.

problem: no authority existed to deal centrally with all shipping requirements and to co-ordinate military and civil demands for shipping space. During the early months of 1942 the need for such an authority became more and more obvious as the conflict between these two demands for ships intensified; and, as a step towards resolving the conflict, the Import Executive was superseded in May 1942 by a new War Cabinet Shipping Committee with more specific functions in this field.<sup>1</sup> At the same time the responsibility for presenting an import programme covering all commodities, other than those for which the Ministry of Food was responsible, was given to the recently established Ministry of Production, although the Ministry of Supply still remained responsible for the day to day implementation of its own share.

#### WAR IN THE PACIFIC

The weeks following Pearl Harbour witnessed a continuous deterioration of the shipping situation. Far Eastern warfare drove upwards the operational demands for ships, and the United States' new rôle as a belligerent dissipated British hopes of increased assistance from that quarter; in fact, some of the help we had already been receiving had to be withdrawn to allow for the de-gaussing<sup>2</sup> of American ships. As our shipping prospects seemed likely to remain shrouded in uncertainty for some time while the strategic demand for ships would almost certainly be intensified, the Lord President decided that the time had come for import estimates to be prepared along rather different lines. It was no longer practicable simply to make an estimate of probable importing capacity for a year ahead and allocate it among rival claimants. If both civil and military demands for shipping were to be satisfied, it was essential to have an estimate of the absolute minimum requirements which would suffice for 1942 'without impairment of our essential war effort, on the assumption that stocks were reduced by the end of the year to the safety line'. Raw material requirements on this basis were stated to be 12·2 million tons; 12·3 million tons of food and 1·5 million tons of finished goods brought total requirements up to 26 million tons.

The Ministry of Supply's new estimate of minimum requirements represented a substantial reduction below its original 16·5 million ton programme, and even fell some way below the rate of 14 million tons previously regarded as likely to result in a 'serious situation'. One official of the Ministry criticised the whole conception of 'an absolute minimum' as being 'extremely vague and ill-defined' and

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<sup>1</sup> This Committee, under the chairmanship of the Secretary of the Department of Overseas Trade, consisted of representatives of the service departments and the Ministries of Production, Food and War Transport.

<sup>2</sup> A protective device against magnetic mines.

questioned the wisdom of releasing such figures. An attempt was meanwhile made to allay apprehensions within the Ministry of Supply by circulating an internal memorandum to the effect that 'there has been no suggestion to date that import programmes should be prepared on this rock-bottom basis'. The Import Executive was warned that this programme assumed a 'restriction of the supply of goods to the civilian population both in the United Kingdom and in the Empire and friendly countries which would be possible only in the event of obvious and extreme urgency'. It was also emphasised that 'stocks could only be run down once' and that the maintenance of full United Kingdom war production in 1943 would call for 'very much higher' imports in that year.

We must now look at the Ministry's first three programmes which are summarised in Table 38 together with 1941 imports, which provide a basis of comparison.<sup>1</sup>

*Table 38. Raw material import programmes for 1942 (compared with actual 1941 imports)*

Group	Thousand tons			
	1941 imports	16·5 m. ton programme	14 m. ton programme	12·2 m. ton programme
Iron and steel . . . .	7,500	8,700	7,155	5,620
Non-ferrous metals . . .	1,500	1,800	1,616	1,700
Textiles . . . . .	800	1,130	922	800
Timber . . . . .	1,900	1,320	1,005	1,170
Hides, skins, leather and tanning materials . . .	200	200	203	210
Paper and paper-making materials . . . . .	600	750	724	650
Sulphuric acid and fertilisers	1,700	1,650	1,390	1,220
Miscellaneous . . . . .	1,000	950	990	830
TOTAL . . . . .	15,200	16,500	14,005	12,200

The outstanding feature of the 16·5 million ton programme<sup>2</sup> was the increase of requirements in the iron and steel group over 1941 imports. Recent departmental estimates had forecast a rate of finished steel consumption during the first six months of 1942 equivalent to an annual rate of 12·2 million tons, over two million tons higher than consumption from October 1940 to September 1941; but there were indications that this represented a 'serious over-

<sup>1</sup> Fuller details of the programmes are given in Appendix 21.

<sup>2</sup> The 16·5 million ton programme was designed to cover:

- (i) direct and indirect war production requirements . . . as at present known,
- (ii) consumption for other needs at the same rate as in the last quarter of 1941, except in cases where further restriction is planned or envisaged, and
- (iii) some rebuilding of stocks where these have been perforce run down unduly during 1941'.



estimate', especially as a substantial reduction had just been made in building programmes. The Ministry itself based its import requirements in the iron and steel group on the expectation that consumption would 'fall somewhat below the estimated requirements'. In some other cases, however, the apparent rise above 1941 imports did not indicate any real upward movement in consumption. Part of the increase in textile requirements arose from the inclusion in the Ministry of Supply programme for the first time of 130,000 tons of jute goods,<sup>1</sup> while the increase in the paper group consisted almost entirely of woodpulp and pulpwood to build a reserve of cordite pulp and increase stocks of mechanical pulp as an insurance against a possible inadequacy of waste paper supplies. The other aspect of the programme of some significance was the high level of stocks it assumed. The 'rough working principle' upon which the programme was prepared was that 'imports during 1942 should meet consumption and leave six months' consumption in hand at the end of the year', although in many cases individual circumstances modified this general rule. Stocks of some materials<sup>2</sup> had fallen during 1941 and in one or two cases it was intended to rebuild these during 1942; but in general the level of total stocks of imported materials had risen considerably during the sixteen months between Dunkirk and October 1941, from 10·1 million tons to 12·8 million tons.<sup>3</sup> The level of total raw material stocks could, of course, be a misleading indication of the real situation since it might not reveal serious declines in the stocks of certain individual materials, but it was suggested by one critic that a reduction of two million tons might be achieved during 1942 without damage to the war effort.

When the reduction of raw material imports from 16·5 to 14 million tons was proposed, ferrous materials, which accounted for roughly half the estimated requirements, naturally suffered most. It was estimated also that as much as 890,000 tons of imports might be saved by keeping stocks of raw materials in general at a 'minimum safety level', or, in some cases, a little below this level, and by cuts in the consumption of softwoods, phosphate rock and textiles; but this still left a cut of some 1½–2 million tons to be borne by the iron and steel group. The Ministry considered that such a cut could be imposed without any substantial interference with direct war production during 1942, but reduced allocations to railways, collieries, civil factories and general building and maintenance were likely to result in the country entering 1943 with its transport and industrial systems in a weakened state.

<sup>1</sup> These jute goods were previously included in the Board of Trade programme.

<sup>2</sup> Including timber, lead, chrome ore, Indian hemp, jute, wool and newsprint. In the last two cases the number of weeks' consumption in hand remained approximately the same owing to a fall in consumption.

<sup>3</sup> See Appendix 22.

The further reduction of nearly two million tons to the 12·2 million ton rate of raw material imports again bore most heavily on the iron and steel group. By now, however, R.M.D. had reverted to its 12 million ton estimate of finished steel consumption during 1942, which it had been forced to abandon in the 14 million ton programme; but as the Lord President had now called for 'a running down of stocks to the fullest possible extent', a reduction of 2½ million tons in reserves of pig iron, steel and scrap was envisaged. It was calculated that this would make possible both the return to a 12 million ton consumption rate and the necessary reduction in ferrous imports. The rest of the programme reductions were also largely to be secured by the running down of stocks, particularly of textiles and some of the fertiliser materials. The one group of materials where virtually no cut was proposed was non-ferrous metals; requirements had fallen slightly from their originally estimated level but stocks were on the average lower than for the majority of materials and it was felt that they must be held at their present level.

Criticism of this programme was largely directed against its estimates of consumption rather than its provisions for stock reductions which, amounting to about four million tons in all, were substantial. The Minister of War Transport pointed out that the programmes of all three departments alike assumed that the consumption of imported commodities would be considerably higher in 1942 than it had been in 1941. The only materials where any real reduction in consumption was proposed were raw cotton and wool, timber, paper-making materials, rubber (where the reduction was forced upon the Ministry by extraneous circumstances) and pyrites, where the loss was more than balanced by a rising consumption of sulphur. The Lord President criticised the statements of minimum requirements of both food and raw materials, particularly food, which 'did not seem to be related to the minimum standards which he had in mind', and requested that both programmes be further scrutinised. The only specific comment he had to make on the Ministry of Supply programme was that some of its estimates of consumption, particularly of steel, timber, newsprint and possibly fertilisers, seemed to be 'on the high side'. The Minister of Supply then appears to have submitted to the Lord President two further programmes of 11 and 10 million tons respectively, the latter programme involving a reduction in the rate of finished steel consumption to 11 million tons, though this figure, in the opinion of at least one official, appeared to be about 500,000 tons too low. The estimate finally adopted in March 1942 was 10·5 million tons, divided up as follows:—<sup>1</sup>

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<sup>1</sup> See Appendix 21 for fuller details of programme.

	<i>Thousand tons</i>
Iron and steel . . .	4,748
Non-ferrous metals . . .	1,360
Textiles . . .	813
Timber . . .	1,100
Hides, skins, etc. . .	210
Paper, etc. . .	630
Sulphuric acid, etc. . .	889
Miscellaneous . . .	750
	<hr/>
Total . . .	10,500
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Apart from the large reduction in iron and steel requirements, this programme went a long way towards meeting the criticism of high consumption estimates for other materials as well, as cuts had now been made in all groups except textiles and hides and skins. A memorandum was circulated by the Ministry of Supply to the various raw material branches on 5th March explaining that 'all plans must be laid on the assumption that a 10·5 million ton import programme for 1942 will be fulfilled and no more'. The Ministry of War Transport, however, continued to work on the 12·2 million ton programme in so far as it was able to keep to an annual programme at all.

At the end of June 1942 the first report of the new Shipping Committee initiated fresh discussions.<sup>1</sup> The main problem was still the uncertainty surrounding future prospects but by now the situation had altered in a number of respects. Non-tanker imports were rising slightly from the very low level to which they had sunk in February, although they still compared unfavourably with the level for the corresponding period of 1941, which had itself at the time been considered very low. It now seemed likely that 25½ million tons of imports might be received during 1942, an estimate which compared favourably with the gloomy and uncertain prospects of four months ago. One of the results of this apparent improvement was that the Ministry of Supply now again based its plans on the assumption that 12·2 million tons of raw materials would be received in 1942.<sup>2</sup>

Long-term prospects, on the other hand, were definitely less favourable. The number of ships available to the Allies was continuing to decline; losses were at a high level and there were not yet enough

<sup>1</sup> At this point we must draw attention to a purely statistical problem. The figures of total raw material stocks used by the Shipping Committee differed in several respects from those shown in Appendix 22 and quoted in other parts of this volume. But the series presented by it did not begin until May 1942. The Shipping Committee was normally concerned only with the stocks of raw materials covered by the import programme, and its figures even for stocks of imported raw materials were compiled on a different basis from those shown in Appendix 22. The most important difference is the inclusion of consumers' stocks of steel in the Shipping Committee figures and their exclusion from the figures in Appendix 22. So in this chapter, and sometimes elsewhere, we must use the Shipping Committee figures where import policy hinged on estimated stock levels; in cases where the Committee's estimates are quoted their use will be indicated by a footnote.

<sup>2</sup> The Ministry did, however, seem a little chary of accepting the Ministry of War Transport's new estimate.

new vessels coming off the slips to close the gap. It was now realised that the anticipated period of stringency must be extended to cover at least the first six months of 1943, and it seemed possible that only 9½ million tons of imports in all would be received during these six months, although a rapid improvement was hoped for during the second half of the year. From August 1942 there were in effect two overlapping raw material programmes, one for the calendar year 1942 (12·2 million tons) and another covering the period July 1942 to the end of June 1943 (11·7 million tons). The Shipping Committee forecast a gap of approximately 8·4 million tons over these eighteen months between imports and *net consumption* of food and raw materials, which was estimated at 41·4 million tons. 'Net consumption' (a phrase introduced by the Shipping Committee) meant in this context total consumption less supplies from home sources and Eire. In other words net consumption could only be met from imports and stocks.

The remaining part of the year was largely taken up, as far as import policy was concerned, in endeavouring to determine how this gap could best be bridged. There were two alternative, or more properly complementary, possibilities: we could press for further American shipping aid or we could modify our consumption policy as well as draw upon stocks to a greater degree. The first of these alternatives implied the necessity of obtaining 'firm assurances' from the United States, but the consensus of opinion seems to have been that it would be most unwise to wait for definite promises from the United States without taking action to reduce requirements. The Shipping Committee thought that by drastic measures, that is the running down of food and raw material stocks by 6·15 million tons and the cutting of consumption by 2·31 million tons, the gap could be bridged without further American aid. Of these suggested savings 5·1 million tons were to come from the reduction of raw material stocks and a further one million tons from cuts in the consumption of raw materials; the main burden of the reduction in imports was to be borne by the fertiliser and ferrous metal groups. But the proposals were accompanied by a pessimistic rider:

This, however, would involve alterations in diet and drastic restrictions in other civilian consumption, serious dislocation of agricultural and other production, a very close paring of steel requirements, which in some circumstances would hamper the execution of programmes, and a running down of stocks to levels which would not be justified save on the assurance of adequate American assistance from the second half of 1943 onwards.

The Lord President's Committee subsequently expressed its own anxiety about such drastic steps and recommended that a reduction

of four million tons in food and raw material stocks and 1.5 million tons in consumption should be regarded as representing the limit of possible economies. The Cabinet fully endorsed this view. If necessary import requirements must rank even above requirements for the Bolero operation.<sup>1</sup> It was clear also that the position could not be allowed to deteriorate seriously without a clear understanding with the United States as to the future.

#### THE PROGRAMMES IN PRACTICE

Imports for 1942, as we have seen, were roughly one million tons higher than the most pessimistic forecast and some 700,000 tons below the 12.2 million ton programme. Table 39 provides a detailed comparison.

*Table 39. Raw material imports in 1942 (compared with 10.5 and 12.2 million ton programmes)*

	10.5 million ton programme	12.2 million ton programme	Actual Imports
Iron ore . . . . .	1,980	2,050	1,922.8
Manganese ore . . . . .	360	360	421.2
Pig iron, steel and scrap (including ferro-alloys) . . . . .	2,310	2,990	2,626.9
Magnesite and allied ores . . . . .	48	72	44.3
Chrome ore . . . . .	50	74	99.8
Copper . . . . .	473	540	453.5
Tin ore and tin . . . . .	75	75	44.1
Zinc ore and concentrates . . . . .	257	444	357.2
Lead . . . . .	188	252	235.7
Other non-ferrous metals . . . . .	367	360	309.1
Cotton, raw, linters and waste . . . . .	423	440	595.0
Wool, raw . . . . .	101	103	188.3
Jute and jute goods . . . . .	165	185	184.0
Other textiles . . . . .	124	147	145.1
Softwoods . . . . .	629	660	807.6
Hardwoods . . . . .	199	254	299.0
Other timber . . . . .	272	346	258.6
Hides, skins and leather . . . . .	114	146	143.7
Tanning materials . . . . .	96	96	87.0
Pulpwood, woodpulp, etc. . . . .	485	494	513.0
Paper, cardboard, etc. (including newsprint) . . . . .	145	155	144.3
Pyrites . . . . .	60	140	187.7
Sulphur . . . . .	149	196	125.0
Phosphate rock . . . . .	380	500	288.2
Other fertilisers . . . . .	300	336	383.0
Miscellaneous . . . . .	750	801	740.9
	10,500	12,216	11,505.0

It is clear that the greatest shortfall as compared with the revised 12.2 million ton programme occurred in the iron and steel group of

<sup>1</sup> Transport of troops and equipment for the American forces based on the United Kingdom.

materials, nearly 400,000 tons of the deficiency being accounted for by steel alone, but imports of non-ferrous metals and phosphate rock were also considerably below the programmed level. On the other hand imports of chrome ore, cotton, wool, softwoods, hardwoods, woodpulp and pyrites were much higher than had been anticipated.

For the shortfalls in deliveries two explanations may be offered. We have already seen<sup>1</sup> that shortage of certain raw materials at source was of growing importance during 1942. In particular some materials of which North America was the main source of supply became, as the Allied demand for them mounted, increasingly difficult to obtain, especially before United States production programmes had been pruned to more feasible dimensions. Shortfalls in the imports of steel and non-ferrous metals, particularly copper, partly arose from this cause. Japanese conquests reduced the supplies available to Britain of certain other materials, such as rubber, hard hemp and tin.

But shipping difficulties were of far greater significance. As was foreseen when the 10·5 million ton programme was drawn up, imports from certain areas inevitably depended during 1942 'more upon the strategic use of shipping than upon pure import planning'. By June a considerable lack of balance between programme and actual imports was apparent, and a controversy arose between R.M.D. and the Ministry of War Transport as to the remedy for this situation. Because of the strategic disposition of some ships, a number of materials in the annual programme had already been over-lifted while others were sadly behind schedule. Much turned on the character of the loading programmes; and R.M.D. was urged to relate its monthly loading schedules more closely to its annual import programme. In so doing it would, the Ministry of War Transport argued, ultimately force ships to be moved to the areas where they were needed but R.M.D. saw various shortcomings in this policy, particularly the inevitable time lag involved. On these grounds it was better to carry goods from the ports in which the ships found themselves than risk missing an opportunity to import. A compromise was finally reached. R.M.D. agreed that its future loading programmes should be determined in the first place by the supply position instead of being related to the expected distribution of shipping between areas; if the Ministry of War Transport found itself unable to fulfil such a programme, R.M.D. would amend it where necessary.

During the latter months of the year, when the strength of the American forces in Britain was being built up and the invasion of North Africa was being planned and carried out, the situation deteriorated still further. The main deficiency of shipping was, as it had been throughout the year, on the North Atlantic route, and

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<sup>1</sup> See Chapter XI.

this increased the difficulties of getting adequate shipments of many materials like steel and non-ferrous metals, where demand was already threatening to outstrip supplies: steel and softwood stocks fell particularly heavily during the first half of the year. With steel, supply shortages and shipping problems seem to have alternated as the dominant factor. At the beginning of March steel was accumulating at American ports but at the end of April it seemed likely that insufficient supplies would be there to load the available ships. In the latter part of the year shipping was consistently the main limiting factor and in the last two or three months a further complication was added by the Ministry of War Transport's endeavour to avoid full cargoes of steel, which were both dangerous to ships and wasteful of their space. In the case of softwoods it was found impossible 'to cut down timber consumption by the service and supply departments as low as we had hoped and anticipated'. This was 'very largely due to requirements resulting from the movements of American troops'. The situation became sufficiently serious by July to merit a loan of shipping space earmarked for cereals to bring softwoods from North America, in whose favour iron ore shipments from Newfoundland were also temporarily suspended. For a time during the summer, loadings in the Gulf of Mexico were restricted by enemy submarine activity and this temporarily caused heavy reductions in shipments of phosphate rock.

Before we can assess the events of 1942 one further question calls for brief consideration: the extent to which home production of raw materials was able to lessen the pressure upon ships. Here the upper limit was by 1942 clearly in sight. Iron ore production reached its peak in 1942 at nearly 20 million tons, one million tons higher than in the previous year and eight million tons above the 1938 level, but hematite production continued to fall. Timber production (including mining timber) rose to nearly  $3\frac{1}{2}$  millions tons:<sup>1</sup> a remarkable achievement though at the cost of stocks of standing timber. An April census of standing timber, however, showed earlier fears about the extent of our reserves to have been somewhat exaggerated. But no further increase in home-produced supplies of either iron ore or timber sufficiently spectacular to influence import requirements to any great degree could be hoped for. The campaign to salvage iron and steel scrap was also intensified, and, after imported supplies from America ceased, the Government assumed authority to requisition scrap. But the collecting of domestic scrap was expensive in terms of both transport and labour, and even if more could have been done in this direction it is doubtful whether the quality of the scrap would have justified the effort. The salvage campaign for waste paper was

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<sup>1</sup> See Appendix 27.

also intensified during 1942 and the war-time peak for collections was reached during the year.

When the figures of actual consumption and stock withdrawals<sup>1</sup> are set against the estimates it becomes manifestly clear that requirements were still being over-estimated in 1942, although the margin was smaller than previously and was further reduced during the course of the year. Before the Shipping Committee's first report in June estimates were not made in terms of total net consumption as they were after that date; any comparison of the early programmes for 1942 with what actually happened must therefore be in rather crude terms. The 16·5 million ton import programme of September 1941, moreover, defeats attempts at comparison as little indication was given of what, if any, stock reductions it assumed. The 12·2 million ton programme of January allowed for destocking of about four million tons; net consumption of approximately 16·2 million tons must therefore have been assumed. In June the Shipping Committee forecast total net consumption at 15·1 million tons but this estimate took no account of the proposed cuts in consumption subsequently sanctioned by the War Cabinet. In the event actual net consumption was approximately 13·5 million tons, 700,000 tons less even than an estimate made as late as October. Stock reductions were correspondingly less serious than originally anticipated, amounting to approximately two million tons.<sup>2</sup>

But we must be wary of reading into the figures more than they in fact reveal; without a detailed knowledge of the assumptions on which estimates were based it is impossible to tell how far any over-estimation was the result of factors outside the control of R.M.D. All the available evidence points, however, to the conclusion that during this crucial period of the war notable progress was made along the hard and lengthy road towards accurate estimation, although the destination was not yet reached by the end of the year. During the last months of 1941 optimism was prevalent to an extent perhaps greater than was entirely justified even though it could hardly have been foreseen when and where the Japanese would attack. The 16·5 million ton programme for raw material imports was proved by events to be well above minimum needs; but R.M.D. was in this case cutting its coat according to the cloth which had been given it by the Import Executive. During this year, however, we were getting nearer to what the Lord President called 'absolute minimum requirements'; estimation was becoming more detailed and the stock position of each material was now considered on its merits and related to the minimum levels dictated by the length of the productive process and other considerations, such as vulnerability

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<sup>1</sup> See Appendices 23 and 24.

<sup>2</sup> Shipping Committee figure, see p. 214, footnote 1.



or distance of source. In this respect the later programmes compare favourably with the 16·5 million ton programme, which was framed simply to ensure that stocks of raw materials at the end of 1942 would, with a few exceptions, be sufficient to cover six months' consumption.<sup>1</sup> Nor can the significance of the replacement of the Import Executive by the Shipping Committee be ignored; its periodical surveys of the whole shipping position, and the more detailed and comprehensive statistical data it demanded from departments, helped both to co-ordinate requirements and keep them to a low level.<sup>2</sup>

The pressure of events did, therefore, squeeze much of the water out of raw material requirements during the year, but twelve months after Pearl Harbour there was still room for improvement. The habit of over-estimation died hard and in September an official of the Ministry of Production could still comment:

My general feeling is that everyone is endeavouring to hang on to present consumption and to stocks which will give a feeling of reasonable security if not of comfort. There is little inclination to face the risks which are inevitable if the War Cabinet's decisions are to be properly implemented.

The scope for economies in civilian consumption was extremely small even at the beginning of 1942 and any further cuts would not solve our import problems, although they might materially help the labour situation. The possibility of reducing munitions requirements of raw materials, however, presented greater opportunities than was probably recognised during the year; the events of 1943 proved that action in this sphere might yield a not inconsiderable return.

#### 1943: A TURNING TIDE

By the beginning of 1943 the Allies had already moved over to the offensive in North Africa and larger schemes were in prospect. The likelihood of a dislocation of shipping for strategic reasons, and the consequent necessity for elbow room stocks to meet any break in the flow of imports, dominated the plans for the 1943 import programme. In November 1942 the total imports for the coming year were estimated at 27 million tons, of which R.M.D. was allocated 14 million tons. On this basis it was considered by the Ministry of Supply that stock levels at the end of 1943 would be adequate only to maintain a regular flow of material through the production pipe-line and a small contingency reserve, amounting to three or four weeks' consumption for most commodities. Some materials might even fall below this safety line and even below the level necessary to maintain production without interruption. In spite of increased munitions imports from the United States and Canada, the munitions industries

<sup>1</sup> See p. 212.

<sup>2</sup> Cf. *Lessons of the British War Economy* (ed. D. N. Chester, 1951), p. 27.

of the United Kingdom were expected to consume  $12\frac{1}{2}$  per cent. more imported material than they had done in 1942. At the moment stocks of steel and steel-making materials stood no higher than three months' consumption.

The experience of the last months of 1942 shed a somewhat gloomy light on the import situation. Arrivals during the last quarter of 1942 were lower than anticipated owing to unexpectedly heavy sinkings and the effects of diversion of tonnage for military operations for which inadequate allowance had been made. Stocks had been eaten into and the fall in stocks over the year had amounted to just over two million tons.<sup>1</sup> The prospect of continuing stock reductions during the early months of 1943 gave rise to great anxiety, intensified by the knowledge that uneven distribution of American shipping assistance would in any case probably force us to reduce stocks below the danger level in the first six months of the year. To avoid a catastrophic reduction in reserves and to give the necessary elbow room, the Prime Minister was obliged in December 1942 to withdraw ships from military uses and direct that, for the first six months of 1943, fifty-two of every ninety-two ships carrying military stores to the Indian Ocean should be diverted to bring imports, food as well as other commodities, to the United Kingdom. This was, indeed, the first occasion on which the requirements of the Services were sacrificed in favour of the import programme. Yet, even with this aid, it was thought unlikely that raw material imports for the first six months of 1943 would exceed  $5\frac{1}{2}$  million tons, partly because shipping was already committed to guarantee food imports up to a total of 15.43 million tons over the eighteen months period ending June 1943. With this anticipated tonnage of no more than  $5\frac{1}{2}$  million tons of raw materials, the War Cabinet limited the total destocking to one million tons. It was decided accordingly to operate the import programme for these six months:

in such a way as to maintain, even at some cost to other materials, stocks of the materials required for direct munition production.

This above all else referred to steel, which was consumed in December 1942 at a higher rate than ever before.

With these changing circumstances in mind, the Prime Minister at the close of 1942 sent a personal minute to the Ministries of Supply and Production, urging upon them reductions in the consumption of imported raw materials during the next six months of at least 300,000 tons per month. Success in this respect would mean not simply reasonable security against a sudden sharp drop in imports but sufficient elbow room to be able to release ships for military operations where circumstances required it. In the words of one official, the consequent reduction rested:

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<sup>1</sup> Shipping Committee figure; see p. 214, footnote 1.

on the Prime Minister's directive and on the policy decision to build up stocks *not* on the sheer inability to meet requirements because of shipping stringency.

In effect, the Prime Minister's decision withdrew the assumption upon which the 14 million ton import programme was based, i.e., that it was safe to run down stocks to the minimum distributional level of 9.8 million tons,<sup>1</sup> the minimum needed to maintain the flow of materials. The new 'elbow room' figure of stocks now stood at 12.5 million tons;<sup>2</sup> in other words stocks were not to fall lower than they were at the end of 1942.

The revised programme for the first six months was now made up as shown in Table 40.

*Table 40. Raw material import programme for the first half of 1943*

Thousand tons

Main imported raw materials	Total consumption as originally planned	Total consumption as now revised	Net consumption as now revised	Stock changes	Required imports
A. Iron ore . . .	1,118	900	900	- 50	850
Manganese ore . .	208	208	208	+ 92	300
Pig iron . . .	4,030	4,030	200	- 80	120
Steel . . .	6,200 (finished)	5,700 (finished)	1,340 <sup>1</sup>	(+ 300 <sup>2</sup> ) (- 200 <sup>3</sup> )	1,440
Chrome ore . . .	40	40	40	- 30	10
Copper . . .	270	260	260	-	260
Lead . . .	116	104	102	- 13	89
Zinc . . .	158	133	96	- 26	70
Zinc concentrates	102	92	80	- 60	20
Raw cotton . . .	200	200	200	- 140	60
Raw wool . . .	125	125	110	- 80	30
Raw jute . . .	50	50	50	-	50
Softwoods . . .	950	900	580	+ 20	600
Hardwoods . . .	550	540	155	- 10	145
Mining timber . .	709	709	94	- 94	-
Woodpulp . . .	186	186	186	- 11	175
Newsprint . . .	125	125	63	- 47	16
Phosphate rock . .	300	190	190	- 30	160
Sulphur . . .	129	114	109	+ 21	130
Pyrites . . .	164	84	70	- 20	50
Total . . .	..	..	5,033	- 458	4,575
B. Total of other imported materials	..	..	1,455	- 30	1,425
Total A and B . .	..	..	6,488	- 488	6,000

<sup>1</sup> In the original memorandum this figure was described as 'actual' with the comment: 'In arriving at this figure a conversion factor from finished steel to steel "as imported" of + 20 per cent. has been used'.

<sup>2</sup> Steelworks' and M.O.S.

<sup>3</sup> Consumers'.

<sup>1</sup> Shipping Committee figure, see p. 214, footnote 1.

<sup>2</sup> Shipping Committee figure.

In the event these economies now proposed by the Minister of Production were more modest than the Prime Minister had hoped; and the cut in net consumption of raw materials over the half year amounted to 1·2 million tons. Among the biggest changes in estimates of total consumption were those for steel and softwood, the former being reduced by 500,000 tons over the half year and the timber estimate by 50,000 tons. It had also been decided by this time that there should be no imports of phosphate rock during the first six months, save for cargoes brought back in ships returning from North Africa and without cost to the United Kingdom import programme. It was thought that this would be sufficient, as indeed it was, to fulfil the 1942-43 fertiliser programme. These revised estimates of material consumption were held by the Minister of Production to require imports of six million tons, the remaining half million tons to be met out of stocks. He was against further reductions in raw material consumption during the period; any deterioration in the import position resulting in less than six million tons of raw materials being imported would inevitably have to be met by stock reductions.

But even this reduced programme depended, as the original programme had done, upon substantial American aid, not simply in materials but in ships. In November 1942 the United States had promised help in the first six months of the coming year to the extent of 1·8 million tons of shipping space; but this estimate was soon reduced to 1·15 million tons, while the Director General of the Ministry of War Transport expressed the opinion that it would be unwise to rely on more than one million tons. For the whole year, however, the American contribution was finally set at seven million tons. No less significant was the timing of American shipping aid. During the first six months we were to receive sixteen per cent. of this aid; eighty-four per cent. was to be concentrated in the latter half of the year, raising, *inter alia*, the serious problem of what useful cargoes would then be available to fill the ships. As we shall see, this was no idle fear in the case of supplies from India and North America.

If the prospects of attaining our import target during the first half of the year were gloomy, events during January and February confirmed them. Owing partly to severe weather, total imports averaged the very low figure of 1·2 million tons per month, and in the four months ending February 1943 less than sixty per cent. of our raw materials consumption was met from imports. By the end of March 1943 our total stocks of both food and raw materials were below the minimum prescribed by the Lord President's Committee, which had agreed to a fall not exceeding four million tons from the level at the end of 1941.<sup>1</sup> Raw material stocks were only 1½ million tons above

<sup>1</sup> Shipping Committee figure; see p. 214, footnote 1.

the distributional minimum<sup>1</sup> necessary to avoid any break in production. The revised estimates, made in the light of these developments, set the year's target at 26·4 million tons for total dry cargo imports, while that of the first six months remained at 12·5 million tons.

The raw materials programme for the first half of the year totalled 5,491,000 tons against arrivals up to the end of March of 2,166,000 tons. In the first quarter of the year, then, we had been forced to depart so far from the 'elbow room' policy that we were in danger of living from hand to mouth. There could obviously be little real improvement in the flow of imports until more American ships were made available. A very drastic cut in consumption might have succeeded in restoring material stocks to the level at which they were on 31st December 1941, but, it was claimed, this would have seriously weakened our impact upon the enemy at some future date. An improvement in imports seemed certain, but the most optimistic assumptions did not envisage the rehabilitation of stocks to the level planned for mid-1943 as well as the maintenance of war production. So the dangers of the situation determined a drastic policy; consumption of imported raw materials would have to be limited, as far as possible, to what actually arrived. It seemed possible that we would be able to import only 11 million tons of raw materials during 1943, that is nine million tons during the remaining nine months. But net consumption of imported raw materials during the last three quarters of 1942 had been at the rate of 13·6 million tons per annum and, on the original production plans, consumption in 1943 had looked like being higher still. Pruning of munitions production requirements in January had, however, reduced anticipated 1943 consumption slightly below that of 1942.<sup>2</sup> Steel consumption had still been at the annual rate of 12 million tons in the first quarter of 1943 but the War Cabinet agreed that for the remaining nine months of the year it must be pared down to the rate of 10·8 million tons.

The Ministry of War Transport's revised estimate of imports for the year (excluding Bolero assistance), was 25 million tons, but this was only on a very provisional basis. On that figure the Ministry of Production calculated the share of raw materials at 12½ million tons which would be adequate to meet current requirements but would have contributed nothing to the 'elbow room' stocks. But neither of the two raw material import programmes of April 1943 in fact rested on this estimate. Programme 'A' was based on the official estimate of 26 millions used in determining what were likely to be our needs. Programme 'B' was the result of the Minister of Production's efforts to conserve stocks. These two programmes are shown in detail in Table 41.

<sup>1</sup> Shipping Committee figure; see p. 214, footnote 1.

<sup>2</sup> See also pp. 222-223.

Table 41. The April 1943 raw material import programmes for the year 1943

	Thousand tons	
	13 m. ton Programme 'A'	11 m. ton Programme 'B'
Iron ore . . . . .	1,500	1,350
Manganese ore . . . . .	500	400
Pig iron . . . . .	330	190
Steel . . . . .	2,800	2,200
Chrome ore . . . . .	60	45
Copper and brass . . . . .	510	510
Lead . . . . .	215	190
Zinc . . . . .	170	130
Zinc concentrates . . . . .	180	160
Raw cotton . . . . .	350	300
Raw wool . . . . .	130	110
Jute and gunnies (including sandbags) . . . . .	160	140
Softwoods and boxboards . . . . .	1,180	930
Hardwoods . . . . .	400	300
Mining timber . . . . .	50	20
Other timber . . . . .	400	360
Woodpulp . . . . .	370	304
Hides . . . . .	155	145
Newsprint . . . . .	100	70
Phosphate rock		
Industrial . . . . .	50	50
Fertilisers . . . . .	630	600
Sulphur . . . . .	250	230
Pyrites . . . . .	160	150
Total of above . . . . .	10,650	8,884
Others not included . . . . .	2,350	2,116
	13,000	11,000

Programme 'A' was used for planning loadings: programme 'B' was used for allocating imported materials for current consumption. Thus, although plans were made to import 13 million tons over the year, raw material branches were warned not to count on receiving more than 11 million tons. Approximately half the difference between the two programmes was accounted for by the proposed reduction of imports of steel and steel-making materials by just over one million tons. The timber group, also, in spite of the general shortage and low stocks, had to bear a cut of 420,000 tons. Raw cotton and woodpulp were the other main objects of the Minister of Production's axe, yielding 50,000 and 66,000 tons respectively. The only major commodities to escape reduction were copper and brass and that small proportion of phosphate rock intended for industrial purposes.

#### PROGRAMME REVISIONS

These decisions, drastic though they seemed, brought no catastrophe in their train, largely for three reasons. In the first place, the

Minister of Production's review of the existing War Office programme for munitions revealed that the January cuts imposed after the Prime Minister's directive had not been fully carried out. Secondly, considerable provision in excess of officially accepted requirements had been made in agreement with the Ministry of Supply. This over-estimation had been a device for insuring against upward revisions by the War Office as well as against a breakdown either of overseas supplies or home production.<sup>1</sup> But by the spring of 1943, when the review was made, the likelihood of an overall upward revision was remote; on the contrary, downward revision of many items was imminent although for others, for example tanks, landing craft and bridging equipment, increases were planned. Thirdly, the War Office was in process of formulating revised requirements based on the Casablanca decisions, which forecast further reductions in many service requirements.

The Minister of Supply was now pressed by the Minister of Production to take up the slack by estimating supplies for the War Office at no more than five per cent. above their requirements. He was asked to speed up the planned reduction of 120,000 workers in his target labour force and to complete it by 30th June 1943, that is six months earlier than planned. The Minister of Supply after discussion accepted these proposals in a modified form. The five per cent. ratio was employed as a general principle but not in respect of each individual item. The labour force was to be reduced by 120,000, not by 30th June but by 30th September. One further important concession to the Ministry of Supply was the provision of a 'float' of 300,000 tons of steel upon which it could draw if necessary to prevent disturbance to its programmes.

The situation at the end of the first six months reflected the successive prunings which requirements underwent. As we have seen, reduced manpower allocations, shipping shortages and reductions due to strategic reasons and the Casablanca decisions all played their part in this process. Net consumption of raw materials for this period was officially forecast in January at 6.5 million tons; it reached 6.14 million tons, only 5.5 per cent. short of the target. But greater margins in terms of initial programmes were manifest. Consumption for the whole year reached 11.82 million tons, nearly half a million tons lower than the lowest estimate of 12.3 million tons and 3.8 million tons lower than the original estimate of 15.6 million tons. This estimate had been based on interim War Office requirements which were cut in response to the Prime Minister's directive; and the Ministry's programme as a whole had been further reduced to put into effect the December 1942 reductions in the target strengths of

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<sup>1</sup> Drastic and sudden reductions in munitions production might, it was thought, also lead to labour difficulties.

the Army and Air Force. These January programme revisions were responsible for the subtraction of 2·2 million tons from the original estimate of 15·6 millions. A further 900,000 tons was later deducted from the new net consumption estimate of 13·4 million tons as a result of unexpectedly high rates of domestic steel and timber production. The effect of these decisions accounts for 3·1 million tons out of the total disparity of 3·8 million tons. Allowance must also be made for the effects of the 'unofficial' drastic reduction in consumption planned by the Minister of Production in April. If we compare the figures given in Appendix 25 of estimated and actual net consumption for the two half years, there is very definite evidence that peak consumption of most raw materials had been reached and passed by June 1943. Consumption during the second half of the year fell short of estimates by nearly ten per cent., i.e. 659,000 tons, whereas for the first six months consumption was only 360,000 tons less than estimates.

Here then is part of the explanation why the anxieties which brooded over the early part of 1943 did not materialise. No less important, the rising curve of shipping losses had reached its peak during 1942 but by the beginning of 1943 began to turn steeply downwards.<sup>1</sup> Two consequences flowed from this. More goods arrived than existing estimates forecast, and the promised American shipping assistance was more easily fulfilled. It is for these reasons, and because of the re-opening of the Mediterranean, that total raw material imports for the year reached 12·83 million tons, only 0·17 million short of the 13 million target. But the rare balance achieved between estimates and actual imports, if viewed simply in statistical terms, masked serious difficulties which lay below the surface. The problem of supplies at the ports had to some extent superseded that of the availability of ships.

#### SUPPLIES AT THE PORTS

From time to time the import position in relation to the United States had displayed the character of a see-saw. Sometimes ships fell short of the available supplies, but often the reverse was true. Both conditions wrecked loading programmes. Steel, in particular, fell short of import capacity at certain periods on the Atlantic seaboard, but when the Ministry of Production suggested that its shipping space should be given over to timber, railing, loading and stowage difficulties supervened. In India, internal railway communications were proving inadequate to carry cargoes to the ports, while the supplies of certain primary materials were diminishing. On the other hand, increased sailings to this area for military purposes were expected to

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<sup>1</sup> The highest losses of United Kingdom controlled tonnage occurred in 1942, the peak month being June although the November figure was almost as high.



result in extra ships to carry away any commodities that could be made available. Here were examples, then, where shortages of supplies or difficulties of inland transport, rather than shortage of ships, proved the limiting factor, though a crisis of first-class proportions never emerged. Shipments from North America fell short of the target by 500,000–600,000 tons, chiefly owing to shortage of available cargo. Table 42 sets out raw material imports from all countries according to loading area and indicates where the shortfalls of raw materials principally occurred.

*Table 42. 1943 raw material imports divided into main loading areas*

Thousand tons

	Main loading areas	Arrivals	13 m. ton programme	Excess or deficit
Iron ore . . . . .	Spain, N. & W. Africa . . . . .	1,894.9	1,700	+ 194.9
Pig iron, steel and scrap . . . . .	N. America, India . . . . .	2,670.2	2,780	- 109.8
Ferro-alloys . . . . .	N. America . . . . .	135.6	120	+ 15.6
Manganese ore . . . . .	India, W. Africa . . . . .	445.7	450	- 4.3
Chrome ore . . . . .	S. & E. Africa, India . . . . .	36.6	50	- 13.4
Magnetite and allied ores . . . . .	N. America, India . . . . .	70.4	92	- 21.6
Bauxite . . . . .	W. Africa, S. America . . . . .	244.0	244	..
Copper . . . . .	N. America, S. & E. Africa . . . . .	516.0	515	+ 1.0
Tin ore and tin . . . . .	S. America . . . . .	52.5	50	+ 2.5
Zinc ore, concentrates and zinc . . . . .	N. America, Australia . . . . .	284.7	318	- 33.3
Aluminium . . . . .	N. America . . . . .	238.0	241	- 3.0
Lead . . . . .	N. America, Australia . . . . .	226.5	215	+ 11.5
Other ores and metals . . . . .		108.9	100	+ 8.9
Softwoods . . . . .	N. America . . . . .	1,302.5	1,492	- 189.5
Hardwoods . . . . .	N. America, W. Africa . . . . .	306.7	285	+ 21.7
Others, including plywood . . . . .	N. America, S. America . . . . .	323.0	384	- 61.0
Cotton . . . . .	N. America . . . . .	497.3	440	+ 57.3
Wool . . . . .	Australia, Africa . . . . .	122.3	130	- 7.7
Jute and jute goods . . . . .	India . . . . .	166.8	160	+ 6.8
Hemp . . . . .	E. Africa, India, Chile . . . . .	70.9	92	- 21.1
Flax, coir and other textiles . . . . .	Egypt, Canada, Australia, India and Ceylon . . . . .	33.9	40	- 6.1
Woodpulp, pulpwood, etc. . . . .	N. America . . . . .	430.1	379	+ 51.1
Paper, cardboard, etc. . . . .	N. America . . . . .	142.7	190	- 47.3
Pyrites . . . . .	Spain . . . . .	160.0	160	..
Sulphur . . . . .	N. America . . . . .	270.3	250	+ 20.3
Phosphate of lime . . . . .	N. Africa . . . . .	788.0	680	+ 108.0
Potash . . . . .	N. America, Palestine, Iberian peninsula . . . . .	149.6	220	- 70.4
Nitrate of soda . . . . .	S. America . . . . .	11.9	14	- 2.1
Other fertilisers . . . . .	N. & S. America . . . . .	177.5	216	- 38.5
Hides, skins and leather . . . . .	S. America, Africa, India . . . . .	120.6	167	- 46.4
Tanning materials . . . . .	S. America, S. and E. Africa . . . . .	80.0	118	- 38.0
Paraffin wax . . . . .	N. America, Gulf and W. Indies . . . . .	37.8	60	- 22.2
Other waxes, gums, resins and turpentine . . . . .		77.9	68	+ 9.9
Rubber . . . . .	Ceylon, India . . . . .	91.4	80	+ 11.4
Calcium carbide . . . . .	Synthetic U.S.—9,000 . . . . .			
Abrasives . . . . .	N. America . . . . .	72.0	90	- 18.0
Asbestos . . . . .	N. America . . . . .	45.7	46	- 0.3
Other materials . . . . .	N. America . . . . .	53.5	50	+ 3.5
		377.2	323	+ 54.2
		12,833.6	13,009	- 175.4

The figures confirm that the materials which suffered most were the metals and softwood, and that the areas which raised the greatest problems were North America and India.

In many respects, then, the year 1943 marked the turning point in raw material import programmes. For the first time since September

1939 requirements for military stores showed an overall decrease. Admittedly, this tendency was only visible in the War Office programme but the field which this covered was wide enough to make a substantial difference to total requirements. The peak munitions consumption of most raw materials had been reached and passed by the middle of the year. 1943 was also notable for the fact that the shortage of manpower had begun to limit war production in a manner and to a degree never caused by any shortage of raw materials. On the supply side, home production of many materials was maintained at the 1942 levels; overseas supplies at source, with the important exceptions of steel, timber and synthetic rubber, presented no serious barrier to the fulfilment of programmes. Now also, a very striking improvement in the shipping situation had taken place because of the low rate of sinkings and the re-opening of the Mediterranean. In June 1943 total non-tanker imports reached their highest level since October 1941. Changes in both supply and requirements had combined to build up a very satisfactory stock position as can be seen in Appendix 26. By May 1943 reserves of most materials were beginning to rise, for the first time since September 1942. In the four months May to August 1943 stocks of raw materials covered by the import programme rose by 1·19 million tons.<sup>1</sup> By the end of the year they had risen sufficiently to cancel the heavy loss of the early months and were indeed 896,000 tons higher than at the beginning of the year and four million tons above the figure for minimum working stocks.<sup>2</sup> Moreover, in the spring of that year the Ministry of Production had fully come to grips with the problem of the over-estimation of munitions requirements, at least as far as raw materials were concerned. As the war turned towards its climax, the Government was provided with two of the necessary pre-requisites: shrewder estimates and 'elbow room'.

#### JANUARY 1944—SEPTEMBER 1945: PREPARATIONS FOR VICTORY AND PEACE

The year 1944 began with higher hopes than any preceding year of the war. But though they could be presented under such good omens, the requirements programmes still posed a complex of fundamental questions no less elusive of answer than those which had harassed the planners of earlier periods. Would the whole of Europe be liberated in 1944, and, if so, what raw materials would it supply for Britain and for what raw materials would it compete *against* Britain? How long would elapse between victory in Europe and victory in the Far East; and, in the interim, what would be the scale of munitions production and raw material needs? In addition to all

<sup>1</sup> Shipping Committee figure; see p. 214, footnote 1.

<sup>2</sup> Shipping Committee figure.

this, what would be the British (and European) requirements for raw materials for reconstruction? No wonder the officials shook their heads and as on earlier occasions sighed that:

any estimate of material requirements and supplies, as the responsibilities of the United Nations widen, *must be a very broad guess.*<sup>1</sup>

During the rest of the war men believed that sooner or later victory must come to the Allies. For this reason the calendar year, as such, had no inherent value as a basis for planning; and looking back over the last phases of the war, one observes that the period January 1944 to September 1945 really formed one complete sequence with a character peculiarly its own. For this reason we shall not fully interrupt the narrative at December 1944, since that date witnessed no break in military operations or plans, but shall treat the twenty-one months as a whole. We may perhaps designate it as the period of preparation for victory and peace. In some respects at least it was easier to prepare for victory than it was to prepare for peace.

But while this period of nearly two years possessed certain features distinctively its own, the inability to determine with any precision or certainty for how long the fighting would go on required the employment of shorter yardsticks: the annual and six-monthly periods. Of the quantitative details for 1944, however, little need be said; estimates and realities marched in step in unwonted harmony. Improved methods of estimation continued to pay a dividend.

The Ministry of War Transport estimate of the volume of imports remained throughout 1944 almost stable and accurate. Fixed originally<sup>2</sup> at 26 million tons for all imports it hovered uncertainly early in the year between that figure and 24½ million tons. By the spring it had settled down at 25 million tons, and it was expected that in the first half year alone stocks would decline by 1.5 million tons in raw materials and by 0.9 million tons in food.<sup>3</sup> But ships alone would not determine the volume of imports. Once again it fell to the Ministry of War Transport to modify the note of optimism which was being more frequently sounded during ministerial deliberations. The ports were under the heaviest possible strain in trying to serve both operational and normal needs and the limit was in sight; the inland transport system groaned under the maximum burden of freight and soon would be able to carry no more. And now, as the United Nations prepared themselves for the spring offensive, the supply ministries must look forward to a lean time, for the middle months of the year at any rate. The third quarter alone was

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<sup>1</sup> Author's italics.

<sup>2</sup> In fact it was 26 million tons less the surplus of 370,000 tons imported in 1943 but to be considered as part of the 1944 total.

<sup>3</sup> Shipping Committee estimate; see p. 214, footnote 1.

expected to reduce the total level of imports by up to half a million tons, though this was intended to be only a short-term postponement rather than a cut, and the last quarter of the year was to redress the balance.

While these dangers were being anticipated, they were palliated to a certain extent by the fact that total imports for the first half of the year proved higher than the Ministry of War Transport had dared to hope, and reached  $12\frac{1}{2}$  instead of 12 million tons. As a result stocks of both food and raw materials were notably higher at mid-1944 than they had been at mid-1943, by 820,000 tons in the case of food and 350,000 tons in the case of raw materials.<sup>1</sup> But with the battle fully joined in Europe this satisfactory stock position could not be expected to last for long. Moreover, total net consumption of food and raw materials was mounting and might be  $4\frac{1}{2}$  million tons higher in 1944 than in 1943;<sup>2</sup> one minister, impervious to the buoyant cheerfulness of his colleagues, reminded them that over the year as a whole total stocks would in that case have fallen by three million tons and raw material stocks would be at their lowest since the beginning of the war. This was an extreme view and none of his colleagues would accompany him so far. Indeed, by early October 1944 it could be said that 'the 25 million ton import programme would be achieved with some ease', and importing departments were in fact being asked whether they wished to bring urgently needed cargoes for 1945 into the 1944 programme. But as the year drew to a close with an unbeaten enemy in Europe and new offensives to prepare, the import situation began to display new stresses and strains. Even so, for the year as a whole total imports reached 25·2 million tons, of which the raw material share came to 11·75 million, some 100,000 tons higher than the programme.

Yet this nice balance between estimate and achievement did not make everything plain sailing for consuming (and competing) departments. The first programme of the year was divided up as follows:—

Munitions and miscellaneous	2·75 million tons
Food	11·25 million tons
Raw materials	12·00 million tons
	—
Total	26·00 million tons
	—

For the first six months it was calculated that about 12 million tons of

<sup>1</sup> Shipping Committee figure; see p. 214, footnote 1.

<sup>2</sup> An important contributory cause as far as raw materials were concerned was the fact that home-produced timber supplies were expected to be about one million tons less than in 1942.

goods would be imported and, in view of coming events, munitions continued to have an absolute priority of 1·4 million tons. But food was given what was called a 'second priority' of 5·25 million tons and the rest of the imports, amounting to 5·35 million tons, were to accrue to the Raw Materials Department. However, the Shipping Committee spoke with two voices. While giving food a 'priority' as against materials, it at the same time announced that any shortfall of imports was to be divided between food and raw materials in the ratio of 4 : 6. This looked more like the ordinary, and by now traditional, system of allocation and inconsistent with the rediscovered principle of priority. It was in the allocation method and the good sense of the Ministry of War Transport that the Ministry of Supply reposed its trust; and though the Ministry of Food got its 'priority' the Ministry of Supply kept its allocation. But if total imports for the year reached only 24½ million tons, which seemed within the realms of possibility, the Ministry of Supply would get only 11·25 million tons of materials, and its stocks would then face a sharp decline of 1·59 million tons<sup>1</sup> in view of rising net consumption; it was held, however, that 1943 stocks had been accumulated precisely against such a contingency. If total imports fell below this figure, then the prospects of maintaining an adequate stock for post-war needs would be jeopardised.<sup>2</sup> But when the spring offensives threatened cuts, the Minister of Production believed that they would have no 'serious consequences provided that an improvement was not too long delayed'.

The feeling of reasonable security could not be extended uniformly to all materials. Timber was presenting difficulties in port clearance and storage, and steel consumers were expecting to draw heavily on their stocks. In May again it was stressed that the sacrifice which the Ministry of Supply was being asked to make for operational needs would probably fall severely on timber, but the Ministry of War Transport considered that the balance of cargoes would not be so profoundly altered. At one time it was thought that the Ministry of Food might have to be asked to give up temporarily some of its shipping space for raw materials, and in June timber was still giving rise to anxiety. Within a few months, however, it was clear that net consumption was likely to be considerably lower than originally anticipated, owing largely to the steep fall in steel consumption as compared with the estimate; in addition the effects of inland transport difficulties on the home production of iron ore and steel proved less adverse than seemed likely at one time. But other considerations were intervening. At the end of the year many materials were to

<sup>1</sup> Shipping Committee estimate; see p. 214, footnote 1.

<sup>2</sup> In February, a few weeks later, it was held that on the whole, with the exception of timber and possibly a few other materials, the prospect for the transitional period was satisfactory.

cease to come under lend-lease. Hence it was doubly necessary to import as much as possible before the year ended.

How, then, did the Ministry of Supply fare during 1944 amidst the improving fortunes of war? On the whole the year was uneventful and was in complete contrast with the dramatic episodes of the military struggles. The contrast was natural enough. The unfolding events on the battlefields of Europe owed a good deal to the earlier struggles for raw materials which this volume has described. To a large extent these struggles were now over but there were still alarms and anxieties. The Timber Control surveyed uneasily the declining production of home-grown timber and the periodic threats to imported supplies. The Iron and Steel Control in the early part of the year continued to press its suit with not a little of the enthusiasm it had displayed in some of the most bitterly fought contests of earlier years. The allocations of steel were heavily cut and timber allocations were, as one report put it, 'severely pruned'. But internal transport difficulties, bad though they were, did not limit home production to the full extent that had been expected. Stocks did not fall by 2.66 million tons, as had been anticipated as late as June 1944, but by 1.67 million.<sup>1</sup> Net consumption for the year in the end was over a million tons less than had been estimated in June. It was *fin de guerre*. The raw materials problem had ceased to be a war problem. But it was becoming an urgent problem of peace.

The question of our imports for 1945 was first considered in August 1944, and in the following month a rough raw materials programme had been provided. Using as its hypothesis that the war in Europe would end in 1944, the 1945 programme (including, of course, the reconstruction estimate) was to be double that of the preceding year and to reach 24 million tons. Since these hopes were so quickly dissipated we need not examine the programme in detail, save to notice that iron and steel imports were to rise from 4.20 million tons to 7.35 million, timber from two million to 8.35 million and pulp and paper from 0.64 to 2.08 million. The only group of materials to fall, and that slightly, was non-ferrous metals. Yet it is instructive to recall that this bountiful, ambitious and short-lived programme was only two-thirds quantitatively of what had been imported in 1937. Very soon the Ministry of Production was being asked to revise the programme, and by December the allocation of tonnage for all importing departments was manifestly in keeping with the continuing war on several fronts, 13.2 million in all for the first six months of 1945. Early in the new year it was reported that the 'shipping position for the second quarter at present showed a serious deficiency'

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<sup>1</sup> Shipping Committee figure; see p. 214, footnote 1.

while British missions in Washington 'were being pressed very strongly for an examination of United Kingdom stocks'.

It must seem strange, at first sight, that one of the most forceful of Anglo-American debates over raw materials should have been joined in the closing months of the war. Yet there are a number of reasons to explain this curious mood. The war was an unconscionable time ending. A munitions industry would have to be kept going, therefore, not only for the Far Eastern war but for Europe as well. Meanwhile the liberated areas were naturally adding their demands for raw materials to those of the United Kingdom. Above all, shipping would be scarce and, in the second quarter of 1945, seriously deficient. The light of American criticism focused itself upon British stocks, while from the British side 'the wasteful use of shipping by the United States military authorities' was being submitted to no less searching criticism.

British requisitions were sometimes being rejected on the basis of the stock position in this country, and soon this question was being discussed at the highest level between the Minister of State (Mr. Law) and Mr. Harry Hopkins. In America, it was said, there existed a general impression, 'particularly in high-ranking army and naval circles, that British stocks were too high and that we were adopting a dog in the manger attitude'. Against this, British representatives argued that many criticisms of British stocks were made by comparatively junior members of American departments and were based on information which was both incomplete and out of date: a combined Anglo-American review of stocks was therefore proposed. It accordingly became the task of the consuming ministries to do two things: to make plain what they meant by 'minimum' stocks and, secondly, to justify in detail the stocks they wished to maintain and the scale of imports they needed to make.

'Minimum' stocks were composed of two elements: pipeline reserves, that is sufficient to keep the production processes in operation from the raw material to the finished article, and 'contingency' reserves, that is sufficient to meet the sudden and unforeseeable interruptions contingent upon war. Clearly the first of these elements could be calculated with some degree of accuracy, varying of course from material to material; but the second was an effort to meet the incalculable and the unexpected; experience, however, had taught that on the average thirteen weeks net consumption was a fair insurance against the 'contingencies' hitherto encountered. The American Mission for Economic Affairs (M.E.A.L.) had reached agreement early in 1943 with the Ministry of Production about what should be the pipeline reserves. 'Contingency' reserves were not the result of any joint decision but, early in 1945, M.E.A.L. expressed the opinion that they were adequate for the purpose but not excessive.

Yet, even with so large a measure of agreement, the Americans suggested that the programmed stock level for June 1945 should fall from 11·3 million tons to 10·8 million tons,<sup>1</sup> thereby saving half a million tons of shipping. This estimate assumed a pipeline stock in addition to a contingency reserve of two months' consumption. But this proposal could not be easily accepted. It was pointed out on the British side that a number of materials 'rode free', that is came on empty ships or ships making their return journey without adequate cargoes. This applied to supplies coming from India and the Mediterranean area in particular. Moreover, even high stocks in some cases, as applied to raw cotton, masked an ill-balanced stock position of the different types of cotton within a comparatively high total. In addition, import cuts tended to fall 'on parts of the raw materials programme where stocks are less able to stand the strain' and especially on North Atlantic imports, since the pressure for ships on this route was usually the greatest. Softwoods, as well as a number of other materials where stocks were low, would therefore suffer disproportionately in the process. For all these reasons the Minister of Production felt unable to reduce the raw materials import programme below 6·2 million tons for the first half of 1945. Even this figure would involve eating into the minimum stock estimates for pipeline and contingencies.

Early in February the Government therefore resisted the American proposal to cut total imports over the first six months by 1·8 million tons. It was prepared to reduce raw material stocks from 12·40 million tons,<sup>2</sup> the level in December 1944, to 11·26<sup>3</sup> in June 1945; below that neither it, nor its representatives in Washington, felt able to go.<sup>4</sup> But soon the grounds upon which this resistance was based were changing. In the spring, as the German war drew to a close, supplies and men were being diverted to the Eastern theatre, and ships for the Mediterranean, West Africa and South America were becoming inadequate; no less important, supplies from North America were failing to reach the volume of available shipping. The Prime Minister had indeed been considering a possible cut in the use of ships for military purposes so that the 13·2 million ton programme could be met, but by now it was clear that not more than 6 million<sup>5</sup> (instead of 6·2 million) tons of shipping would be required for raw materials. It was clear also that ships could not be easily moved from one area to another to make up deficiencies, while port clearance

<sup>1</sup> Shipping Committee estimate; see p. 214, footnote 1.

<sup>2</sup> Shipping Committee estimate.

<sup>3</sup> Shipping Committee estimate.

<sup>4</sup> The British secretariat in Washington did however point out that on some materials they had 'insufficient information'.

<sup>5</sup> Or 6·07 million tons, as appears to have been agreed at one time though not officially promulgated.



difficulties were also hampering movement. Officials in the United Kingdom began to observe that 'there was no point in making a fetish of the 13·2 million ton programme'.

But still the American agencies pressed for greater stock reductions than this change involved, particularly as programmes for the second half of 1945 were now being drawn up. On the other hand, the Prime Minister himself, as late as 21st March, viewed with anxiety the declining stock position and was in favour of reducing sailings to the Mediterranean and Indian Ocean if supplies were available elsewhere for shipment to Britain. Meanwhile in May plans for a raw materials import programme of 9·8 million tons for the second half of the year were being made. In all the first half of the year yielded 5·74 million tons of raw material imports and the first eight months until August, when the Japanese war ended, 8·52 million tons, the equivalent of 12·78 million for the year as a whole. But now events were once again moving swiftly; import programmes were changing rapidly and profoundly. Peace had its problems no less than war. With the raw material problems of peace we are not concerned but for a broad assessment of the war programmes we must turn to a separate chapter.

## CHAPTER XV

# IMPORT POLICY AND PROGRAMMES: A SUMMARY

**T**HE whole of this volume inevitably pivots around the success or failure of the import policy and machinery which the previous chapters have described. For that reason, if for none else, we must attempt a separate assessment of the relevance and value of that policy and machinery to the war effort as a whole. We could, if we wished, seize upon a very simple method for testing the requirements programmes presented by the Ministry of Supply. We could state what the original programme for a given year was, then note what in fact the Ministry of Supply consumed, subtract the one from the other and say that by so much the Ministry of Supply over-estimated its needs. For example, we could say that the original raw materials programme for the second year of war was 20·5 million tons; in the event the Ministry of Supply 'made do' with 16·5 million,<sup>1</sup> that is 4 million tons less; in other words, the Ministry of Supply over-estimated its requirements by 24 per cent. This tempting device was, in the experience of the present writer, used both during and after the war for 'testing' the reliability of the Ministry of Supply programmes. But it is a device which is both crude and misleading and can be of little validity to the historian of the period.

The import programmes were admittedly changed and frustrated by a whole variety of causes. Some arose from errors of judgement or policy within the hierarchy of the raw materials committees and controls. Others arose from developments external to the field of raw materials. So we must examine separately, first the extraneous forces which limited the accuracy of programming; secondly, the difficulties which emerged within the raw materials organisation and imposed limits upon its achievements; and, finally, those decisions which can only be considered as matters of 'high policy.'

### THE EXTRANEOUS CAUSES

The Raw Materials Department as such was not a consumer. It was a distributor which furnished the raw material or intermediate product on its way to the final consumer, whether for munitions, export or civilian needs. It was not for R.M.D. to determine what

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<sup>1</sup> Or 15·2 million tons if we allow for the rise in stocks by approximately 1·3 million tons.

these requirements should be but, once it was satisfied that the requirements were justified, to act on behalf of the consumer as a petitioner for the necessary materials. We know that munitions requirements were set too high, particularly during the early part of the war. That is not to say that the Services were too large, which is obviously a question hardly relevant to a volume of this kind. But there is strong evidence to show that the Services demanded more, and R.M.D. demanded on behalf of the Services more *than they could in fact consume*. Again, the quality of the specifications for equipment was sometimes higher than the scarcity of the materials allowed. Sometimes the demand for steel was forced up not simply to maintain the highest standards of equipment but to build capacity in excess of the raw material available for manufacture. And service estimates fluctuated with the changing tides of war and the changing concepts of weapons. All these, and many other influences, served to make estimates 'unrealistic' and usually higher than the circumstances in fact permitted. But R.M.D. could not usurp the functions of the service departments and reduce their demands against their will, though it could and did use persuasion and pressure to that end. When the Ministry of Production came tardily into being the chance of a more uniform system of control and better economic strategy was provided, but that was in February 1942.<sup>1</sup> By then much of the damage had been done, while the Services still managed on occasion to present inflated demands which eluded the somewhat remote control of the Ministry of Production.

But there were occasions also when at least part of the differences between estimates and consumption could be attributed to a genuine decline in requirements while the programme was in operation. The events of the year 1943 exemplified this process at work. As far as army stores were concerned, cuts were made after the programme had been accepted. A large part of the 34 per cent. by which net consumption of steel in the second half of 1943 fell short of estimates must therefore have been due to a steady decline in production of these items. A small decrease in production was sometimes accompanied by a larger though temporary reduction in the demand for raw materials, because in time of falling demand consumers might prefer to draw on stocks rather than lay in fresh supplies. We must also bear in mind the time-lag between the presentation of a requirement for, and the actual use of, a raw material. For example, the provision of semi-fabricated materials for use in aircraft construction might be required anything from three to nine months before the fly-away date. Similarly, the fabrication period itself required delivery of the raw material weeks ahead of the delivery date to the aircraft constructor. Comparable time-lags operated in other fields of construc-

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<sup>1</sup> It was known as the 'Office of the Minister of Production' until July 1942.

tion where the raw material had to undergo a series of complicated processes before final assembly into a finished product. Admittedly it was the function of the planners to foresee such contingencies, but there were inherent limits to the precision with which their plans could be made.

R.M.D. could not, and did not, adopt the attitude of an impartial spectator while such developments were occurring. R.M.D. had its own estimates of the amount of raw material likely to become available and its own notions about its end use. Countless discussions took place with the consumers and various economy organisations came into being for the purpose of reducing inessential consumption;<sup>1</sup> but R.M.D. could act in this way only as a counsellor and friend. In the end, naturally enough, the Services alone had to evolve and state their own requirements. To say that they put their requirements high is to say that they acted in a manner in which human nature and service departments normally act: they felt bound to protect themselves against a critical shortage at a crucial hour. But if over-estimation was a defect in terms of a total war effort, then that defect originated at the top: in the absence of a supreme co-ordinating and directing organisation for production which could determine the needs of the hour as well as the long distance needs of the war. Much of what has been said about service departments applied *mutatis mutandis* to civilian and export requirements.

#### INTERNAL PROBLEMS

But while these external conditions were driving requirements in an upward direction, there were features within R.M.D. which made it unable fully to arrest these tendencies. In the first place it was unconvinced that the estimates of the Ministry of Shipping, as it then was, could be accepted as reliable statements of the shipping likely to be available. Their estimates had 'not been borne out by events in the past and may not be in the future,' wrote one official of the Ministry of Supply.<sup>2</sup> With that sort of *arrière pensée* in its mind R.M.D. could hardly be expected to bring its estimates into complete submission to the forecasts of the Ministry of Shipping. This example has been drawn from the first year of the war, and relations between the two ministries afterwards grew more intimate and harmonious. Yet in September 1942 an official of the Ministry of Production was saying that 'everyone is endeavouring to hang on to present consumption and to stocks which will give a feeling of reasonable security . . .' and refusing to accept the full implications of War Cabinet directives as to the use of importing capacity.<sup>3</sup> The previous

<sup>1</sup> See Chapter XXII.

<sup>2</sup> Above, Chapter V, p. 94, and Chapter XIII, p. 194.

<sup>3</sup> Above, Chapter XIV, p. 220.

chapter<sup>1</sup> shows that in 1943 the Ministry of Supply was still ensuring against upward revisions by planning the production of considerably more equipment than the existing programmes demanded.

Other controversies arose over estimates of minimum stocks. We have seen<sup>2</sup> that it took a long time to evolve a reliable basis for estimating what was a satisfactory stock position. At first existing stocks were expressed in terms of the number of weeks' consumption that they would provide at the current rate. This provided undoubtedly useful information but slurred over the great divergences in the production processes for different materials. Thus 'weeks' consumption' was too broad a calculation to provide reliable minimum estimates of stocks for the very reason that different materials required different periods of time to carry the raw material through to the finished product. If this period was long then a high level of stocks had to be maintained. It was not until early in 1943 that a more precise definition and evaluation of stocks could be expressed, which took account both of 'pipe-line' needs and contingency reserves. It may be that these considerations were operative earlier but it was in 1943 that they were given official expression.

In one other respect also the internal policy of the Ministry of Supply bore a close relationship to the import programmes, namely in the home production and salvage of raw materials. We have seen that the first phase of the war ending in Dunkirk saw the inauguration of schemes to expand the home production of timber and iron ore, the two materials which could bring most aid to the import programmes, while other materials such as aluminium, magnesium, flax and plastics contributed their welcome quota. Timber was at a disadvantage compared with iron ore, especially as the latter material was already drawing the benefit from the Corby scheme of the pre-war period. Yet during these ten months more than a million tons of timber were provided from home sources and in the same period 13·8 million tons of iron ore were mined. In the period which followed, output rose for both materials and by 1942 iron ore was at its peak level of output and timber was nearly there. Appendix 27 sets out for these materials the position at successive stages of the war. From it we see that in each case home production contributed an increasing share of total supplies. In the case of iron ore it rose from 75 per cent. of total supplies in terms of tonnage in the pre-Dunkirk period to 91 per cent. in 1942 and 1943; for softwood from 10 per cent. to 49 per cent. in 1942; for hardwood from 36 per cent. to 80 per cent. in 1943; for pitprops from 60 per cent. to 98 per cent. in 1942. Taking all these materials together the rise in the proportion

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<sup>1</sup> p. 226.

<sup>2</sup> Chapter XIV, pp. 219-220.

of home production to total supplies was from 66 per cent. in the first period of the war to 89 per cent. in 1942.

We have seen also that the collection of salvaged raw materials began slowly and was indeed hardly under way by the time of Dunkirk. The campaign was not properly launched until after Lord Beaverbrook's dramatic aluminium scrap campaign of July 1940, but soon the reclamation of raw materials had spread to all fields. These efforts met with a varying degree of success; the collection of scrap iron and steel reached so large a quantity that it tided the steel industry over the years 1942 and 1943 when scarcely any scrap iron and steel was imported. Indeed by 1943 scrap collection had for the majority of materials, except timber and steel, reached saturation point. By now the returns on the labour expended were too low to justify the continued collection of salvage in many cases, for example metal containers. In other words labour had become more scarce than materials.

These measures, and the other aspects of raw materials conservation considered in Chapter XXII, owed their primary importance to their capacity to lighten the burden which the import programme imposed on currency (in the early stages of the war) and continuously on the ships and on the ports. But there were more drastic steps in prospect which a deteriorating economic situation threatened to demand; they, however, could only be taken as a major strategical decision. It falls therefore to consider these questions within the framework of higher policy.

#### HIGH POLICY AND THE IMPORT PROGRAMMES

As supplies from overseas declined, the question inevitably arose as to what fundamental re-orientation of the British industrial system was necessary and, indeed, enjoined by the seriousness of the time. A descriptive term much used in the contemporary press, particularly after 1941, was that Britain had become an unsinkable aircraft carrier anchored off the coast of Europe. This meant, in effect, that Britain's importance in world strategy lay in her survival as a base for military operations, and it was necessary to determine, therefore, whether her industrial activities, as compared with this, must take a secondary position. Should we at least, as a step in that direction, stop importing raw materials in favour of processed ones? In March 1941 the Government was frankly asking itself whether the import of the full quantity of raw materials needed for the steel industry could be justified, now that American steel was available in such notable quantities.<sup>1</sup> How far, we may ask, could raw material imports have

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<sup>1</sup> Chapter XIII, p. 201.

given place to the munitions of war? Obviously there were limits. A nation of 50 million souls could not be turned into an armed camp drawing its munitions solely from overseas while its own processing industries lapsed into desuetude. There was a vast mass of skill and experience which it had taken centuries to accumulate. It would have been fantastic to attempt to convert such a great industrial army, much of it over age, into a military force. Moreover, too sharp a swing of the pendulum in the direction of finished products would have imposed strains of its own upon both the import and the production programmes. 'We cannot' (wrote one official in another context) 'leave the flow of imported materials entirely at the mercy of the quantity of, and rate at which, finished goods, components and explosives come forward for shipment from North America.' There were post-war considerations also to be borne in mind, for which it was manifestly necessary to retain as much as possible of the inherited training and equipment. In any case, there were limits to what our American ally could send. Soon the United States were looking askance at our demands for steel, and all our other requirements had to run the gauntlet of numerous American committees and organisations. However desirable an international division of labour might be in time of war, there were obvious limits to the amount of liberty of action which one nation could give up to an ally. Had Britain in fact reached such an economic limit by the end of the war?

It is obviously impossible to provide any hard and fast statistical answer to this question. But Table 43 may serve to indicate the extent to which Britain diminished, either voluntarily or under military duress, her imports of raw materials in favour of processed articles.

*Table 43. Dry cargo imports of raw materials and finished products, 1939-45*

	Min. of Supply imports (raw materials)	Board of Trade imports (i.e., finished products, including munitions)	B.O.T. imports as a percentage of combined total
	Million tons	Million tons	
1939 (Oct.-Dec.)	5.3	0.3	5.3
1940	22.1	0.9	3.9
1941	15.0	0.8	5.0
1942	11.5	0.8	6.5
1943	12.8	2.0	13.5
1944	11.8	2.4	16.9
Jan.-end June 1945	5.8	0.9	13.4

Source: Based on Central Statistical Office figures

The comparison is, to some extent, incomplete in that it refers only to those finished products which were sea-borne. An important omission is the aircraft, mainly heavy bombers and flying-boats, which were *flown* across the Atlantic. The annual totals of aircraft imported, irrespective of method of arrival, are shown in Table 44.

Table 44. Arrivals in the United Kingdom of aircraft from North America, 1940-45

Year	Numbers of aircraft
1940	1,069
1941	1,712
1942	2,394
1943	2,418
1944	5,667
1945 (1st and 2nd quarters only)	1,999

Source: *Statistical Digest of the War* (H.M.S.O. 1951), Table No. 135.

Part of this amount is included under Board of Trade imports and cannot be separated from them. Nevertheless, some measure of the contribution made by these aircraft to lighten the import burden can be gauged from the fact that anything up to fifteen tons of aluminium were required to manufacture one aircraft, in addition to the other materials and equipment used. Moreover, quite apart from aircraft, the tonnage needed to ship the raw materials for the finished products in general would have been much greater than that shown under the Board of Trade programme; more than one ton of raw materials is needed for each ton of finished product. Even with these limitations, the above comparison shows that the percentage of finished products in the import programme rose from 3.9 per cent. in 1940 to a peak of 16.9 per cent. in 1944, when the combined tonnage was only 62 per cent. of that imported in 1940. The special factors we have considered in this paragraph suggest that the movement away from raw materials in the import programme was greater still.

One other element played its part in the planning of import programmes, the difficulty of erecting one central organisation to conceive and execute such programmes. We have seen that before Dunkirk there was no unified conception of import licensing or bulk purchasing which could give coherence and system to the existing methods of buying overseas. Even when rapid advances were made



in this direction, both before and after Dunkirk, the control of the programmes rested with committees of ministers or officials, to wit: the Economic Policy Committee, the Lord President's Committee and the Import Executive. The Shipping Committee did not come into being until May 1942. The decision not to establish a Ministry of Material Resources before the war, the not very successful *marriage de convenance* between the Raw Materials Department and the Ministry of Supply, the absence of a Ministry of Production until February 1942 and the continued dichotomy between R.M.D. and that Ministry after February 1942, all combined to limit the effectiveness of central control. No government can hope to speak consistently and with one voice over the whole sphere of military and economic endeavour in war, and the import programmes and policies which we have been considering were no exception in betraying the signs of divided counsel.

Yet if we examine successive import programmes what trends do they reveal to us? We can here only very briefly survey the material we have covered in detail in earlier chapters. We have seen that the programme for the first year of war stood at 23.9 million tons and survived more or less at that level until the defeats culminating in Dunkirk suspended all the existing hypotheses about such programmes. By the second year of war the raw materials estimate was down to 19 million tons and continued to fall during the year. In the event 15 million tons arrived. In 1942 the programme fell still further, for a short time dropping to as low as 10.5 million tons, though in fact 11.5 million tons were imported. This was the lowest level reached. In 1943 nearly 13 million tons came, a close approximation in total to the programme upon which R.M.D. was working from April onwards. For 1944 the programme fell again to 11.65 million tons, with imports slightly higher than this figure. The 1945 programme was high at first, when victory seemed imminent, but soon fell as the struggle continued; in fact, imports for the first eight months of the year came in at the rate of 12.78 million tons per annum. Thus the broad outline which emerges is a steep fall in the first three years of the war, from approximately 22.3 million tons in the first twelve months to approximately 11.5 million tons in 1942. Then, from 1942 onwards, imports fluctuated only within the narrow range of 11.5 and 13 million tons per annum.

The evidence unmistakably shows that the process and machinery of estimation vastly improved during the course of the war, though the practice of over-estimation died hard. Yet when all the criticisms of the current methods, considered earlier in this work, are allowed for, two important conclusions can be drawn. In the first place, sheer necessity and growing experience determined a cut in the imports of raw materials from an average of 30 million tons in the

five years before the war to 11·5 million tons in 1942, the lowest of the war. Secondly, in spite of such drastic cuts, the war machine at no stage threatened to come to a halt for want of raw materials. When Britain's heavy dependence upon overseas supplies is borne in mind, the skill of the raw materials planners represents no insignificant contribution to the tasks of total war.

## CHAPTER XVI

# ANGLO-FRENCH RAW MATERIAL PROBLEMS: AN EXPERIMENT IN COLLABORATION

OUR story so far has embraced the problem of supply in a global sense, to use a term which gained such wide currency in the latter part of the war. Our relations with France, before Dunkirk, and with the United States throughout the war naturally formed part of that narrative. But so complex and so important were those relations that we must devote this chapter to Anglo-French developments, and the three which follow to an examination in detail of the origin and history of the Anglo-American combined operations in the field of raw materials.

In the ten months before Dunkirk England and France were in search of an Allied economic policy, a policy which was only to come to maturity years later in our relations with the United States. Fundamentally the problem was: could the Allies build a supreme economic machine equal to the supreme military command in the field of strategy? For this the beginnings were slow. In October 1938 negotiations were opened between a French commercial mission and the Board of Trade Supply Organisation to see how far Britain and France could fulfil each other's raw material requirements from domestic or imperial sources. In the discussions which followed, the two countries exchanged information and recognised that co-ordinated purchases in overseas markets for certain materials, such as copper and tungsten, would be desirable in time of war, but that as far as possible the two countries should keep to their normal sources of supply. It had been envisaged that a syndicate of the commercial missions of England and France might be set up in the United Kingdom when war came, but beyond this no financial or administrative machinery had been planned.

From the outbreak of war until the fall of France the two countries explored the possibilities of reinforcing the Anglo-French military alliance with a co-ordinated raw materials policy. It proved a many-sided question. They had to set about estimating and co-ordinating their requirements, planning and increasing supplies, eliminating competition and building an organisation capable of standing up to such imposing tasks. Programmes, in the first place, brought their own crop of frustrations.

During the preliminary negotiations which took place in London in September 1939 between French representatives and some of the British controllers, it became clear that it would be impossible to organise mutual assistance without adequate information about estimated war-time consumption and stocks. In November, therefore, when the permanent executive committees were being set up, their first assignment was 'to lay down a programme of the requirements of the two countries in the particular field covered by each executive committee and, where possible, to establish an *ad hoc* inventory of the resources of each country in that field'. But in December, the Commercial Counsellor of the British Embassy in Paris reported that French statistics were very difficult to obtain. In February 1940 British officials were again stressing the need for obtaining French statistics 'regularly and promptly'; but similar difficulties were being experienced in drawing up complete British data. One official pointed out 'that the executive committees for textiles and hides had only considered the question of supplies of boots for army needs. He had no knowledge of what the requirements of the Admiralty, the Air Ministry, the Home Office, the Post Office, etc., were'. At the end of April, M. Monnet, the chairman of the Anglo-French Co-ordinating Committee, was asking urgently for information about the existing stocks and requirements of timber and woodpulp.

If a fully correlated combined programme was the goal, the road lay through a fully correlated internal programme for each country. In February the various committees had been asked to 'endeavour to show separately amounts required for military purposes, for the civil population, for increase of stocks, and for imports required to make exportation possible'. But to determine under these heads allocations between the Allies involved high policy which, it was felt, might have to be submitted to the Supreme War Council. Moreover, as a senior British official observed:

It is quite a sufficiently difficult job to bring the French and British programmes into harmony. If the Anglo-French Co-ordinating Committee is also to be faced with the difficulties of harmonising the conflicting demands of various British departments and of various French departments they would surely be . . . attempting an impossible task.

When an attempt was made to formulate a joint programme, however, this drew forth the complaint that here was no co-ordinated policy applied to programmes: 'at present, the British and French programmes appear to have been merely added together'. But these separate estimates were wanted just the same. Short-term programmes on this basis were drawn up for the periods September 1939–February 1940 and February–August 1940,<sup>1</sup> but import priority was

<sup>1</sup> See Appendix 28.

settled from day to day by negotiations between the Shipping Executive Committee and the other permanent executive committees. In the middle of May the conception of a joint Allied production programme, and therefore a joint raw materials programme, found expression in a memorandum by M. Monnet, and the idea was in this embryonic stage when France fell.

Meanwhile the potential threats to Anglo-French trade had to be dealt with. Under Article 15 of the Anglo-French Agreement of 4th December 1939, it was laid down that:

The two governments will not impose restrictions on trade between the two countries for the purpose of protecting home industry or for foreign exchange reasons. They will do all that is possible to establish the same solidarity between their two empires.

The process was carried a stage further by the Anglo-French Import Agreement of 16th February 1940, by which a large number of quantitative import restrictions on Anglo-French trade were withdrawn, and both governments undertook also to encourage the expansion of trade between their empires. But this agreement presented difficulties to the Ministry of Supply, already anxious to restrict both imports of certain raw materials, such as French veneers, and the production of some kinds of finished or semi-finished goods in this country. It was arranged that control licensing should remain in force but the amounts imported from France would continue to be governed by the spirit of the agreement. Where, for example, home production of any article had to be reduced on a percentage basis, an equivalent percentage reduction was to be made in similar imports of French goods. The French were anxious to obtain also an undertaking from the British Government that price control would not force prices to so low a level as to act as a protective measure, but the British Government was unable to go further than promise sympathetic consideration in special cases.

At the same time the governments tried to increase the supplies of materials flowing between the two countries. In the early stages, before any committee organisation had been set up, the United Kingdom and France presented to each other lists of requirements which it was hoped could be supplied from Allied sources. But many of these initial requests could only be satisfied from stock, and in a number of cases the requests had to be refused. For example, Ministry of Supply representatives had to give negative answers to French requests for pyrites, jute, and flax, while the French themselves at one time, in December 1939, felt unable to fulfil further B.E.F. calls for timber from French forests. On the other hand, while urgent French needs for aluminium could not be satisfied from United Kingdom supplies, the British Air Ministry undertook to eliminate delays as much as possible in the manufacture of extrusion presses for France.

Gradually the whole position improved and the Allies began to increase their supplies to each other and from neutral sources. For example, by May 1940 there was a considerable interchange of iron and steel of different varieties between the two countries, and deliveries from Belgium and Luxemburg, which were shared equally between Britain and France, were increased by sixty-six per cent. between January and April 1940. Similarly, the Controller of Non-Ferrous Metals secured supplies of zinc concentrates for France from Empire producers, and schemes were being worked out for increasing zinc production in Canada to meet future French needs; the French were providing Britain with phosphate rock, timber, arsenic and bromine from France and the French Empire. But the growing French control over British purchases in France did not invariably mean an increase of supplies. For example, when the French grew alarmed at the danger of a timber scarcity they cut down British purchases from French sources. In the French timber industry there had now emerged a serious labour shortage, and there were lengthy discussions in the spring and summer of 1940 following a French request for 3,000 Canadian foresters to assist in cutting timber in France. By May 1940 French requirements for additional labour had expanded to 68,000 men, and a special committee had just been set up to deal with this issue when France fell.

Meanwhile there was the ever-present problem of competitive purchases. On the outbreak of war the French were known to be very seriously concerned at the possibility of competition between the two countries in purchases from abroad, and within the first fortnight of war a number of instances in fact occurred of Britain and France competing for raw material supplies. French demands for silk in Belgium were having the effect of forcing up the price at which the Belgians were offering silk to the British; and British and French representatives were, unknown to each other, negotiating for the same parcel of Belgian toluol. There were fears, also, that the French incursion into the Argentine hide market would lead to a sharp increase of prices against the British. Sometimes the appearance of both countries in the market had curious results. At an Anglo-French meeting in London the chairman of a British firm announced that he proposed to charge the French Government four shillings per ton more for tungsten than he was charging the British — 'a statement which caused M. Jaoul and M. Vieux to reach for their hats'. As late as December 1939 there was a serious case of competitive bidding by England and France for Italian hides, with the French apparently offering better terms than the British; but the French Embassy and purchasing commissions denied all knowledge of the negotiations, and suggested that they were being conducted by private firms. Because the French controls, where they existed at all,

lacked the authority of their British counterparts, it remained possible for a certain amount of unorganised dealing to be done in foreign markets.

This lack of co-ordination was showing itself not simply in price rises but in requests by neutrals for payment in 'hard' currencies. For example, while the Ministry of Supply was quite hopeful of obtaining Russian flax for sterling or francs, the French were negotiating for payment in dollars. On the other hand, the French expressed alarm that British dominions might sell raw materials which France needed to neutrals such as the United States, from whom France would subsequently have to buy the materials for dollars. It was indeed to deal with the financial problem, amongst others, that the Anglo-French permanent executive committees were set up in November 1939; and the Anglo-French Financial Agreement of December laid it down that (Article 12):

Payments should be made as far as possible in francs or in pounds sterling or in the money of the exporting country. The two governments will if necessary assist each other in negotiating payments agreements with third countries.

The commercial contacts between London and Paris grew much closer. As a result the British controls were purchasing certain materials abroad on behalf of the French, for example, steel and paper-making materials from America and wool from Australia and New Zealand. In any case the two countries maintained close liaison between their purchasing missions abroad. By these means they were often able to present a common policy to neutrals, as when they successfully resisted the Spanish demands that pyrites should be purchased in dollars. By the summer of 1940 the liaison was very close and little was being heard about Anglo-French competition for raw materials.

This was significant progress towards a common goal; on parallel lines the machinery for combined policy was taking shape. But first each country had to set its own house in order. A British inter-departmental committee for Anglo-French purchases, under the chairmanship of the permanent secretary of the Ministry of Supply, was set up by the War Cabinet on 3rd October 1939, although it had already been functioning informally for a month;<sup>1</sup> and on 2nd November the French Government followed suit with a 'Comité des Programmes et des Achats Alliés'. An important distinction between the two committees, however, was that while the British committee consisted of civil service heads of departments the French one con-

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<sup>1</sup> The committee consisted of representatives of the Treasury, the Air Ministry, the Ministries of Supply, Food and Economic Warfare, the Mines and Petroleum Departments, and the Ministry of Shipping (when formed); the committee also had power to co-opt representatives of the War Office, Admiralty and other departments.

sisted of ministers. The French recognised the need for establishing in addition an interdepartmental committee in London, but pointed out that they could not be expected to send the heads of their departments to England.<sup>1</sup> M. Jean Monnet added that it would be necessary to set up sooner or later a supreme economic council or 'there would be a great gap in the programme'. The British and French Prime Ministers agreed that there should be a 'ministerial body' in charge of the co-ordination of economic activities, and that it 'might be a committee of the supreme economic council', but it was understood that matters would be referred to it only if 'agreement was impossible on lower planes'.

The 'ministerial body' does not appear at any stage to have been established, although there were a number of specific meetings between British Ministers and their French colleagues. A series of permanent executive committees were, however, set up in November 1939, consisting of representatives of the British departments and of the French missions in this country; and three of these committees, dealing with (a) armaments and raw materials (except timber), (b) timber, and (c) textiles, boots, hides and skins, came within the purview of the Ministry of Supply. The permanent executive committees were responsible to the Anglo-French co-ordinating committee of which M. Monnet, 'the personal representative of M. Daladier', was chairman and the permanent secretary of the Ministry of Supply, vice-chairman. M. Monnet was to be regarded in future as neither a French nor a British official but an *Allied* official, paid jointly by the two governments.<sup>2</sup>

Throughout the period under consideration the French favoured the setting up of fully integrated combined organisations for various purposes, particularly for joint purchases abroad, and they favoured also the pooling of resources, proposals which the British resisted at almost every stage. On the other hand, a British suggestion for the joint purchase of woodpulp was not accepted by the French. M. Monnet advised the creation of a joint mission for raw materials in the United States, but it was pointed out that British purchases in that country, apart from steel, were extremely small, and it was finally agreed that British raw material orders should continue to be placed by British controllers through the normal trade channels, while the French would place their orders either through the French mission in the United States or through the trade, with a record kept of all orders placed. French purchases of American steel were arranged, after lengthy discussion, through the British Iron and Steel

<sup>1</sup> The original French suggestion in September 1939 was that all armament and raw materials problems should be dealt with by a two-man executive committee, immediately below the ministerial level, an arrangement which was, in fact, adopted later in Anglo-American relations.

<sup>2</sup> See Appendix 29.



Corporation. In general, while the British recognised the value of the whole committee framework for Anglo-French co-operation, they regarded it as essentially a framework, 'not intended to supersede . . . direct contacts and negotiations'; it was 'a means of discussing cases in which it has not been found possible in direct negotiations to satisfy the requirements of one side or the other'.

Here, in this field, we see perhaps the familiar contrast between the highly rational French conception of government and the much more pragmatic outlook of the British. The joint statement issued by the two Prime Ministers in November 1939 declared that the committee arrangements just made

will provide for the best use in the common interest of the resources of both countries in raw materials, means of production, tonnage, etc. . . . The two countries will in future draw up their import programmes jointly and will avoid competition in purchases which they have to make abroad in carrying out those programmes.

But in the spring of 1940 a high French official was reporting to his government that 'joint purchases are still the exception whereas they might be the rule in a great many more cases'. In the event no general Allied raw material plan or programme was ever evolved. At the end of the period, the Anglo-French committee organisation provided a means for personal contact and mutual assistance on individual supply problems and for avoiding competition, in which respects a great deal was achieved. But it was not an instrument for evolving a joint Allied policy. Yet the two nations had come far since October 1939, when economic relations between them could only be described as 'chaotic'. In the last weeks of the alliance M. Monnet was asking the permanent executive committees to give 'close and prompt attention' to two major issues:

I regard it as essential that the stocks of each country should be regarded as being available, if the necessity arises, for use in the other country [and] . . . each import programme should effectively be considered as a joint programme for both countries.

That is, the committees were, in essence, asked to advance from the policy of drawing up 'import programmes jointly', as expressed in the Chamberlain-Daladier statement, to the policy of drawing up a joint import programme. By the summer of 1940 the committees were still very far from this goal, but the foundations had been laid for the larger structure which, under the direction of a supreme economic council, might have provided the machinery for a fully co-ordinated Allied raw materials policy. So far there had only been trial and error. But military developments were already calling for larger and bolder experiments in economic collaboration across the Atlantic.

## CHAPTER XVII

# ANGLO-AMERICAN SUPPLY RELATIONS UNTIL PEARL HARBOUR

**T**HE study of the economic association between Britain and America from the outbreak of war until Pearl Harbour falls roughly into three main periods. The first extended until the fall of France in June 1940 and covered a time when purchases from North America were perforce restricted to the minimum in order to ensure the fullest economy in the use of dollars. The second lasted from the fall of France until the passing of the Lend-Lease Act in March 1941. During these critical nine months, for us the most critical period of the war, our demands upon North America expanded enormously. We drew upon our dollar assets to the full and their exhaustion was in sight when the Lend-Lease Act of March 1941 made it possible for the New World to begin to redress the balance of the old. But this event, though it opened the dams, occurred when the shortage of shipping made the situation graver still and while the pressure of America's own demands upon her supplies was growing apace. The third phase lasted from now until the Japanese attack on Pearl Harbour in December 1941 when America took her place in the world struggle. Not only did she need from now onwards the full-scale equipment of a major fighting ally but, at this very time of steeply rising demand, supplies of raw materials from the Pacific area were swiftly lost to the democracies. With the crucial events of Pearl Harbour the first half of this narrative of Anglo-American relations comes therefore to an end.

### (i) FROM THE OUTBREAK OF WAR UNTIL THE FALL OF FRANCE, SEPTEMBER 1939—JUNE 1940

Until the eve of hostilities virtually no preparations had been made for the war-time purchase of raw materials in North America. That was natural enough. As far as the United States were concerned most of the materials they could supply, with the possible exception of iron and steel, could be obtained in adequate quantities, in easier currencies and with a shorter shipping haul from European sources. Our estimates were therefore based upon 'the maximum possible diversions from the United States'. But there was one important

exception: the cotton-rubber barter agreement of June 1939, by which the United Kingdom Government was to receive 600,000 bales of American cotton in return for a quantity of rubber equivalent in value to the total value of the cotton.<sup>1</sup> In the case of Canada the position was complicated by other issues. In the first place, as we have seen,<sup>2</sup> the Imperial Conference of 1937 had been against making commitments 'during peace-time either to purchase or to supply raw materials during a period of war'. In spite of this, however, representatives of the Board of Trade and other departments had continued to hold discussions with the Canadian Government and with private trading organisations about the possible supply of Canadian materials to Britain in time of war. In particular we looked to Canada for non-ferrous metals, notably copper, lead, zinc and aluminium, but the Canadian authorities felt unable to enter into long-term war contracts on the grounds that they needed first to plan their own supply and control arrangements. In August 1939, however, the Canadian Government gave *carte-blanche* to the industrial concerns to make whatever arrangements they thought fit with the British negotiators.

Meanwhile, the United Kingdom authorities laboured in this, as well as in many other features of their work, under unsatisfactory estimates of total raw material requirements. Indeed, a month after the outbreak of war, the Raw Materials Department had no more up-to-date plan for calculating requirements from overseas than that worked out before the service expansion of April 1939. The very tentative estimates of British requirements from the United States and Canada as forecast in July and February 1939 respectively are set out in Appendix 30 to this volume.

#### PURCHASE RESTRICTIONS, SEPTEMBER 1939-JUNE 1940

Until the German invasion of Scandinavia in the spring of 1940 the basic principle of our policy remained, wherever practicable, 'diversion from North America'. This does not mean, of course, that imports were expected to be negligible. In the programme of October 1939 the United Kingdom sought from Canada non-ferrous metals, timber and small quantities of other materials, of a total value of £49 million,<sup>3</sup> but from the United States a comparatively small proportion of our total iron and steel requirements estimated at approximately 100,000 tons per month,<sup>4</sup> some cotton, a little timber and

<sup>1</sup> Cmd. 6048. See also Chapter III, pp. 53-54.

<sup>2</sup> See Chapter II, pp. 41-42.

<sup>3</sup> See also Appendix 31.

<sup>4</sup> This figure was increased to 130,000-135,000 tons per month in February to allow for increased demands for alloy steel and steel for re-export in manufactured articles. In addition the Iron and Steel Control made a special request in February for the import of 5,000 tons of American forging billets to meet the heavily increased Air Ministry programme for drop forgings.

miscellaneous materials. At the beginning of 1940 it was estimated that, of the £200 million to be spent in the United States during the first year of war, £48 million would be spent on raw materials. Here already was a noteworthy modification of policy. While the pre-war estimate assumed that expenditure in the United States on raw materials would be approximately half that in Canada (i.e., about £25 million), within a few months of the outbreak of the war the American estimate had doubled while the Canadian one remained stationary, and, in fact, subsequently diminished.<sup>1</sup>

But could the American continent meet our demands? On the outbreak of war the supply of raw materials in North America was undoubtedly plentiful. The main problem was neither supply nor shipping, apart from the difficulties of port diversion, but currency. We therefore imported from North America not what that continent could best send but what the United Kingdom could not obtain with easier currencies. A minor exception to the satisfactory position at source was Canadian steel, of which the supply dwindled quite early on account of increased Canadian demands as a fighting ally. Our imports of steel from Canada, including ferro-alloys, which accounted for one-third of the total, amounted to just over half a million tons in the period September 1939 to December 1942; on the other hand, anxious as we were to cut our purchases from the United States to the minimum, we bought nearly 1½ million tons of steel there during the first six months alone.

Within less than a month of the outbreak of war contracts had already been signed for the purchase in Canada of the following essential materials: 187,000 tons of copper; 110,000 tons of lead; 130,000 tons of zinc; and 30,686 tons of aluminium. It was also stated that in the Timber Controller's programme of purchases provision had been made for the expenditure of £11 million over the next six months on Canadian timber. By the beginning of December the main items in our programme were as follows:—

(a) Contracts already placed.

Material	Quantity in tons	Cost in Canada in dollars
Copper . .	187,000	42,000,000
Zinc . .	130,000	11,000,000
Lead . .	110,000	8,000,000
Aluminium . .	48,200	21,000,000
Timber . .	. . <sup>1</sup>	8,730,000
Acetone . .	1,500	235,000

<sup>1</sup> Quantity not specified in the document from which these figures were taken.

<sup>1</sup> See Appendix 31. This reduction in Canadian expenditure and increase in American expenditure had been in some respects foreseen, but not to the extent which occurred in the case of Canada.

## (b) Expenditure authorised but contracts not yet placed.

Material	Quantity in tons <sup>a</sup>	Cost in Canada in dollars
Flax . . .	1,000	340,000
Timber . . .	..	39,400,000
Pitprops . . .	..	4,450,000
Woodpulp . . .	..	4,787,200

<sup>a</sup> No quantity specified for timber, pitprops and woodpulp.

In the middle of the same month our purchases of steel alone in the United States stood at:

Steel ingots and semis	435,407 tons
Pig iron	138,000 tons
Scrap	315,000 tons

By the beginning of February the total contracts with the United States and their dependencies amounted to £51 million, expended roughly as follows: cotton £26 million; iron and steel £9 million; timber £3½ million; woodpulp £2 million; hemp £800,000 and a large number of smaller items.

The loss of Scandinavian sources of supply did not immediately affect to any considerable extent our requirements from North America. Alternative sources were still available in Europe and elsewhere, except for woodpulp, for which we became almost completely dependent on North America, and for non-ferrous metals and timber, of which Canada now became our chief, though not our sole, source. Existing civil consumption of certain materials, such as timber and paper, was, however, high enough to allow of a reduction in consumption without replacement.

The German invasion of the Low Countries in May and the fall of France in June introduced much more radical changes in the situation. For iron and steel the United States became the chief remaining source of supply overseas. Requirements from that country were increased on 13th May from 130,000-135,000 tons per month to 155,000 tons; and on 31st May the purchase of a further 300,000 tons of American steel was authorised. In the same month the British Iron and Steel Corporation were asked to negotiate the purchase of a million tons of steel in the United States on behalf of France. After the capitulation of France, it was decided that, in addition to placing new orders in the United States to replace ferrous resources lost in Europe, attempts must be made to ship immediately as much American steel, pig-iron and scrap as possible from the orders already given by ourselves and France. Accordingly, arrangements were made for the importation of 1,800,000 tons of these materials in the two months July-August. Canada and Newfoundland became almost our main source for pitprops, while our requirements of aluminium from

Canada were increased. Apart from expanding the *existing* demands for raw materials in North America, the United Kingdom was obliged to turn across the Atlantic for supplies of those materials which she had not imported from that area since the beginning of the war. Thus we began taking phosphates from Florida in place of those lost in North Africa.

For the last part of the period, the contracts for timber, woodpulp and iron and steel in the United States revealed, as is shown in Table 45, our increasing dependence upon that country.

*Table 45. Raw material orders placed in the United States, March–July 1940*

Material	March	April	May	June and July <sup>1</sup>
Timber <sup>2</sup> . . .	\$1,380,868	\$2,218,380	\$4,351,806	\$10,652,700
Woodpulp . . .	7,515 tons	26,028 tons	15,780 tons	41,154 tons
Pig iron . . .	..	20,000 tons	62,500 tons	301,467 tons
Scrap . . .	..	80,000 tons	330,000 tons	100,000 tons
Semi-finished and finished steel .	..	250,000 tons	637,144 tons	1,938,254 tons

<sup>1</sup> The figures for June and July are given as a combined total.

<sup>2</sup> In the cables from which these figures are obtained timber contracts are not given in quantities but in costs in view of the varieties of timber and different units of measurement involved.

Figures of our expenditure in North America during the period September 1939–June 1940 show that, in spite of the attempt to husband our dollar resources, the money spent on practically all the materials imported from that continent was increasing even before our military defeats in Europe. Part, but only a limited part, of this increase was due to the rising price level overseas; the rest was due to the heavier purchases we were making. By far the most important material imported from the United States, in terms of value, was cotton, with, by May 1940, steel imports a close second. Chemicals were also being bought on a large scale, averaging more than £500,000 a month. Our largest purchases in Canada were of non-ferrous metals, wood and timber. To pay for these imports we had to find dollars by all available means: by exports, intensified by the export drive of February 1940; by the requisitioning and resale in the United States of American securities held by British subjects; and in Canada by payments, partly in sterling and partly in Canadian dollars at an agreed exchange rate. But our earnings were not enough and we were living on our dollar capital.

#### ORGANISING THE MACHINE

Meanwhile, two major problems of organisation had come to the fore. There was first the problem of eliminating competition between

British nationals and between allies, competition which would be reflected either in rises in price or in shortages of supplies for essential purposes; and, secondly, there was the problem of creating some central organisation for co-ordinating all our purchasing activities in North America. The two problems were themselves part of the fundamental task of preparing a long-term plan or programme of raw materials requirements as a whole.

#### COMPETITION

With the exception of iron and steel from Canada, and electric steel from the United States, the essential materials were in such plentiful supply in North America that it was not envisaged that competition could seriously affect the supply position, as such, of raw materials to the Allies. But the Allied and the American Governments were aware from the outset that competition would immediately affect prices, and therefore would indirectly limit total supplies, while it would have an undesirable inflationary effect upon the American Government's own purchases in the home market. Competitive bidding might take one of two forms; the unco-ordinated attempts by British nationals to purchase scarce materials or the struggle for supplies between allies. Both forms of competition would play into the hands of the sellers.

The danger of competition between British nationals was dealt with in North America, as elsewhere, by the increasing centralisation of imports, either by purchases on government account (timber, woodpulp, flax), or by placing the imports under the direction of the individual raw materials controllers (iron and steel); or, where such full powers were not considered necessary, by the import licensing system (paper, hides and skins, molasses) or by a combination of these methods (jute). In the case of pitwood, for example, a company was set up in Canada and Newfoundland, with a parent company in the United Kingdom consisting of all the principal agents, to obtain offers from producers, assist in finding the necessary currency, inspect, measure and so on. Similarly, for caustic potash and sodium carbonate a buying group was created representing merchants and consumers, while for calcium carbide a Carbide (Voluntary) Control Committee, consisting of the principal British importers, was established. On the other hand, silk and cotton continued to be purchased through the usual trade channels. Practically no evidence exists of competition between individual British purchasers in North America during this or any other period of the war.

The other problem, namely that of competition between England and France, we have considered in the previous chapter. Competitive bidding between the two countries occurred both in Europe and overseas, and certainly in North America it presented great diffi-

culties. It was to deal with this and related problems that the Anglo-French Co-ordinating Committee was set up in November 1939. A co-ordinating committee without a co-ordinated programme could not, however, achieve much; as late as April 1940, for example, the Iron and Steel Controller learned from *unofficial* sources that there was a French buyer on his way to the United States to purchase alloy steel. Thus it was feared that large and increasing demands for this commodity might 'over-tax the capacity of the American industry unless handled and co-ordinated with the greatest care'. A tentative agreement was reached in April 1940 to extend to alloy steels the system under which the British Iron and Steel Corporation arranged joint purchases of American commercial steels, though it was doubtful whether the agreement would work very efficiently in the event of French requirements assuming larger proportions than indicated at that time. But already the problem of inter-Allied collaboration for raw material purchases had become merged in the wider question of setting up a central purchasing organisation in North America.

#### BRITISH PURCHASING MACHINERY IN THE UNITED STATES

The Riverdale Mission to Canada, in its report of August 1939, had naturally assumed that British purchases of raw materials in North America would be small. It had assumed also that such raw materials as were bought would continue to be acquired in war-time through the usual producers' trade channels, modified where necessary. This view prevailed after the outbreak of war and raw materials were therefore not included within the purview of the Canadian War Supplies Board, the British Purchasing Commission in the United States or the Anglo-French Purchasing Board. Thus, during this period, copper, lead and zinc, for example, were purchased in Canada by direct agreement with the producers; ferro-alloys and woodpulp through the producers' agents in the United Kingdom, and most other raw materials through the usual peace-time trading channels, under the supervision of the Ministry of Supply and the Import Licensing Department of the Board of Trade. Criticism of this procedure came from two main sources: from the Canadian and American Governments and from the British Purchasing Commission.

The American Secretary of the Treasury (Mr. Morgenthau) constantly reiterated the view of his government that Allied purchases of raw materials should be organised through one central body and that the American Government should be kept informed of the main purchases contemplated or completed. At the beginning of October 1939 Mr. Morgenthau had already made clear the President's strong desire that the British Government should furnish weekly summaries of orders placed and deliveries taken in America;



that only Mr. Morgenthau and the President were to see the orders and that no one else was to be informed even that they had them. The Secretary of the Treasury explained that a co-ordinated organisation and effective liaison between the three countries was needed to prevent 'an increase of prices which would be as damaging for the American economy' as for the British purchasers. He was prepared to offer the assistance of the Procurement Division of the United States Treasury to provide information about prices, specifications, productive capacity and possible supplies. Apart from other considerations, this would obviate unsatisfactory orders:

He [Mr. Morgenthau] instanced a case in which the French Government had placed an order for a certain type of truck from Paris; if only the order had been placed through an organisation here which had consulted the United States Administration first, they would have learnt that this type of truck was defective.

He also emphasised that the absence of raw materials collaboration would be felt in a falling supply of American finished products to the Allies, if they diverted raw materials from American factories in order to import them themselves. At about the same time attention was drawn to precisely similar dangers in unco-ordinated purchases in Canada; and it was pointed out that the ill-organised piecemeal purchase of raw material was leading to dissatisfaction in Canada and might seriously affect Canada's war effort.

To the arguments put forward by the Canadian and United States Governments, Mr. A. B. Purvis, the head of the British Purchasing Commission in New York, added his own frequently repeated pleas for the linking up of all British raw materials purchases through the machinery of the B.P.C. Mr. Purvis stressed that he could not satisfactorily undertake the organisation of munition imports without at least being kept informed of the purchases of essential raw materials. Apart from resolving or avoiding possible conflicts of demand for raw materials between the United Kingdom and American factories, the B.P.C. (he added) could probably obtain better terms in purchasing finished products from those very companies which were supplying raw materials. For example:

Our hands would be materially strengthened in the purchasing of shells and of toluol (both of which involve the same companies from whom the big Allied steel purchases are made) if the steel business were done through us.

He also objected to the methods of purchase used by the raw materials organisations. For example, the British Iron and Steel Corporation was still using the peace-time method of guaranteeing payment by depositing letters of credit in the American banks. Such methods were damaging to the prestige and authority of the B.P.C. and harmful to the credit of Allied Governments. Its effect was to stultify the

Anglo-French Purchasing Board policy, so far successful, of refusing such demands for letters of credit.

These issues were crystallised in the conflict between the Iron and Steel Control on the one hand and the B.P.C. on the other. To the thesis that all raw material purchases should be centralised under the B.P.C., the Control replied that, in making use of the peace-time contacts of the British Iron and Steel Corporation in North America, it was in fact arranging its imports more economically and effectively than would be possible through the newly created machinery of the B.P.C. This, it was argued, was exemplified in the purchase from the Bethlehem Steel Corporation of more than a million tons of steel at four dollars per ton cheaper than the prevailing ring price, thanks to the personal assurance given by that company to a senior member of the Control that Bethlehem Steel would never become party to a price ramp. In any case, it was claimed that even the heavy purchases of the Corporation could not seriously inflate the prices of an industry with a productive capacity of 75 million tons. It was argued also that there were special advantages in purchasing through the Corporation in *London* rather than through the B.P.C. in *New York*. It was held that rings of American suppliers were less effective when obliged to operate overseas; that much of the burden of preparing detailed cables and forwarding specifications was borne by the London offices of American suppliers and not by the British purchasers; that changes of requirements and of import programmes could be more effectively introduced through a close London control than through one exercised over a great distance; that the best knowledge about loading ships and of the most suitable sources existed in London mainly, and that from here the purchases should be arranged.

Gradually, and under pressure, the Ministry of Supply set about centralising its trading activities in North America. In the autumn of 1939 it was agreed that purchases of raw materials should continue to be arranged under the direct authority of the various departments and controls but the British Purchasing Commission would be kept informed of large financial commitments; where experts were sent out, they would be instructed to establish and maintain contact with the Commission. In December it was further agreed that the American Government should be provided with weekly statements of all war orders placed or pending, and in February Mr. Purvis was promised a regular statement of government purchases and estimates of large private purchases; but it was pointed out that it would be impossible to give information about the less important private purchases other than what could be obtained from the ordinary trade returns. These developments, however, were all designed to give information in America after, or, at most, immediately before, a contract had been placed, and this state of affairs aroused the increasing dissatisfaction

of the American Government. In May 1940 Mr. Morgenthau expressed himself in the strongest terms on the subject, referring especially to the steel supply arrangements under which the material was still being purchased on behalf of this country and France by the British Iron and Steel Corporation and not through the B.P.C. The Secretary of the Ministry of Supply immediately made it clear to the Iron and Steel Controller that the issue had now become one of 'high politics', and on these grounds the Controller gave way. It was accordingly agreed that pig-iron and steel should be purchased in the United States through the Anglo-French Purchasing Board, composed of the French Mission and the B.P.C., and that a Control expert should be attached to the Purchasing Board. Control experts for other commodities also began to be appointed.

By the end of the period no central trading organisation had been evolved. This may be attributed partly to the natural reluctance of the controls and other expert purchasers to hand over their powers to a new body without close trading connections or experience in handling the individual material; but, apart from these special causes, it was proving impossible to create an appropriate organisation without having some general estimate of requirements. The position as summarised in May 1940 showed that, in essence, only the preliminary stages of raw materials planning had been reached.

In the case of most of the raw materials in which we are interested (and also in regard to food purchases, for example) it is a case of surveying world supplies and making up our minds where best to go for what we want, balancing up exchange and shipping considerations.

In conditions such as these it was natural that the work of centralised programming could make only very limited progress and that the machinery of co-ordination should be still in an inchoate form.

(ii) FROM THE FALL OF FRANCE TO THE PASSING OF THE LEND-LEASE ACT, JULY 1940—MARCH 1941

To re-equip her armies after the losses of Dunkirk, and to stand alone against the Axis, Britain in the summer of 1940 was desperately in need of supplies. With the capitulation of France the whole of the western European sources of supply from Narvik to the Pyrenees passed under enemy occupation, and no one knew how long the Iberian peninsula would remain neutral. At the same time, the Empire countries, and Canada in particular, were increasing their own requirements of raw materials as their armaments programmes, both for the United Kingdom and for themselves, expanded. Clearly pressure upon American sources was bound to increase.

The threat of the heavy bombing of our manufacturing centres and ports played a significant part in changing the balance of our

import programmes. To maintain our military effort at its maximum we needed, of course, considerable raw material imports but the emphasis moved from imports of raw materials in favour of imports of munitions of war: finished products and processed materials. If part of our armaments industry were put out of action the call for raw materials would necessarily diminish but the call for finished products would increase. Thus, the Raw Materials Department laid it down that:

Subject to the necessity of keeping important industries going, materials should be imported in the most concentrated and convenient form, e.g. pig iron and steel instead of iron ore and scrap, paper instead of woodpulp, etc.<sup>1</sup>

This viewpoint was forcefully expounded also by Mr. Purvis in his cable of 15th June 1940 in which he urged a policy of placing an increasing number of orders for finished munitions rather than raw materials or machine tools. He pointed out that this would have the additional advantage of providing insurance against air raid damage. This development served also to economise in shipping though it meant a greater drain on our foreign currency, thus underlining the increasing importance of the one and the diminishing importance, by comparison, of the other. An indication of the relationship between requirements of raw materials and finished products is set out in Table 46.

*Table 46. United Kingdom expenditure on imports of United States raw materials and finished products before and after Dunkirk*

(Actual payments made by 31st October 1940 compared with orders placed by 1st November 1940 for delivery November 1940–August 1942)<sup>1</sup>

	Payments already made 1st Sept. 1939–31st Oct. 1940	Orders placed for delivery November 1940–August 1942
Raw materials . . . .	\$147.2 million	\$285.8 million
Finished products . . . .	\$815.6 million	\$2,476.4 million
<b>Total . . . . .</b>	<b>\$962.8 million</b>	<b>\$2,762.2 million</b>
Expenditure on raw materials as a percentage of total . . . . .	15.3	10.4

<sup>1</sup> This statement is based upon a table of forecast payments in the United States by the B.P.C., drawn up on 1st November 1940. Column 1 represents payments made by 31st October 1940 and is therefore a rough measure of orders placed before Dunkirk; column 2 represents orders placed for delivery for the period November 1940–August 1942, and reflects broadly the changes which took place after Dunkirk. (In the totals provided no figures were included for timber. Items of 'capital' and 'all other' expenditure have been omitted as it is not stated what proportion of these sums were expended on raw materials.)

<sup>1</sup> It added: 'This would in many cases have the double effect of saving shipping space and of accelerating discharge and clearance of ports'.

In a crude form the table indicates that whereas before Dunkirk expenditure in the United States on raw materials represented roughly fifteen per cent. of the sum involved, in the period after Dunkirk it was expected to fall to ten per cent. of the anticipated total. Also, while it was intended that expenditure on raw materials should barely double after Dunkirk, expenditure on finished munitions was to be more than trebled. But, in view of the length of the second period, these orders alone, given out by 1st November 1940, represent a small part of our requirements in the United States, and particularly is this true of munitions. Therefore, the switch-over from raw materials to finished goods was probably far more impressive than indicated here.

As far as the individual materials were concerned, there was the same change of emphasis in favour of semi-finished or finished materials. Table 47 compares the purchases of American pig iron, scrap and steel in the period 1st September 1939-30th April 1940 (the last clear month before the German invasion of the Low Countries and France) with the estimated requirements drawn up for the period September 1940-August 1941.<sup>1</sup>

*Table 47. Imports of pig iron, scrap and steel from the United States, September 1939-April 1940, compared with estimated purchases for September 1940-August 1941*

Materials	1st September 1939- 30th April 1940		September 1940- August 1941	
	(Actual)		(Estimate)	
	Tons	% of total	Tons	% of total
Pig iron . .	185,500	10·9	600,000	7·7
Scrap . . .	638,950	37·6	1,200,000	15·4
Steel . . .	876,507	51·5	6,000,000	76·9
<b>TOTAL . .</b>	<b>1,700,957</b>	<b>100·0</b>	<b>7,800,000</b>	<b>100·0</b>

It is clear that while the requirements of pig iron and scrap, the 'raw materials' of the steelworks, fell from 10·9 per cent. and 37·6 per cent. of the total imports to 7·7 per cent. and 15·4 per cent. respectively, the import of steel, the 'semi-finished' product, rose from 51·5 per cent. to 76·9 per cent. of the total.<sup>2</sup>

<sup>1</sup> It has not been possible to find out at which date these estimates were compiled.

<sup>2</sup> It should be noted, however, that this change of requirements represents not simply the United Kingdom's reaction to the Dunkirk crisis. It represents also the American preference for exporting processed and finished steel rather than pig iron or scrap, in view of the enormous steel-producing capacity of the country. The American steel industry was much more balanced in structure than that of the United Kingdom, whose finishing capacity was greater than its steel-making capacity, and the steel producers naturally preferred to export finished or semi-finished products. Were it not for the special 'insurance against bombing' policy and the American pressure, the Iron and Steel Control would have preferred to import pig iron, scrap and ingots rather than material which had been further processed.

Apart, however, from these modifications in character, British requirements increased rapidly. As the Minister of Supply claimed on 17th July: 'the more modest chapter of North American purchase has gone . . . a new big comprehensive chapter has begun . . . we are acting with speed and vision in this vital matter'. 'It is of urgent importance to "talk big and at once",' said the chairman of the North American Supply Committee, Sir Arthur Salter. 'It matters little if we over-estimate'. Iron and steel imports from the United States provide the best example of the enormous expansion which was taking place. In April 1940 the total estimate of iron and steel requirements for one year amounted to £12.6 million; by July 1940 the estimate for the second year had leapt prodigiously to £100 million.<sup>1</sup>

It was not possible, however, to weld all these demands into a complete plan of requirements. Sir Arthur Salter had declared:

A bold, comprehensive, imaginative statement of the *whole* of what we think we may wish to obtain, on a wider basis than has so far been planned (except in regard to aircraft), would seem . . . to be an urgent and imperative necessity.

In August Mr. Purvis had cabled:

To take the initiative it will be necessary that we present to the administration the full picture of British requirements and that that picture be established on a high plane as to quantity so that Empire needs as a whole may be covered.

He stressed, even at this early stage, that the ultimate goal must be an integrated Anglo-American programme. But the ideal of such a co-ordinated programme for the United Kingdom was extremely difficult to realise, and even more so throughout the Empire, where the government supervision of imports and consumption was far less thorough than in Britain. For example, the Government of India had little knowledge of the raw material requirements of civil industry and only a very limited control of imports.<sup>2</sup>

Mr. Purvis himself observed that the various Empire missions in North America obviously did not have a complete idea of their needs. In September the American Government had been asking for a 'forward-looking programme covering all essential war material' for Britain and the Empire, but the Ministry of Supply pointed out that it was not possible to draw up any such programme which could remain completely unchanged. On 3rd December 1940 the B.P.C.

<sup>1</sup> See also Appendix 32.

<sup>2</sup> Similarly, it proved impossible to accept the American proposals for joint purchases of quartz crystals in Brazil because at least five British government departments and a number of commercial firms were all making their individual arrangements to obtain supplies, and it was therefore not possible to give the Americans a comprehensive picture of our stocks, requirements and consumption.

stressed that it could not afford, in putting forward estimates of zinc requirements, to make the same mistakes as had been made in the case of mercury. In the same month, the B.P.C. complained that the American Government was asking for full information in many fields in which the Commission was still ignorant of the activities of independent agencies purchasing on United Kingdom account. It was not until the effect of the United States export licensing system and the Lend-Lease Act of March 1941 were brought to bear upon the situation that the difficult task of co-ordinating United Kingdom requirements drew near to fulfilment.

#### LIMITS UPON SUPPLY

But while these skirmishes over requirements policy were taking place, supply difficulties of various sorts were making themselves felt. Currency was a notorious handicap, the shipping position was about to become serious, and to these problems was added a third limiting factor which was to become of increasing importance: the American rearmament programme.

Although our currency shortage was acute in North America, in fact it became clear from quite early in this period that the United States Government was preparing to help in the solution of the problem and allow us the maximum available supply of raw materials. Productive capacity in America was being expanded rapidly, irrespective of whether Britain would ever be able to pay for its products or not, and as Sir Arthur Salter pointed out, in the memorandum already referred to, 'the creation of this capacity and the momentum of the output and the interests involved may itself, at the worst, force a solution of our credit problem'. The British Ambassador to the United States, Lord Lothian, expressed this viewpoint, even more strongly, in October:

everyone in the United States realised that sooner or later America would have to find money for us. He did not doubt that the United States Administration would find a way of providing money, either as a gift, or as a nominal loan . . . The President would, however . . . have both to be convinced that our resources were exhausted, and to have full information regarding the purposes for which we required the money.

Meanwhile the export drive continued to provide us with some of our dollar needs at the same time as Treasury restrictions upon purchase were being less intensively applied. In the House of Lords debate of 11th July 1940 Lord Beaverbrook declared that, since his appointment as Minister of Aircraft Production, British purchases overseas had not suffered an hour's delay on account of the Treasury,<sup>1</sup>

<sup>1</sup> H. of L. Deb., Vol. 116, Cols. 953-54.

and a week later, Lord Woolton, speaking on behalf of the Ministry of Supply, said 'His Majesty's Government have realised that there is no time for hesitation, or for prudence, or for the undue consideration of positions of exchange'.<sup>1</sup> The raw material controls and the Ministry of Supply were obliged, none the less, to exercise a careful surveillance of requirements to ensure that currency was not wasted on inessential uses, and the Treasury continued to urge upon them the need for obtaining supplies from alternative areas in which currency problems were not so grave. Thus, we continued to purchase phosphates from North Africa, even after the fall of France. But although the currency situation was continuously deteriorating, there was no alternative but to spend on essential needs. It was now or never, and we could not resist the advice of the Americans that we should scrape the bottom of the barrel. But the bottom of the barrel was in sight.

The shipping situation continued to deteriorate. The Mediterranean was closed to us, and our imports from south-eastern Europe, as well as our supplies for the armies in the Middle East, had to use the long route via the Cape. While this reduced the available shipping tonnage, the German control of the coastline of north-west France, with its submarine and air bases, menaced our shipping routes and threatened also severe damage to our ports. The import programme for raw materials fell sharply from 30 million tons per annum to estimates ranging between 19 and 23 millions. In addition, the problem of North American land transport became of greater importance. For example, when we concentrated the bulk of our timber demands upon Canada we were committed not only to a longer shipping haul but to a lengthy trans-continental rail haul since the bulk of the timber came from the west coast of Canada. Similarly, American steel sometimes had to traverse long distances to suitable ports for shipment to the United Kingdom.

And now the American rearmament programme was getting well under way, accompanied by a closer government control over the export of essential materials. By a presidential proclamation of 2nd July 1940, the export of numerous basic materials, and products containing these materials, was prohibited, except under licence.<sup>2</sup> On 21st July Mr. Purvis observed that the speeding up of the American defence programme was making itself felt in our own supply position in the United States. A few days later he referred to the difficulty of obtaining early delivery of chemicals, chiefly because American consumers were stocking up in anticipation of shortage; he added that both delivery and price conditions for chemicals would progressively

<sup>1</sup> *Ibid.*, Col. 1054.

<sup>2</sup> i.e. aluminium, antimony, asbestos, chromium, cotton linters, flax, graphite, hides, industrial diamonds, magnesium, manganese, manila fibre, mercury, mica, molybdenum, optical glass, platinum group metals, quartz crystals, quinine, rubber, silk, tin, toluol, tungsten, vanadium, wool, and a number of chemicals.



become unfavourable to us. On the whole North American supplies were still plentiful, but aluminium was becoming scarcer, and, in spite of the over-production of copper, shortages were expected of certain semi-manufactured derivatives such as brass strip, as well as of a number of steel products. By August it was clear that shortages were also likely to be encountered in gun forgings, drop forgings and bearings. By November difficulties were being experienced in chlorine and many other chemicals; and by December in zinc. Although the drop forgings situation appeared to become easier, in January dies for forgings were still in short supply.

By now also the Americans were asking for our assistance in dealing with their own supply needs. Thus, arrangements were made in December 1940 to build up a 'strategic reserve' of 250 million lb. of Australian wool in the United States to be available to the American Government in the event of an emergency.<sup>1</sup> The advantages of this agreement were twofold. While it was a supply security measure as far as the Americans were concerned, it provided also an economy in Allied shipping space because some of the wool was carried away to the United States in American ships. The American Government's efforts to build up a large stockpile of mica led to greater difficulties. In August the American authorities asked for the assistance of the British Government in facilitating current orders and in building up in North America a stockpile of Indian mica consisting of about one million lb. block mica and five million lb. splittings. The British Government promised all aid in assisting current orders, but pointed out that the building of such a large stockpile, especially of high-quality mica, might lead to shortages and price rises. The American Government, however, made renewed representations, in view of which the British Government expressed in September its willingness 'in principle to purchase and ship mica . . . as far as may be practicable'. In December, however, the raw material division of the United States Defence Commission told Sir Walter Layton, at that time on a special mission in America, that, while the Defence Commission were taking every possible opportunity to meet us in every way, they felt that we had been dilatory in meeting them on questions about which we should have been able to satisfy them without much difficulty. To this the North American Supply Committee replied with great regret that, apart from the quantities already provided, little more could be obtained in this country without denuding our own essential supplies.

While, however, individual supply difficulties were arising as the result of expanding requirements in North America, the effects of the rearmament programme were not, apart from the exceptions already

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<sup>1</sup> Cmd. 6242.

noted, seriously reducing the available supplies. In fact, the encouragement of the production of synthetic substitutes for vital materials such as rubber, and the increase of productive capacity for aluminium, were to be of substantial benefit to the total Allied programme. Moreover, the proposal of the American Government to build stockpiles was increasing the supplies ultimately available, particularly of imports which were not then in short supply. This applied to antimony, tin, rubber, tungsten, chrome ore, manganese and wool, which were to stand the Allies in good stead after the outbreak of the Pacific war.

After the fall of France the Anglo-French Co-ordinating Committee in London had been dissolved. Apart from its uses as a combined organisation, the committee had indirectly helped British Government departments to co-ordinate their own requirements as a step towards a unified United Kingdom balance sheet of requirements for scarce materials overseas. The demise of the committee left, therefore, a very important gap in the British supply structure. On 8th July the gap was in part filled by the setting up of the inter-departmental North American Supply Committee, with Sir Arthur Salter, Parliamentary Secretary to the Ministry of Supply, as chairman. Its task was to 'consider all major question of policy arising in relation to the co-ordination of supplies from both the United States and Canada'. In December 1940 the N.A.S. Committee was reconstituted and became a supply committee on ministerial level, under the chairmanship of the Minister of Supply (Sir Andrew Duncan), while the secretariat was transferred from the War Cabinet Office to the Ministry of Supply.

But could the United Kingdom supply arrangements be co-ordinated without attempting something similar for the Empire and the Allies as a whole? At the request of the British Ambassador in the United States (Lord Lothian), the N.A.S. Committee investigated the problem, but it was reminded that this might raise complicated policy issues and false hopes as to the available supplies. It was also pointed out by the Ministry of Supply that that ministry was already working on the War Office programme which, it was assumed, covered imperial requirements. The committee also recognised that the Dominions, possessing their own dollar and gold resources, might naturally ask for direct contacts in the United States. But if Dominion representatives were attached as full members of the B.P.C. in New York, important questions of production priority would in effect be transferred from London to New York. Proposals were accordingly made to the Dominions that their major requirements for supplies from the United States should pass through London, except for imports not involving priority matters, which should be negotiated direct by Dominion representatives in New York in co-operation

with the B.P.C. This procedure was already functioning as far as India was concerned. But the Canadian requirements could obviously not be dealt with in this way since, as the Canadian Government showed, 'geographical contiguity has led to a great measure of interlocking of Canadian and United States industry in peace-time', and special liaison was in any case being maintained with the B.P.C. in New York. The proposals were accepted in principle by the South African, Australian and New Zealand Governments, except that the New Zealand Government declared that it was sending a special mission to New York to deal with urgent military requirements. There the matter was allowed to rest for the time being, but the N.A.S. Committee felt that the High Commissioners for the various Dominions still needed convincing that every 'effort was being made to meet Dominions requirements so far as the general strategical situation allowed'. The rest of the Allies, whose requirements of raw materials were necessarily small, presented no great difficulty. They maintained liaison with London and the B.P.C. through their official representatives here and in New York, although existing arrangements were by no means fully co-ordinated.

Such limited progress as was made was part and parcel of the changes in our supply organisations in North America. We have already observed the strong insistence of the American Government that British purchases in that country be centralised through one channel, a point of view which Mr. Purvis strenuously supported.<sup>1</sup> With the fall of France, and the consequent expansion of the American rearmament programme, that insistence became even stronger. The American authorities now made it clear that they could not prepare to supply their own needs unless they knew the quantity of essential exports required by the Allies, i.e. unless these foreign demands were co-ordinated and notified through one channel. The first step taken by the American Government was the presidential proclamation of 2nd July 1940, already referred to. It set up an export licensing system for a large number of essential raw materials,<sup>2</sup> but at the end of July priority treatment was granted to all applications bearing the B.P.C. stamp. In September further materials were added to the list, and in February 1941 the American Government published its Comprehensive Export Schedule, announcing at the same time that purchases going through the B.P.C. were exempt from export licensing. Thus, the strengthening of American control also strengthened the hand of the B.P.C.

Pig iron and steel had already been brought under the supervision of the B.P.C. in May 1940,<sup>3</sup> but the N.A.S. Committee in the United

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<sup>1</sup> See p. 259 *et seq.* above.

<sup>2</sup> See p. 267 above.

<sup>3</sup> See p. 262 above.

Kingdom was itself not fully aware of the various channels through which the other raw materials were bought. It admitted however that 'the manner in which purchases of raw materials have hitherto been handled by the B.P.C. has not always given entire satisfaction'. When in August 1940 the Ministry of Supply submitted a paper on the position in general, it showed that the methods of purchase in the United States varied from that used in the case of pig iron and steel to 'the old established and elaborate methods of buying cotton which are centred in the Liverpool Cotton Association'. Meanwhile, in July 1940, Mr. Purvis had once again asserted:

It is our definite belief that from now on purchases through private channels of munitions or important materials or tools required therefore will meet delays in obtaining or refusals to grant export licences. The above is the general background against which we shall have to operate in the United States from now onwards.

He pointed out that centralisation was especially necessary because all United Kingdom applications were automatically referred to the American naval and military authorities before materials were released; and in September 1940 the American Government was asking that all Empire, as well as all United Kingdom, requirements should be presented through the B.P.C. The problem of organising supplies from the United States was thus ceasing to be a commercial one and was becoming increasingly concerned with inter-governmental policy and relations. In recognition of this the B.P.C. moved from New York to Washington in October 1940 and in December the British Supply Council in North America (B.S.C.), consisting of senior British supply officers there, was set up to co-ordinate the work of the various missions.

Throughout the autumn and winter of 1940-41 the B.P.C. continued to stress the importance of directing all our purchasing activities in the United States through one channel; but though it was at least being kept better informed of British raw material agreements, serious difficulties remained. Under pressure, the Ministry of Supply was fully prepared to operate as far as possible through the B.P.C., but it remained especially difficult, and hardly desirable, to do this for the supply of raw materials sent by American companies direct to their British subsidiaries. More important than these special cases was the fact that not all British materials were 'controlled', nor were all controlled materials dealt with in the same way. If it had been fully practical and necessary to control the import of materials by a uniform method of centralised purchasing and distribution, it might have been possible to formulate demands more easily and canalise them through one purchasing medium. In point of fact, shortage of shipping, currency and supplies were combining to pro-

duce this result, but it was not until we became financially dependent upon the United States for our American raw materials that this procedure was applied to a large number of cases. The effects of lend-lease, as we shall see, made possible and essential the first effective co-ordination and centralisation of British raw materials purchases in that part of the world.

(iii) FROM THE PASSAGE OF THE LEND-LEASE ACT UNTIL PEARL HARBOUR, APRIL-DECEMBER 1941

Under the act of 11th March 1941 the United States Government obtained authority to 'manufacture for, sell, transfer title to, exchange, lease, lend or otherwise dispose of' any defence article (including raw materials) to a foreign government as a measure 'to promote the defence of the United States'. The act did not automatically open the floodgates of American supplies, but it went a long way towards solving the currency difficulties of the preceding period. For this reason we shall hear little more about currency problems in the pages which follow. But expanded British requirements for raw materials had now to be presented to the United States Government and its agencies. The Americans themselves took a much more active share in determining the end use of their materials; and supply issues therefore passed more and more from the commercial to the political sphere, a change which was reflected both in the new type of supply problems which arose and in the more extensive machinery which was planned.

A month before the Lend-Lease Bill was passed, the British supply organisation in the United States was asked to provide the full list of United Kingdom requirements:

on the assumption that practically all our purchases here [including materials not actually produced in the United States] can be regarded as defence articles if they can be brought within the machinery of the Bill.

An attempt was therefore made on this side to assess British requirements of American raw materials, including imports from Cuba, South America and the Philippines, and very rough estimates were forwarded. But there was still some uncertainty whether our list of requirements could include imports of manila hemp from the Philippines and raw silk from the United States (obtained from Japan), imports which were made necessary not by immediate needs but as an insurance policy against political developments in the Far East. We now had to face also the task of estimating the requirements of the Dominions and Colonies. We began with a rough estimate based on very limited information, followed by a revised one when information was obtained from the governments themselves. But the

diverse character of the controls overseas, and the different interpretations that were possible for the term 'essential requirements', still left room for considerable uncertainty. Meanwhile, in March, as our total requirements rose, a 'certain scepticism had been observed in the United States service departments as to the necessity for the large British requests'. In August, during Lord Beaverbrook's visit to America in his capacity of Minister of Supply, his attention was drawn to the fact that considerable criticism had been expressed in official quarters of requisitions which appeared to be in excess of real needs.

At the beginning of April 1941 the B.P.C., at the request of the United States Treasury, presented a table of requirements for the period April-June 1941, based on very rough estimates for a large number of materials,<sup>1</sup> which were to cost in all some 126 million dollars.<sup>2</sup> In July the estimated total requirements of raw materials, except cotton, for the period September 1941-June 1942 were put at 1,340 million dollars, but this estimate was drawn up at very short notice and had to be considerably modified afterwards.

During the summer of 1941, *pari passu* with an increasing supply of materials under lend-lease, the Americans increased their requests for the fullest details, with evidence that requirements were restricted to purely essential needs. The Office of Production Management of the United States was already engaged in drawing up total raw materials requirements for the munitions programmes of the United States and Great Britain and was asking for comprehensive information as to requirements, production and total imperial stocks of twenty-one materials. It was hoped that this ambitious project, making use of United Kingdom figures and whatever other data were available, would be completed within two weeks, though perfection was out of the question. By December, the United States Government was unwilling to accept requisitions for steel, unless programmes of requirements were furnished six months in advance together with a good deal of other information.<sup>3</sup>

Canada occupied a special position both in inter-imperial and Anglo-North American supply relationships. True, she had no Lend-Lease Act with which to succour us, and her million-dollar gifts were

<sup>1</sup> Carbon steel, alloy and special steel, drop forgings, pig iron, scrap, molybdenum, ferro-alloys, brass rod, bar and strip, refining copper, tin residues, bismuth metal, zinc slab, timber, woodpulp, cotton and linen rags, bagasse, paper and board, hoof and horn meal, basic chemical raw materials, inorganic chemicals (including fertilisers and commercial explosives), organic chemicals (including dyes), silk, Cuban molasses, South American copper, manila hemp and miscellaneous raw materials.

<sup>2</sup> The item 'miscellaneous' which consisted of 'steel structures and equipment' has been omitted from this estimate.

<sup>3</sup> (i) The purpose for which the steel was required. (ii) The relative peace- and war-time consumption of steel by product and by industries and departments concerned. (iii) The current stock position by product and number of months' consumption this represented.

yet to come. But we were not precluded meanwhile by any cash-and-carry legislation from making contracts without the necessary financial backing, so Canada was, as we have seen, financing the deficit of the whole sterling area.<sup>1</sup> The British Government was most anxious that Canada's economy should not be damaged by the diversion to the United States of British orders which Canada was in a position to fulfil. Britain therefore gave the Canadian Government an assurance that it did not propose to modify the purchasing programme in Canada, but added that this would inevitably depend on the gold and dollars at our disposal and the amount of financial assistance which it proved possible for Canada to extend to us. The Canadian Government in its turn stressed that the fundamental aim must be the full employment of the productive resources of the continent, whether they were situated in the United States or in Canada. There is no evidence during this period of a diversion of raw material requirements to the United States from Canada; where we substantially reduced our imports from that country, as in the case of pitprops, we did so as the result of special efforts to rely upon home, not American, sources of supply.

#### POLICY AND POLITICS

Demand was rising steeply; indeed, since the spring of 1941 it had emerged that the supply of raw materials from America could not keep pace with total demand, though this of course allowed for a high standard of American civilian consumption. At the same time delicate policy questions cried out for early settlement. What was essential British demand? Whereas a gun or a tank could unquestionably be shown to be essential to the British war effort, no such easy line of demarcation could be drawn for raw materials. In Britain it was held that, if a material was an item of civilian consumption essential to the maintenance of civilian morale and a standard of subsistence necessary for the continuance of war production, it was as much entitled to lend-lease aid as a purely military item. In this connection various general terms were suggested. At first the Office of Lend-Lease Administration (O.L.L.A.) tested requirements on whether they were 'solely for war purposes', but it was felt in the United Kingdom that this was open to objection in that civilian supplies might by one interpretation be excluded from it. The alternative phrase we suggested was 'necessary to maintain the maximum war effort'. At a later stage requisitions were divided into two main groups: direct and indirect war purposes, but this proved to be unworkable and misleading as the terms were found to have different implications in different circumstances. O.L.L.A. then

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<sup>1</sup> See above, Chapter XII, p. 184.

proposed two other divisions: essential war and essential civilian use, but the United Kingdom authorities objected that this arrangement might imply that essential civilian use was always of a lower order of 'essentiality' for the conduct of war than essential war requirements. O.L.L.A. officials, however, insisted on these divisions in order to have a record which they could quote whenever necessary but, on being pressed for a definition of these terms, frankly confessed that they were quite unable to do so and stated that they preferred to leave the distinction to the British. In practice, this problem was dealt with by the submission with each requisition of full details of use for close American scrutiny. But the American administration required that all orders should be presented in the first place through the B.P.C. for transmission to the United States Treasury, which itself put out the orders to public tender. It was argued, however, on behalf of certain United Kingdom imports that:

Many of the products are highly specialised, are bought to very particular specifications, and in comparatively small quantities from selected United States suppliers and thus are not commodities which either the Ministry of Supply, the B.P.C. or (still less) the Procurement Division of the United States Treasury have any experience of handling.

There remained therefore a 'hard core' of materials which could not be brought within the purview of the Lend-Lease Act. The British Treasury accepted the Ministry of Supply view that a number of commodities<sup>1</sup> should not be presented for lend-lease approval so that delay and complications could be avoided. The cost of these materials was estimated in June 1941 at 23 million dollars for one year, but gradually more of them were brought within the range of the Lend-Lease Act, under the Treasury instruction to all purchasing departments:

to extend, wherever practicable, the scope of their own direct importations of goods with which they or their contractors are concerned, provided that to do so would not unreasonably distort private trade and/or necessitate an undue enlargement of the departmental administrative machine.

It was also agreed in July that orders of approximately 500 dollars or less should be met in cash unless they could be manifestly better dealt with under lend-lease, and in October the limit was raised to 1,000 dollars. To obtain these dollars it continued to be necessary to realise our assets in the United States and to export both raw materials and finished products to that country.

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<sup>1</sup> Such as rutile, bentonite, diatomaceous earth, tin residues, bagasse, borax, razorite, fibestos and synthetic resins and various other miscellaneous materials.



Meanwhile, the British Government was urging the extension of lend-lease assistance to the Empire and her allies. But the position did not appear to admit of any uniform solution. Within the British Empire, Canada had special industrial and financial relations with the United States which released her from the need for lend-lease assistance; Eire, on the other hand, was neutral, and it could therefore be argued that she must pay for her supplies; of the remaining sterling countries within the Empire, South Africa manifestly had gold supplies of her own and New Zealand, Australia and India, although needing American assistance, could pay for that assistance, at least in part, with exports. As far as the Allies were concerned, on the one hand there were countries like Poland, which were utterly dependent upon foreign help, while, on the other, the Dutch East Indies had a considerable dollar income. The United States authorities expressed a preference for dealing with each country separately according to the individual circumstances. But the N.A.S. Committee pressed from the outset for the inclusion of the whole Empire sterling area, except Eire, within the province of lend-lease aid, on the grounds that it was inconsistent with the exchange structure of the sterling area to assume that any one part of it had a specific number of dollars available for purchases in the United States. It was also argued that a long delay in clarifying the position would be dangerous on political as well as on exchange grounds. By the middle of April the President had indicated his willingness to permit the transfer of armaments under lend-lease to the Dominions, Colonies, China, Turkey, Greece and Jugo-Slavia. He was prepared also to release 'non-armament materials' to the last two countries on the same terms; but no decision had been taken about 'non-armament materials' for the other lend-lease beneficiaries, with the exception of the United Kingdom. By the end of June the United States authorities had in general agreed to the extension of these facilities on certain conditions:

(a) that the commodities to be acquired must be necessary to maintain the maximum war effort in the country concerned (this included supplies necessary to maintain the life of the civil community on a war-time basis),

(b) that demands for the commodities to be acquired under lend-lease procedure must be centralised by the governments concerned, and presented by the appropriate United Kingdom mission in the form of consolidated orders, looking as far ahead as possible, together with statements providing evidence that demands represented essential requirements as defined in (a) above,

(c) that thereupon private purchasing of such commodities in the United States must cease,

(d) that the arrangements for distribution by the governments

concerned must be such as to satisfy the United States authorities, e.g. as regards the remuneration of intermediaries.

During the months which followed, intense efforts were made throughout the Empire to fulfil these conditions as well as to satisfy the American authorities. The efforts met with varying degrees of success. The Australian Minister in Washington referred to difficulties in obtaining American rulings on what could be brought within the terms of lend-lease, with consequent delays in supply; while the American authorities doubted, for example, whether steel plates for South African gold mines could be described as essential for the war effort. In December the N.A.S. Committee expressed alarm because the United States administration, in dealing with supplies for the colonial Empire, tended to apply standards of 'essentiality' very different from those applied to supplies for the United Kingdom itself or for other countries more prominently concerned in the war. Against this the N.A.S. Committee argued that, apart from considerations of colonial welfare, unless the native producers were provided with a certain amount of imported manufactured goods, their output of essential exports would rapidly diminish. The issue was not simply a financial one, because if the American Government declared that a colonial requirement was ineligible for lend-lease aid, growing scarcity would probably make it ineligible also for an export licence even if cash payment were offered. Thus it was reported at the beginning of December that the percentage of rejected applications for exports to the Empire had risen in one month from less than one per cent. to about ten per cent of the total submitted.<sup>1</sup> The whole question was, however, modified by the entry of Japan into the war. Henceforth the United States was to be a full ally vitally concerned with defence measures in the Pacific as well as the Atlantic zone. As a result the number of materials as well as the number of countries brought directly under the lend-lease umbrella were increased.

Within the United Kingdom itself the machinery for centralised control of supply and distribution was in any case being strengthened as the result of the necessities of total war, but the Lend-Lease Act speeded this process up considerably; for example, special efforts were made to bring nearly all private purchasing overseas under government control. The Ministry of Supply also went ahead with plans to set up an organisation to cover the purchase and distribution of raw materials for which there were at that time no trading controls. At the same time raw materials experts were being sent out to the B.P.C. to maintain close liaison between it and the Ministry of Supply controls. As we shall see, this task of co-ordination proved more difficult in the rest of the sterling area, which included countries as

<sup>1</sup> In the transcript of the cable there appears to be some doubt as to whether the word 'ten' has been cyphered correctly.

widely separated in their economic structure and development as they were geographically. As the N.A.S. Committee pointed out, arrangements for centralisation of purchases which might suit dominions might not be possible in India and colonies. They would probably be even less suited to Egypt, Iceland, the Faroe Islands, the Free French colonies and the Belgian Congo. It was indicated, however, that the American Government would be prepared to take a 'liberal' view of the situation, provided the maximum efforts were made to conform to the general policy laid down. The Dominions were likewise assured that they would not be expected to adopt methods of distribution which would prove impracticable. By stages, however, the main features of an import licensing system, public purchasing and the governmental supervision of distribution and use were introduced throughout the Empire. Hong Kong was, except for special cases, excluded from lend-lease because it was dependent upon a large entrepôt trade and could not establish an efficient licensing system to ensure that only essential war needs were satisfied. Egypt, which barely had a rudimentary system of control, presented at first considerable difficulties.

The chief problems we have been considering so far were primarily difficulties of economic strategy, i.e. how far a given requirement should be satisfied in the interest of the fullest prosecution of the war. These issues were, however, being clouded by considerations extraneous to the supply problem. The United States authorities, under constant pressure from American political opponents and commercial interests, were in their turn asking the British Government for two assurances: first, that lend-lease materials were not used in the export trade, save in exceptional cases and, secondly, that the materials did not provide the commercial distributors with unjustifiable profits on their transactions.

The first of these questions, the use of lend-lease materials in the export trade, is more fully considered in another volume in this series<sup>1</sup> and is only dealt with here in summary fashion. The first stage towards a resolution of the export problems was the celebrated White Paper of 10th September 1941.<sup>2</sup> In brief, the British Government gave an undertaking not to use lend-lease materials in the export trade. Where such materials were used, the equivalent quantity would come from home sources, or be paid for in cash, or it would be established that the export was essential to the overseas war effort. There were some slight exceptions where the amounts involved were small or where the materials were used to repair or complete British machinery or plant. The issue of this declaration did not, however,

<sup>1</sup> See Hargreaves and Gowing, *op. cit.*, Chapters 7 and 8 *passim.*, and pages 195 and 197-8.

<sup>2</sup> *Cmd.* 6311.

satisfy the critics or provide the British administrators with a completely viable *modus vivendi*. It was not until the entry of America into the war, followed by the planning of joint Anglo-American export programmes, that the situation became simpler, though other difficulties subsequently arose. But as shortages of manpower, materials, productive capacity and shipping were felt increasingly on both sides of the Atlantic, the desire and need to encourage exports gave place to the recognition of the 'burden of export', and with this fundamental change of emphasis, the export controversy declined.

The parallel question, the commercial distribution of lend-lease materials, presented difficulties of its own. Mr. Morgenthau was anxious that the British arrangements should avoid excessive profit by intermediaries, but the British Supply Council expressed uncertainty as to what this meant in practice.<sup>1</sup> After discussion, a formula for the distribution of lend-lease materials was presented to the United States Government in July 1941, in the following terms.

These [raw materials] will be distributed either direct by the Ministry of Supply or through agents whose remuneration is determined, after investigation, in the light of the actual services which they perform in the work of distribution.

This principle was embodied in the White Paper of 10th September,<sup>2</sup> together with an undertaking that, 'where for strong practical reasons' involving a loss of efficiency or wastage of manpower the principle could not be applied, the prior approval of the United States administration would be sought for specific modifications. In the Empire this changeover was a much more difficult process in view of the less rigorous control prevailing outside the United Kingdom, but similar undertakings were given.<sup>3</sup> In the case of Egypt, which was a neutral, full commercial control was even more difficult to establish and a compromise arrangement was planned for goods to be handed over to the Egyptian Government, with the best safeguards possible against abuses in distribution.

While these external problems were under consideration, the American Government was taking steps to ensure that its own defence industries obtained adequate supplies of raw materials through a priority system under the Office of Production Management. But, in March, British officials had pointed out that there were certain serious defects in the American priority machinery as it affected overseas supply; and, a few weeks after the passing of the Lend-Lease Act, they argued that Britain should at least be consulted before her allies were allocated their share of American equipment. On the

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<sup>1</sup> It proposed therefore to work on the motto '*solvitur ambulando*'.

<sup>2</sup> Paragraph 5.

<sup>3</sup> See p. 276 *et seq.*

other hand, in May the Australians drew attention to their difficulties in obtaining supplies because United Kingdom 'comprehensive programmes may tend to absorb the whole of the appropriations under certain heads and thus exclude urgent spot requirements which Dominions may require to place under lend-lease'. Special difficulties arose in the case of steel, of which the Dominions and Colonies failed to obtain any supply during the greater part of 1941, particularly as small orders of mixed specifications were of a kind which the American steel industry was not normally designed to fulfil.<sup>1</sup>

Even before the passage of the Lend-Lease Act the American Government had requested that imperial requirements and supplies should be focused upon the British Supply Council in North America. The B.S.C. itself expressed the view that in order to obtain the potential benefits of the Bill, it would become more and more necessary for British demands to be presented to the United States administration by men of standing, clothed with the necessary power of decision. In April the general position was that Allied requirements were presented sometimes direct to American suppliers or the American Government, sometimes through the N.A.S. Committee in London, and sometimes through the British Supply Council in Washington. But the B.S.C. felt that what was wanted was one organ in Washington to canalise all priority aspects of British, Dominion and Allied supplies from the United States. After exploring the possibility of similar machinery in London for total imperial demands for critical materials, no complete system was evolved, though an Empire Steel Committee already existed. It was hoped that there might be similar arrangements for a small number of other important commodities; the lesser materials were to be covered by *ad hoc* decisions. It was agreed in June, however, that co-ordination of Empire requirements in London should be extended to zinc, copper, brass, bronze, ammonium sulphate and potassium salts.<sup>2</sup> By July the procedure had been worked out under which imperial and Allied (i.e. Greek, Belgian, Norwegian, Dutch and Polish) demands should be submitted to the American Government through the British purchasing missions, under the direction of the B.S.C. in Washington.

But the inter-Allied difficulty remained unsolved. In October it was learned that supplies for Turkey must be at the expense of supplies to the United Kingdom, and at the end of the same month the Russians were urgently asking for immediate delivery of aluminium, cobalt, rubber, magnesium alloys, bimetals, ferro-silicon, ferro-chrome and other materials. Further progress continued to be made

<sup>1</sup> It was stated in September that the lend-lease machinery was clogged up with numbers of small iron and steel requisitions.

<sup>2</sup> In the majority of these cases this co-ordination was not in fact undertaken until the setting up of the Empire Clearing House in February 1942.

in the creation of combined organisations, but the whole supply structure for lend-lease materials for the Empire, and even more so for the Allies, was still in a comparatively unformed state by the end of 1941. Until early in 1942, when joint Anglo-American allocation boards were set up, the supply of lend-lease materials to the Empire and the Allies continued on an *ad hoc* basis with only partial co-ordination in London.

The third and most important link in the supply chain, namely direct Anglo-American association, proved even more difficult to forge. Machinery was created but it was unwieldy, complicated and slow. Direct contact with American suppliers was not allowed under the lend-lease system, although it was clear that it would take the United States authorities some time to set up an efficient organisation to take over the handling of purchases hitherto carried out by a large number of private traders. The N.A.S. Committee suggested that preliminary contracts should for the time being continue to be made between British importers and American producers, but the most the American Government would agree to was that:

In special cases, the B.P.C. (or other approved United Kingdom agency) may, with the consent of the United States authorities, participate in the discussions with suppliers, but such consent will not ordinarily be extended to direct contact between United States suppliers and United Kingdom private importers.

The need to pilot all Allied requirements through many governmental channels imposed dangerous delays upon essential purchases. Sir Clive Baillieu, the Director-General of the B.P.C., informed Lord Beaverbrook in September 1941 that through the action of the American Secretary of the Treasury the time for completing purchases was to be reduced from forty-two to sixteen days; but it was feared in October that requisitioning delays in the case of airframe plywood veneers, for example, might bring British airframe production to a standstill within two months. A description of the relevant Ministry of Supply machinery is given in Appendix 33.

But, as supplies looked like becoming scarce, the means of transporting them were becoming scarcer still. The freight shortage was in fact leading to numerous complaints from importers about shipping space, especially as far more orders had been placed than could be accommodated in the available tonnage. It became clear also that, with the concentration of British shipping on the North Atlantic route, it would be extremely difficult to maintain the full volume of our imports from non-American areas, of which the estimated annual shipping programme of raw materials stood then at about seven million tons. The N.A.S. Committee proposed, therefore, the 'transshipment' of these raw materials, as far as practicable, from non-

American areas to the United States on American ships, for early delivery to the United Kingdom. This proposal became linked with a scheme to build up joint<sup>1</sup> stockpiles of strategic raw materials in the United States.

The idea of stockpiling was first mooted by Mr. Harriman in June 1941 but he was 'pessimistic concerning the availability of United States shipping for this purpose' and hoped for British aid. He added, however, that, if such a joint pool were created, the expense of storage might come under lend-lease. In July the American Government expressed its general approval of the proposals, but in August the scheme appears to have broken down owing to the heavy demands by American industry for home-produced raw materials. The proposal was revived in the autumn at a time when, with the increasing speed of its rearmament programme, the American Government was increasing its calls for raw materials from British sources, particularly materials like rubber and lead from Commonwealth countries in the Pacific. The stockpile question thus assumed a twofold character: the building of reserves of raw materials produced in the United States, and the importation into the United States of quantities of certain materials to form a special pool. The prospect of the former had to be ruled out once more because the materials suggested were all in short supply in the United States.<sup>2</sup> At the end of November, however, recommendations were made for 'transshipment' of certain imported raw materials and, where surplus supplies of these materials were available, their stockpiling in the United States. These materials, such as jute, sisal, lead, and copper, were to come mainly from the Pacific area; but the problem was solved in theory at the moment when it became insoluble in practice. A month later Japan had entered the war and soon there were no Pacific supplies to stockpile.

The position at the beginning of December 1941 was that the American Government was most anxious to help the United Kingdom, her Empire and her allies to the maximum extent, but in its own way and with its own machinery. Britain was still the suppliant not the ally, and the American Government was gratuitously providing aid to beleaguered friends. But a close relationship was being built up, and machinery for collaboration was being slowly and painfully evolved which would provide a useful basis for future expansion. The full erection of joint machinery for mutual aid belonged, however, to the period after Pearl Harbour, which introduced a new epoch in Anglo-American supply relations.

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<sup>1</sup> This, of course, was distinct from the American stockpile (See pp. 268-9).

<sup>2</sup> i.e. calcium carbide, methanol, glycol esters, phthalic anhydride, nitro-cotton, bichromates, phosphorus, caustic potash, potassium carbonate and chromic oxide.

## CHAPTER XVIII

# ANGLO-AMERICAN SUPPLY RELATIONS IN 1942

**T**HE new situation which arose as the result of the events of 7th December 1941 introduced profound changes in the problems, and the approach to the problems, of Anglo-American relations. The outstanding changes were the political, economic and strategic reorientation called for by the emergence of the United States as a full ally of Great Britain; and, secondly, the scarcity, and sometimes the complete cutting off, of certain materials which the United Nations had hitherto drawn from the Pacific. By the end of 1942 the Anglo-American alliance had survived its early testing time and had become a mature association of states with a common objective, of which the landings in North Africa were both the symbol and the first fruits. By the end of the year, also, the Allies had in a large measure solved, or adjusted themselves to, the new supply situation, although they were perhaps not fully aware of the extent of their success. Indeed, the conquest of North Africa, which was now nearly complete, offered them for the first time since the outbreak of war an expansion of the supplies of some materials. The thirteen months from Pearl Harbour until the end of 1942 comprised, then, a complete period with peculiar problems of its own; it provided also the link between the period of military and economic misfortunes which went before and the victories which followed. The special conditions of what was probably the turning point of the war, 1942, are strikingly revealed in the changed nature of requirements, supply and, outstandingly, organisation.

### THE REQUIREMENTS

The immediate effect of America's entry into the war, it was assumed, would be the freezing or grave diminution of her supplies, at least as a temporary measure; this contingency the British Government was prepared to accept with as good a grace as possible. Moreover, as an added mark of our zeal for full collaboration, Lord Beaverbrook, then Minister of Supply, made it clear, a few days after Pearl Harbour, that he was fully aware of the need for such a step and added that he had already, on the personal instructions of the Prime Minister, ordered a list of available British war materials to be drawn up and sent immediately to the United States. But the British



mission under Lord Beaverbrook, which embarked for the United States in mid-December, had also set itself the task of obtaining supplies for Britain as quickly as possible. The mission was therefore pleasantly surprised on its arrival to find that, apart from a temporary suspension of shipments, the American Government had no intention of freezing the supplies of raw materials. The extraordinary situation arose, then, in which the Prime Minister and the Minister of Supply, finding that they had no battle to fight to obtain raw materials for the United Kingdom, became concerned with America's own battle of production. Their object now was to persuade the Americans to 'raise their sights', that is, to plan with a full recognition of their vast munitions potential. In this the British Ministers adopted a statesmanlike attitude; they knew that the raising of the sights might mean a greater call for raw materials, perhaps at the expense of British supplies, but from the point of view of the total war effort on a long-term basis such a step was essential. Now, therefore, it was doubly necessary to present to the Americans a consolidated, fully documented<sup>1</sup> statement of British essential needs and, secondly, to combine with the Americans in integrating such a statement with American programmes.

During this period, as we have seen,<sup>2</sup> there were in fact several different import programmes which served successively as the bases of British requirements. The original programme for 1942, which was drawn up in September 1941, was calculated on a total import figure of  $32\frac{1}{2}$  million tons, of which  $16\frac{1}{2}$  million would be raw materials. Of these  $16\frac{1}{2}$  million tons it was thought that about  $9\frac{1}{2}$  million would come from North America. Allowing approximately  $2\frac{1}{2}$  million for imports from Canada, Newfoundland and the West Indies, there remained about seven million tons to be brought from the United States, i.e. some forty per cent. of the total imports. Of these the principal commodities were steel and steel-making materials, which amounted to nearly  $4\frac{3}{4}$  million tons, followed by phosphate rock, sulphur, woodpulp, timber, cotton, and lesser quantities of a host of materials. Yet, although the figure of  $4\frac{3}{4}$  million tons of steel and steel-making materials was very considerable and might, as far as the United Kingdom was concerned, make a fundamental difference in the prosecution of the war, it appeared somewhat different when viewed in the perspective of American steel-making capacity, which in 1942 reached 90 million tons. But the drastic cut involved in the March programme, the  $10\frac{1}{2}$  million one, fell naturally enough on iron and steel, to the tune of some fifty per cent. of the tonnage allocated to them. The remaining cuts were to be spread fairly evenly over various

<sup>1</sup> It is noteworthy that, even as late as the summer of 1944, the B.R.M.M. was still encountering supply delays on account of inadequate documentation.

<sup>2</sup> See Chapter XIV above.

materials. The subsequent raising of the programme to 12·2 million tons in June promised to ease the steel position very considerably by increasing its tonnage by three-quarters of a million, while the remaining million tons were once again widely spread over the whole import programme.

But these long-term outlines of requirements were simply the expression of what the United Kingdom felt to be its minimum needs. It was still necessary to convince the Americans that each item was essential to a planned munitions programme. Many of the initial difficulties had been overcome as experience had been gained on both sides of the Atlantic, but the Americans were still complaining that for imperial needs we were failing to provide them with all the information they required.<sup>1</sup> The British Iron and Steel Corporation in reply protested that, in the case of steel, dominion requirements figures were not available and that any which might be produced at short notice would be unofficial and inaccurate. The Americans, however, were sceptical 'since, in the case of statistics about United Kingdom requirements, we had first said that it was impossible to give any figures and then when O.L.L.A. put their foot down had produced them within twenty-four hours'.<sup>2</sup> Later, in June, similar uncertainties in the case of Middle East requirements were criticised, and it was feared that that area might therefore fail to receive any supplies from the United States.<sup>3</sup> In May, the Americans had added the further complaint that, although agreed total programmes were in force, Washington was still handicapped by a constant flow of small requisitions at irregular dates. Yet, whilst the Americans were protesting against these piecemeal demands, they were none the less opposed to the endeavours of the British Raw Materials Mission to obtain approval for programmes extending beyond the period of the next six months, and requisitions for supplies over a lengthier period were rejected by O.L.L.A. After considerable discussion, the Americans agreed to accept annual programmes but insisted on requisitions still being limited to six months.

But these difficulties were really minor ones compared with those facing the Americans in setting their own house in order. It was not until June 1942 that the first major attempt to achieve a balance

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<sup>1</sup> One British official was told by the vice-chairman of W.P.B. that there had been an interdepartmental meeting about steel, 'where all departments had been at one in showing their indignation at our refusal to give adequate figures. They had been so annoyed by this that they were inclined to bring the matter to a showdown by blocking our requisitions for steel unless we gave adequate statistics'.

<sup>2</sup> Similarly the Americans found it hard to understand that we could not get all the statistics we wanted from India. 'They cannot get it out of their heads that we are holding India down against the wishes of the large population and find it impossible to believe that we have not got a large bureaucracy there'.

<sup>3</sup> In general, 'they [the Americans] will certainly regard us with suspicion if we do not produce figures when they ask for them'.

between supply and demand of critical materials could be made, and no real measure of success was obtained until the end of the year. Yet against a mosaic of departmental claims the Combined Raw Materials Board was trying to allocate the available supplies between the claimant countries. The machinery and its effectiveness we must discuss elsewhere,<sup>1</sup> but the very existence of the combined boards stimulated and regulated the attempt to provide an overall requirements plan. Such an ambition was not fulfilled during the period under consideration; the supply situation as much as requirements programmes was changing too rapidly to allow for more than a joint approach to individual material problems. For example, nobody really knew at any stage how much synthetic rubber would be available. But the combined organisations were accumulating a mass of information and were developing the technique of estimation and allocation which was to be applied with considerable success in 1943. At the end of November 1942, as a portent of what lay ahead, the C.R.M.B. was engaged, not in surveying the progressively diminishing stores available to the United Nations, but in supervising the requirements of the United Nations for raw materials produced by the French colonies, following upon the Anglo-American entry into North Africa. The beginnings of a total raw materials requirements plan were by now clearly visible.

But if the requirements picture was coming into focus, what was happening in the field of supply? 1942 undoubtedly looked like being the leanest year so far. Indeed, from the point of view of America's own programme, 'by the end of the year the principal limiting factor on production was shortage of materials'. Even where supplies appeared reasonably adequate the British importers were faced with a second major anxiety: transport deficiencies.

#### THE GROWING SCARCITY OF SUPPLIES

When raw materials in the United States grew short the situation arose as the result of one of two reasons—or a combination of both. There were cases of rapidly expanded demand, as for steel, where potential supplies were ample but where there was bound to be a time-lag before the full flood of supplies could flow. On the other hand, in some cases, such as rubber, demand had not been increased and was in fact being forced to contract, but the loss of essential overseas supplies threatened an acute crisis. The American administration was therefore faced with the problem of conserving the available supplies of raw materials and expanding domestic output wherever possible. Soon after his appointment as Director of Raw Materials of the War Production Board, Mr. W. L. Batt turned his

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<sup>1</sup> Below, pp. 296–298 and Chapter XXV.

attention to a number of tasks: the substantial increase of synthetic rubber, aluminium and magnesium production, the enforcing of measures for strict control of critical materials such as tin and rubber, and the bringing under close investigation of service specifications involving the use of critical materials. To deal with the second and third aspects of this work the Conservation Division of the War Production Board was established in January 1942.

#### THE EXPANSION OF OUTPUT

Plans for the production of synthetic rubber, for the increased exploitation of native ores and for the expansion of capacity for other essential materials were soon under way. By March 1942 the W.P.B. had begun to requisition material lying idle in private hands, for example 3 million out of the existing private stores of 20 million lb. of aluminium. It was known also that there was a plentiful supply of scrap in the country, estimated as sufficient to increase the production of critical metals by thirty-three per cent.;<sup>1</sup> a great publicity campaign was organised to collect it, but in March twenty steel furnaces, and later forty-five, had to be damped down because of lack of scrap. On the other hand, by April, contracts had been signed under which synthetic rubber plants with an annual capacity of 700,000 tons were to be built.

In spite of this and other major enterprises, the head of the War Production Board admitted in June that by and large America was short in differing degrees of most of the important raw materials; but he saw signs of a marked improvement. In August, however, the position had deteriorated again, while the flow of scrap was regarded as still extremely unsatisfactory<sup>2</sup> and resulted in the personal intervention of the President. In the absence of adequate information about unused stocks, the existing powers of acquisition could not be effectively employed, and a general nation-wide shortage was expected to arise early in 1943. In September the synthetic rubber programme received some sharp comments from the Baruch Committee, which reported that the rubber shortage was 'so dangerous that, unless corective measures are taken immediately, this country will face both a military and civilian collapse'. But while the dramatic materials were tending to receive unfavourable treatment in Congress and the press, steadily and, in some cases unobtrusively, the output of raw materials and the requisitioning of stocks were making real

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<sup>1</sup> Including 500,000 tons of copper scrap; aluminium scrap amounting to thirty-three to forty per cent. of annual aluminium production; three million tons of steel scrap from 'junked autos' and three million more tons from farms; and nickel, tungsten, chromium, vanadium, manganese, etc., by recovery from steel alloy scrap.

<sup>2</sup> One official report stated, however, that after July no open-hearth furnaces were closed down on account of lack of scrap.

progress.<sup>1</sup> Thus, between 1939 and 1942, total steel output increased by 63 per cent., alloy steel by 255 per cent., aluminium by 182 per cent., copper by 54 per cent., rayon by 67 per cent. and magnesium by 3,614 per cent.<sup>2</sup>

#### THE CONSERVATION OF RAW MATERIALS

If the problem of expanding production presented difficulties, that of conservation called for no less prodigious efforts. These efforts involved not simply the tightening of the civilian belt, for which ample opportunity existed, but the drastic revision of service specifications to ensure that the minimum of critical materials was consumed. It is very difficult to assess in which of these two fields the W.P.B. achieved its greatest economies. The use of a cumbersome, top-heavy priority system placed limits upon the control of raw materials and it was known that evasion was not difficult. An impressive list of prohibitions upon the production of civilian goods might sometimes be riddled with concessions. Industrial construction, with its enormous appetite for steel, was uncontrolled and the various government departments were still able, in April, to authorise individually widespread new construction. Meanwhile conservation orders began to fall thick and fast from the W.P.B. and it was thought in May that virtually nothing except armaments would be able thereafter to be made from steel. To issue orders proved far easier than to police them and throughout the summer an extensive 'black market' in steel was known to exist.

The pressure of the Bureau of Conservation could not be uniformly applied, nor could all the leaks of materials to inessential uses be efficiently stopped: the programme tended to be closely wedded to a general, national scheme in contrast with the British policy of dealing with individual problems on an *ad hoc* basis.<sup>3</sup> While, then, on the one hand the Americans tended to complain that the United Kingdom approach to the problem was haphazard and ill-organised, the British felt that American methods produced impressive façades behind which a great deal of waste could continue. The setting up of the Anglo-American Conservation Committee in February 1943 went a long way to ensure that the latest information was available to both sides, though the committee could hardly be expected to lead to anything approaching a uniform basis of civil consumption.

The modification of service specifications in the United States

<sup>1</sup> It was calculated that by the middle of 1943 steel output would have reached 97 million tons, an increase of 30 million since 1940; while, in the twelve months since the requisitioning act had been passed, the following results had been achieved: 10,000,000 lb. of aluminium seized from dealers who had refused to sell at fair prices and an additional 500,000 lb. requisitioned, as well as 215,000 lb. copper, 1,000,000 feet lumber and 13.6 million feet of railroad rails. 351 tons of rubber, 195,000 lb. of solder mix, 293,000 lb. of tin, 142 tons of steel and 10.5 million lb. of zinc concentrates were also being requisitioned.

<sup>2</sup> See Cecil Brooks (ed.), *Overseas Reference Book of the U.S.A.* (1944), Section 5, pp. xi and xiii.

<sup>3</sup> See Chapter XXII below.

proved a much easier nut to crack: the Services were most amenable to reductions in quality consistent with the maintenance of operational standards and had, indeed, even before the outbreak of the European war, made considerable preparations for such measures. Their complete co-operation in these efforts from the beginning of their direct participation in the war enabled them to take full advantage of the latest research. The American Iron and Steel Institute, for example, at the request of the W.P.B. mobilised the best United States metallurgists who in ten days developed a new series of steel alloys for special munition purposes. It is impossible to examine statistically how far these conservation efforts contributed to the release of American raw materials for essential needs either of the United States Government or of any of the United Nations, but the information becoming available told an impressive story of a new outlook. At the end of January rubber had to be excluded from the American supply programme to the Soviet Union, but this proved only a temporary emergency; on the whole, when the Combined Raw Materials Board agreed to an allocation, that allocation was received. Gloomy forebodings of a breakdown of raw material supplies, which were occasionally uttered, were never realised.

#### TRANSPORT DIFFICULTIES

From the British point of view far more serious than individual commodity shortages was the increased stringency imposed by transport conditions. We have already seen how the U-boat campaign and port dislocations determined the major cuts in our import programmes.<sup>1</sup> To the effects of shortage was added that of uncertainty of shipments with the result that during one period nearly half a million tons of steel had accumulated on the Atlantic seaboard, while at another there was barely enough to provide a working stock. The accumulation of these stocks at a time when the Americans were themselves alarmed at the scarcity of their own supplies provoked somewhat ill-informed criticism of the whole of the steel arrangements. It was not immediately appreciated that the vagaries of the shipping situation inflicted even greater hardships upon British steel consumers than upon their American colleagues. At the same time the American inland transport system was beginning to groan under the effects of the vast munitions expansion, while the railing of timber from the Pacific area across the continent of Canada to east coast ports added to the difficulties encountered in that country.

#### POLITICAL PROBLEMS

The period witnessed also the occasional flaring up of purely political issues. The American anxieties about the export of lend-lease materials by the United Kingdom in the form of finished pro-

<sup>1</sup> Chapter XIV.

ducts were on the whole quiescent as the matter appeared to become much more one for supply and combined allocations rather than for political disputation. The setting up of the Combined Export Markets Committee (the Sykes Committee) in June 1942 was a further step towards transferring the export problem from the field of politics to that of supply, where it properly belonged.<sup>1</sup> The suspicions were dormant, however, and not dispersed; they were to be renewed in later periods as the war drew to its close and post-war export schemes reappeared in the limelight.

Meanwhile, in March 1942 the President, in his Report to Congress, had stated: 'Lend-lease . . . is not a one-way street. It is the instrument with which we supply our allies and it promises to become the instrument with which they supply us'.<sup>2</sup> But it was felt, by British officials, that there was in America 'a clear lack of realisation of the two-way nature of the supply of raw materials and lack of knowledge of the British contribution'. In August, when a public storm seemed to be brewing about American supplies to lend-lease countries, Mr. Stettinius, the Lend-Lease Administrator, was obliged to announce that whenever the occasion had arisen, O.L.L.A. had halted the export of materials already delivered to representatives of lend-lease countries in America in order to fill an unexpected need in the United States or in another of the United Nations. He re-enunciated, however, in strong terms the doctrine that the fundamental policy governing supplies was a *combined* United Nations policy based on the strategy laid down.

How far then did the collaboration between the two countries fulfil the hopes built upon it? In Tables 28 and 33 on pages 160 and 171 there are set out quantitatively the supplies of raw materials from the United States to this country. Tables 30 and 34 on pages 164 and 172 provide similar data for Canadian exports. Unfortunately, comparable statistics are not available for exports of raw materials from North America to the British Empire as a whole or from the Empire in reverse. It is clear, also, that a complete picture of mutual aid could not be produced without taking fully into account total supplies of raw materials *and* finished products being sent in both directions, as well as the services rendered in all parts of the world. But the raw materials figures, alone, do establish the great measure of assistance given by North America to this country, assistance without which our national war effort might have been brought to a standstill. Tables 48 and 49 set out in percentage form the amounts of important raw materials sent by the United States and Canada to Britain in the years 1940, 1941 and 1942.

<sup>1</sup> *Report on the Work of the Combined Raw Materials Board to January 26th, 1943* (H.M.S.O., 1943), para. 15.

<sup>2</sup> *Report to Congress on Lend-Lease Operations* (Washington, March 1942), p. 32.

Table 48. Percentages (of total United Kingdom imports) of certain materials coming from the United States in the years 1940-42

Material	1940	1941	1942
Molybdenum ore . . . . .	93	100	97
Pig iron . . . . .	56	55	25
Ferro-alloys . . . . .	20	10	7
Iron and steel scrap . . . . .	96	96	58
Steel . . . . .	77	83	94
Aluminium and aluminium alloys . . . . .	19	2	2
Brass and alloys of copper . . . . .	95	98	69
Nickel . . . . .	4	5	4
Copper . . . . .	25	24	32
Magnesium . . . . .	36	56	96
Mercury . . . . .	36	11	—
Zinc or spelter . . . . .	18	28	46
Non-ferrous scrap . . . . .	36	8	23
Abrasives . . . . .	6	12	19
Sulphur . . . . .	90	100	100
Rubber, raw and synthetic . . . . .	1	1	11
Cotton, raw, waste and linters . . . . .	51	34	26
Silk, raw and cocoons . . . . .	34	51	—
Hemp . . . . .	25	19	11
Hardwood . . . . .	21	21	39
Softwood . . . . .	7	5	6
Plywood . . . . .	44	62	50
Paper, cardboard, etc. . . . .	19	17	30
Paper-making materials . . . . .	22	37	43
Hides, skins and fur skins (undressed) . . . . .	4	1	1
Fertilisers . . . . .	34	84	74
Seeds and nuts for oil, etc. . . . .	56	32	70
Paraffin wax . . . . .	38	50	77

Source: Based on *Annual Statement of the Trade of the United Kingdom*

Table 49. Percentages (of total United Kingdom imports) of certain materials coming from Canada in the years 1940-42

Material	1940	1941	1942
Ferro-alloys . . . . .	55	86	92
Aluminium and aluminium alloys . . . . .	68	98	97
Nickel . . . . .	80	92	89
Copper . . . . .	31	27	21
Zinc or spelter . . . . .	65	60	50
Lead . . . . .	31	41	48
Abrasives . . . . .	45	55	68
Hardwood . . . . .	28	31	33
Softwood . . . . .	82	85	81
Plywood . . . . .	25	30	49
Paper, cardboard, etc. . . . .	33	63	60
Paper-making materials . . . . .	17	54	49

Source: Based on *Annual Statement of the Trade of the United Kingdom*



Certain important conclusions may be drawn from these tables. The most striking is, as might be expected, our increased dependence upon North America in 1941 and 1942 as compared with 1940. Whereas in 1940 in the case of only eight materials did we draw more than 50 per cent. of our total imports from the United States, in 1941 the number of materials had risen to eleven and in 1942 it was still ten. For molybdenum ore, steel, magnesium and sulphur we looked in 1942 to the United States for more than 90 per cent. of our total imports. In the case of Canada, whereas we drew from her more than 50 per cent of five materials in 1940, we were drawing more than 50 per cent. of eight materials in 1941, and of seven materials in 1942; in that year we obtained more than 90 per cent. of our total imports of ferro-alloys, aluminium and aluminium alloys, and more than 80 per cent. of our nickel and softwood from that country.

#### THE PRINCIPLES OF COMBINED PLANNING

While the political and economic controversies were either being resolved or shelved a combined supply plan was beginning to take shape. The issue was not faced immediately. For instance, in February the Americans were still buying rubber in the Dutch East Indies at prices above those agreed with the Rubber Reserve Company<sup>1</sup> and were, moreover, trying to buy the whole crop. Their activities were brought to an abrupt end not by the Combined Raw Materials Board but by the Japanese. In March the activities of private American buyers in other markets, particularly South America, still hampered the activities of British official purchasers. The British were particularly alarmed lest large-scale private purchases, apart from favouring the sellers at the expense of the importers, should lead to serious inflation in the Colonies, especially as imports of civilian goods to these areas were being kept down to the minimum. The American device to prevent great rises in the prices of raw material imports by enforcing internal ceiling prices was felt to be in this field ineffective. A general solution was sought in combined purchasing on behalf of both governments. The treatment of this problem became necessarily linked with the attempts to evolve a total raw materials plan which, as far as fifteen critical materials were concerned, had begun to emerge by May 1942.

One of the first achievements of full combined planning was the agreement in July that, in the interests of shipping economy and British productive capacity, the United Kingdom would import synthetic rubber from America rather than manufacture it over here.<sup>2</sup> Comparable arrangements were made for other materials: thus,

<sup>1</sup> A special corporation set up by the Americans in June 1940 to carry out purchases of rubber for stockpiling.

<sup>2</sup> H. of C. Deb., Vol. 381, Col. 766; Vol. 383, Col. 771.

alcohol and acetone were imported from the United States in place of molasses with their heavier demand for ships, triple superphosphate came in place of the much bulkier phosphate rock, and phosphorus instead of industrial phosphate.<sup>1</sup> To deal with the wider principles involved Mr. Stettinius came to England in July. In the same month the Combined Production and Resources Board placed on record, with the approval of the governments concerned, the principle that 'the raw material needed by the United States, Britain, Russia and the other United Nations should be supplied in 1942 from the common pool'. In December this principle was reaffirmed for steel by the setting up of the Combined Steel Committee for the United Kingdom, United States and Canada, which would treat the steel-producing and munitions-making resources of the three nations as though they were a single unit to ensure that the maximum weight of weapons could be brought against the enemy in 1943. It was, however, one thing to affirm a doctrine, another to enforce it amidst the contrasting economic and social conditions of the three countries.

By the autumn combined supply and combined purchasing policies had assumed much more practical shape. For most materials (as listed in Appendix 34(a) to this volume) either the United Kingdom or the United States purchased on behalf of both countries, or, where each country continued to make its own purchases, certain arrangements were made to incorporate them within an agreed framework. The United States and the United Kingdom assumed also, in November, joint responsibility for the provision of a group of materials including copper, nickel, rubber, zinc, ferro-chrome and ferro-silicon, to the Soviet Union. By the end of the year the C.R.M.B. was faced with the pleasurable but complicated task of allocating materials from French North and West Africa and Madagascar, newly liberated by Allied arms. This matter was dealt with in two phases: first, materials were directed, on the best practicable basis, to given areas according to the shipping available; then a long-term policy of allocation and procurement was devised for 1943 as part of the allocation programme for the United Nations as a whole.<sup>2</sup> So the French and Belgian colonies became important sources for raw materials such as rubber, tin, copper, fibres, palm oil and industrial diamonds. Collaboration between the United States and the United Kingdom also developed in matters of economic warfare, but here there was a greater and increasing divergence of interest and approach, particularly in relation to the South American republics.

But, as we shall see elsewhere in this volume, it was still necessary

<sup>1</sup> The import of phosphorus in that form was calculated to involve an eight-fold saving in tonnage as well as the release of phosphorus capacity for the manufacture of ferro-silicon.

<sup>2</sup> *Report on the work of the Combined Raw Materials Board to January 26th, 1943* (H.M.S.O., 1943), para. 13.

for the Americans to complete the construction of a fully co-ordinated organisation with which British and other officials could negotiate. To the Ministry of Supply representatives in Washington the complex of organisations there presented serious problems. Thus, on more than one occasion, they spent a week holding discussions with one department and, after obtaining its official approval, found that the overriding decision rested with another department and negotiations had therefore to be reopened at the beginning. For example:

One great difficulty in dealing with raw materials was that anything up to five or seven departments were dealing with them, mostly with their own statisticians, and would all produce difficult papers on the subject . . . If you went to see someone high up in the administration, he would have a paper in his hand, but you would have no idea which paper it was or whether you had seen it.

That was the position at the beginning of 1942. The Americans were themselves most uneasy about these arrangements and the establishment on 16th January 1942 of the War Production Board, under the chairmanship of Mr. Donald Nelson, represented a significant step forward. Whereas the O.P.M., the body it replaced, had been established to deal with the defence production programme, the W.P.B. was given powers, at least in theory, over all production, thereby recognising the principle that an essential production programme could only be directed and controlled when all civilian production had been brought within its orbit. Mr. W. L. Batt, as vice-chairman of the W.P.B., was placed in charge of raw materials. The creation of the W.P.B. did not, however, provide an immediate solution to all problems. In the case of steel, for example, the B.P.C. had still to negotiate with four government departments: the Office of Lend-Lease Administration, the American Requirements Committee, the Lend-Lease section of the Production Board and the United States Treasury. The British Mission, moreover, was not allowed to make direct contacts with the producers, and was expected to operate through the United States Treasury, although in fact orders went more expeditiously through the Lend-Lease section of the War Production Board, and this was the channel used wherever possible.

As the W.P.B. grew in stature it assumed powers worthy of its title, but it was still encumbered by the unwieldy apparatus of its priority system. If the original priority scheme which came into force after Pearl Harbour displayed an incomplete control of the situation, the Production Requirements Plan, which was prepared in the summer of 1942, threatened to bury all planning under a mountain of paper. Thus, it was held, the contractors would have to answer thirty-nine complicated questions on the quarterly form and more than twenty

questions on supplementary monthly forms. The information gained from the forms would be layered laboriously up from level to level and then back down again level by level until the allocations finally reached contractors and suppliers. The quest for a 'balanced production during the current year' which was renewed under the direct instructions of the President was still held up by the manifold difficulties of organisation,<sup>1</sup> while the War Production Board was inclined to believe that the faults lay far deeper and might be explained in part by managerial defects within some industries. So although materials were more plentiful in the United States than in the United Kingdom, the problems were intrinsically more difficult. They were partially solved by the end of 1942 to the advantage of both countries and the United Nations as a whole, but some of the weaknesses of organisation and of personal conflict remained to impede, though to a lesser degree, the combined planning of successive periods of the war.

The problem of unifying *imperial* supply arrangements presented its own difficulties. Canada continued to enjoy special privileges in the United States and the economic ties with that country became ever closer; in July, Canadian service requirements for strategic materials from the United States were placed on an equal basis with those of the American Services. For the rest of the Empire the Americans looked to London and to the United Kingdom representatives to prepare a total demand on behalf of this country and all the varied requirements of the Empire. But the Dominions had their own missions in Washington, which, while they maintained close touch with the B.R.M.M. through an advisory committee and often acted through that body, were quite prepared also to make direct approaches to American government departments, with all the consequent dangers of duplication and confusion.<sup>2</sup> Serious delays were accordingly imposed from time to time on certain imperial requirements.

The solution which was favoured on both sides of the Atlantic was the co-ordination of Empire requirements in the United Kingdom, and to that end the Empire Clearing House was set up in London in May 1942. Under its terms of reference it was to advise the Minister

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<sup>1</sup> In the late summer the W.P.B. was being widely criticised, and Mr. Nelson, at a meeting of the heads of all the materials branches of his department, pungently summarised the situation with the comment that it took far too 'long to get things done around here.' The following month a British committee was invited to Washington to explain at first hand how the British materials allocation system was working and, with the help of the information they provided, the Controlled Materials Plan was introduced for steel, copper and aluminium, based largely on the British arrangements, to become effective as from the second quarter of 1943.

<sup>2</sup> Two separate series of negotiations, one of which went through the B.R.M.M., were inaugurated by a dominion purchasing commission for steel for wagons. When the W.P.B. discovered these developments it promptly retaliated by demanding a statement of *total* steel requirements for rolling-stock for the British Empire as a whole.

of Production on the imperial requirements and imperial supplies of raw materials.<sup>1</sup> Sir Clive Baillieu in Washington was made responsible, under the direction of the Minister, for the integration of these programmes with those of the C.R.M.B. where the materials were allocated by that body, and in most other cases he was to operate through O.L.L.A. It was intended that the E.C.H. should not become a mere body for the collation of statistics, but should constitute an active part of the machinery for determining the distribution of vital supplies to the best advantage of the war effort. But it was to deal with requirements and allocations only and not with the placing and progressing of orders. The danger existed, therefore, that such an organisation might prove to be a mere rubber stamp for policy already decided in the United Kingdom. To guard against this, and to quieten any suspicions which might grow in the Dominions, a 'high level' committee, the Commonwealth Supply Council, consisting of the Minister of Production and the High Commissioners for the Dominions and India, was formed in October 1942, and the Empire Clearing House became the Raw Materials Sub-Committee of this body. Difficulties continued, however, particularly in Washington; there were delays in the transmission of figures and other information from London and apparently incomplete liaison between the Dominion Governments and their missions in both capitals. But for the most part the tripartite relations between the United Kingdom, United States and Dominion representatives were smooth, particularly as 'on the whole the Empire has something to contribute rather than to receive'.

#### THE COMBINED RAW MATERIALS BOARD

The vision before statesmen and senior officials in both countries remained the pooling of resources.<sup>2</sup> The announcement of such a policy soon after Pearl Harbour was a political achievement of some importance, particularly when compared with the developments of the First World War. But once the idea of a combined programme had been accepted the machinery for its implementation had to be evolved, partly out of existing committees and offices and partly out of improvised organisations.

The purely internal difficulties within the United States have already been noted. But the Allies as a whole had to face the difficult problem of linking up the old with the new, in essence the pre-Pearl Harbour functions of O.L.L.A. with the post-Pearl Harbour func-

<sup>1</sup> See Appendix 35.

<sup>2</sup> As one British Supply Council memorandum put it: 'The essential pattern for implementing this principle may be briefly stated as follows: determination of strategic concept and its expression in military requirements—translation into terms of raw materials necessary to their production—production itself—assignment of finished weapons—shipping.'

tions of C.R.M.B. The former of these offices had existed to advise the administration whether a requirement of Britain or her allies was essential for the defence of the United States. If the answer were in the affirmative then it would recommend the government department concerned to release the material. It acted then as a watchdog for American security, which was the sole theoretical criterion applied to each application. But the C.R.M.B. was established at the end of January 1942 as a two-man body, consisting of the vice-chairman of the W.P.B. (Mr. W. L. Batt) and the head of the B.R.M.M. (Sir Clive Baillieu), and it was given almost supreme powers, being answerable only to the chairman of the W.P.B. and the British Minister of Production. Its functions were defined as follows:<sup>1</sup>

(1) [to] plan the best and speediest development, expansion and use of the raw material resources under the jurisdiction or control of the two governments . . .

(2) . . . In collaboration with the [other] interested nation or nations, [to] formulate plans and recommendations for the development, expansion, purchase or other effective use of their raw materials.

But there existed the immediate danger of a conflict between O.L.L.A. and C.R.M.B. The British felt that if C.R.M.B. made an allocation it was binding on all parties and the intervention of O.L.L.A. at a later stage was at best superfluous and at worst dangerously obstructive.<sup>2</sup> This was particularly the case as O.L.L.A. from time to time based its decision not simply on whether the material was available or essential, but on whether there would be enough shipping to carry the material, an issue on which it was incompletely informed and which, in any case, was outside its terms of reference. There thus existed the germs of a three-cornered conflict between C.R.M.B., O.L.L.A. and the B.R.M.M., and this added to the already complex situation in Washington.

To the incompletely defined conglomeration of committees and boards there was added in June 1942 the Combined Production and Resources Board. That such a board was necessary there can be no doubt. It was designed as the production counterpart of the Combined Chiefs of Staff Committee and was intended:

to integrate the production of the two countries so that the total available resources as ascertained by the board are related to operations of

<sup>1</sup> Cmd. 6332, January 1942. In theory, the C.R.M.B. was to deal with all critical materials, but the second most critical material, steel, was never allocated by it and was dealt with at the highest political level. See also Appendix 96.

<sup>2</sup> It was pointed out that our argument would be that the decision of the Combined Raw Materials Board had committed us to an unavoidable dollar expenditure for purposes the United States regarded as necessary to the war effort of the United Nations, and that such expenditures were therefore eligible for lend-lease.

war and to particular dates as laid down by the Combined Chiefs of Staff, rather than being related to a national establishment of forces.<sup>1</sup>

Such a body was an essential element in production strategy, but to determine where production problems ended and raw materials problems began was to embark on a metaphysical as much as an organisational discussion. Since C.P.R.B. was concerned with finished products it took an interest in the raw materials for their production, especially steel, aluminium, rubber and copper.<sup>2</sup> It began by dealing with them through its own organisation, much to the discomfort of the C.R.M.B.; but after an initial jockeying for position a rough solution was found through the creation of combined committees of the two boards. O.L.L.A. was meanwhile claiming its inherent right to determine eligibility of requirements. Here it was found extremely difficult to reallocate functions, and O.L.L.A. at the end of the period was still using its right to 'screen' requirements even when those requirements had already been agreed by C.R.M.B. In fact, a double 'screening' took place, both by the Requirements Committee of W.P.B. and by O.L.L.A. Once again the solution was found not on a legalistic basis but through the intimate contacts maintained between the British and American officials in Washington. But the very nature of the procedure continued to cause delays in the supply processes.

How far, then, did these developments and adjustments enable the United Kingdom to draw fully upon North America for essential raw materials which the Empire and other sources could not supply? There were a few instances where full expectations were not realised, to wit steel, synthetic rubber and plywood, but in the vast majority of cases, in spite of the growing tightness of the raw materials situation in North America, the British Raw Materials Mission rarely received a negative answer to a properly documented plea. The real shortage throughout was not supply but shipping. If supply negotiations with O.L.L.A. and other American organisations caused the headaches, it was shipping problems which caused the scarcity. Thus, even though American supplies of steel were cut from the original estimate of 600,000 to 300,000 tons monthly, we were in fact unable to ship that amount. The lend-lease programme in America, and the dollar gifts from Canada,<sup>3</sup> the first of which was made in April 1942, ensured that no currency difficulties would interfere with our

<sup>1</sup> H. of C. Deb., Vol. 380, Col. 1984.

<sup>2</sup> *Report on the work of the Combined Raw Materials Board to January 26th, 1943* (H.M.S.O., 1943), para. 14.

<sup>3</sup> The first thousand million dollar gift was exhausted in November 1942, whereupon Canada supplied us with 215 million dollars worth of goods and received in return all the United Kingdom owned plant and equipment in Canada plus 150 million American dollars. For further gifts see below, p. 303.

supplies. The oiling of the machinery of supply was achieved partly by the setting up of comprehensive organisations, partly by the growing understanding and mutual respect between the two countries and their representatives. The machinery was still clumsy and frequently overlapping; the organisations were not so much ill-defined as over-defined, with the result that all sorts of bodies and committees might suddenly demand a voice in the numerous decisions to be taken. Not surprisingly, the individual members of the combined bodies were not always sure whether they were supposed to defend national interests or sacrifice them, where necessary, to total Allied needs. In most cases, however, the majority of individuals, British and American, rose above the defects of their organisations. After twelve months of trial and error the emergence of a combined programme for 1943 and, what was more important, a combined outlook, was assured.



## CHAPTER XIX

# PREPARING FOR VICTORY: ANGLO-AMERICAN RELATIONS

1943-45

**A**t the beginning of 1943 the decisive battles of the war had yet to be fought. But some of the hardest battles of Anglo-American planning were over or nearly so. For this reason the student of the period sees none of the dramatic episodes which marked the earlier stages of the conflict. He no longer sees the efforts, American no less than British, on both sides of the Atlantic to move the United States first to friendly neutrality, then to economic intervention. He can see nothing comparable to Pearl Harbour, which solved overnight problems which had been exercising the politicians and strategists for a year or more, though other and graver problems quickly took their place. He sees no longer the struggle to erect combined organisations to show to the world that the Allies had been welded into a single military machine, but instead the efforts to make these grandiose organisations work. And he begins to see also the unwinding of the machine and the loosening of the bonds as the Allies began to manoeuvre for position in the cold realities of the post-war world.

In this chapter we shall not re-tell the story of Britain's import policy and programmes in relation to the United States. For this the reader is referred back to an earlier chapter,<sup>1</sup> where he will find them more appropriately in the context of our import programmes as a whole. The problems they presented were grave enough. Supplies remained at first scarce, but in 1944 the first signs of surplus were clearly to be discerned. Ships remained short; sinkings declined but the Allied invaders of Europe made exacting demands upon available shipping. And the American pressure upon our import programmes lost nothing of its vigour in the closing months of the war. On the contrary, it inaugurated a somewhat vigorous discussion about the size of our stocks. But we shall only revert to an examination of these problems where they are especially relevant to our present interests. Here we shall be concerned with the impressive development of reverse lend-lease, which gave a new content to Anglo-American economic relations; with the strengthening of

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<sup>1</sup> Chapter XIV.

machinery to create a common policy in Washington; with the political problems bound up with the British stock position; with the use, and alleged misuse, of lend-lease materials, and with the reopening of the British export trade. We shall see also something of the work of the Foreign Economic Administration (F.E.A.), established in September 1943 to co-ordinate America's policy in relation to the whole problem of overseas supplies. We shall look finally at plans for the post-war period as seen through the eyes of Washington and London.

When men were fighting with their backs to the sea neither they nor their allies were deeply concerned with the niceties of international finance. But when the Axis assault was first held and then countered, and when America turned its attention once more to the problems of an election year, the administrator was bound to keep his ear closer to the political ground. Perhaps also some of the resistance to British requests derived from the imperfect notion still prevalent in America about the British war effort. 'Hardly anything is known of the British position except at the very top level', wrote one official of the Ministry of Production. 'This is true of British representatives as well as United States and is true both in the large and in detail'. Elsewhere in the memorandum he wrote:

We tend to fall between two stools. We cannot force our demands upon the Americans as the Russians do, backed by a general public understanding of the Russian position; we cannot fight each detailed case in the most effective way because we have not the necessary knowledge and personnel in Washington to do so. We are, therefore, in a defensive position all the time and this, of course, is bad for bargaining.

A first reading of the sources for this period brings into the foreground a much greater 'political' emphasis in the relations between the two countries. Though we hear a good deal about combined plans and policies we also hear a good deal more in the cables about the political pressures put upon the negotiators. Even one of the achievements of this period, reverse lend-lease in raw materials, had its roots in the American political scene. Already, before 1943, the Atlantic Ocean had been filled not only with ships bringing supplies but with ships bringing men. Once the men landed in these islands, or anywhere else in the sterling area, they brought with them dollars to spend, and soon the dollar reserves held by sterling countries began to rise again. American officials and the American Congress contemplated this improving outlook with mixed feelings. Not only were they providing us with materials, food and munitions under lend-lease, but they were also paying cash for materials and other commodities that we sold to them, sometimes paying cash for those very

materials which were needed for the munitions sent back to us under lend-lease. Here was a *prima facie* case for asking Great Britain to extend her reciprocal aid and, in so doing, reduce the rate of growth of her dollar reserves. Meanwhile, without further ado, the American Government decided that British gross dollar reserves<sup>1</sup> ought not to exceed 1,000 millions.

An argument presented in this form was unacceptable to the British Government. For implicit in it was the assumption that the contributions of each country to the war effort could be measured in terms of goods and currency reserves. Such an evaluation took no account of the lives, ships, buildings and treasures which a front-line country like Britain was contributing and losing in the war effort. It made no allowance also for her heavy commitments to her allies and her dependencies overseas, as well as her need to have some regard for her post-war position. But Britain acknowledged just the same that, now that her reserves were rising, there was good reason for bringing more of her own exports within the lend-lease system, according to the principles of mutual aid, to which her unremitting war effort had for long paid tribute. Reciprocal aid had in fact been in operation since the summer of 1941,<sup>2</sup> and had been written into the Mutual Aid Agreement of February 1942.<sup>3</sup> Under it America had received equipment, supplies, services and technical information; and similar arrangements had been made with our other allies.<sup>4</sup> If by the middle of 1943 America had used twelve per cent. of her total war expenditure for lend-lease, Britain had devoted ten per cent. of hers to mutual aid, and this was a very low estimate.<sup>5</sup> But, in our dealings with America, raw materials and foodstuffs, other than service rations, had been excluded from the provisions of the agreement. Now mutual aid was to be extended to these as well.

The difference between the British and American attitude was not simply one of theory; it was concerned also, as we shall see, with the hard realities of trade and trading procedure. In July 1943 the British Government undertook for herself and her Colonies, but not for the Dominions, to supply 'as reciprocal aid and at the expense of the United Kingdom Government' raw materials purchased in bulk, but not those obtained through private channels. This decision to extend mutual aid led at once to renewed discussions between Britain and the United States. In this country there could be no ready acceptance for the Washington view that American departments should buy their goods according to the current procedure and

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<sup>1</sup> Gross dollar reserves apparently meant gold and dollar reserves.

<sup>2</sup> Cmd. 6931, para. 4.

<sup>3</sup> Cmd. 6341 and Cmd. 6389.

<sup>4</sup> Cmd. 6483.

<sup>5</sup> *Ibid.*, para. 39.

leave payment to the British Government. Britain requested that American purchases should be centralised as much as our own for these purposes, and should be made to pass through lend-lease machinery over here. But American economic policy, in war as in peace, aimed at the minimum interference with the normal channels of trade, and here was a challenge to their established procedure. Negotiations dragged on until the end of the year, but already practice had raced far ahead of theory and, even before the advent of reciprocal aid, the overwhelming bulk of American imports were procured through British governmental organisations, and only a small proportion by America direct.

But Britain could naturally only commit herself for her own supplies and those of her dependent Empire. The Dominions had to be left to make their own arrangements. Already Canada had magnificently shown the way with her money gift of \$1,000 millions to British war needs in 1942. In May 1943 her Mutual Aid Act made available a further \$1,000 millions, mainly to Britain but including the United Nations as a whole; and she made other grants as well.<sup>1</sup> Soon other Commonwealth Governments had made their own agreements according to the existing circumstances.<sup>2</sup> But the largest contribution made by the United Kingdom was in finished products, equipment, accommodation and an increasing variety of services. If we calculate our total contribution under mutual aid to America as approximately £1,242 millions for the duration of the war, the value of raw materials from Britain and her dependencies seems small by comparison, £31 millions.<sup>3</sup> But these contributions included some highly essential strategic raw materials of which natural rubber, coming largely from Ceylon, was the most important. These exports have already been summarised in Table 21 on page 114.

The rising store of dollars was only one element in a situation which aroused the closest attention of the American Congress and Government. At the beginning of 1943 the Office of Lend-Lease Administration was showing itself reluctant to face the new and zealous Congress with lend-lease appropriations which might be open to the slightest question. Tobacco for civilian use was one of these items; it would not necessarily be ruled out but 'it would be impolitic to put in a large sum to provide tobacco for civilian use in the United Kingdom'. This feeling was strengthened somewhat 'by the

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<sup>1</sup> Cmd. 6483, para. 3. Further appropriations to cover supplies to Britain were made in the spring of 1944 and the spring of 1945. See Hancock and Gowing, *British War Economy* (1949), p. 375.

<sup>2</sup> New Zealand and India agreed, with certain reservations, to supply America with bulk commodities as reciprocal aid.

<sup>3</sup> Cmd. 6931, paras. 7 and 11. For a more detailed comparison between lease-lend and mutual aid see R. G. D. Allen, 'Mutual Aid between the United States and the British Empire, 1941-45' (*Journal of the Royal Statistical Society*, CIX, Pt. III, 1946).

British cash position'. A consideration of South Africa's gold supplies produced an even more stringent reaction from the State Department, and it looked for a moment as if South Africa's munition and civilian requirements would have to be paid for in currency.<sup>1</sup> Apart from those two cases, however, only four items out of 1,200 had been considered by O.L.L.A. as unsuitable for lend-lease. But by the end of the year various criticisms were being made against Britain, including her use and misuse of lend-lease materials; and in the new year a high American official mentioned the harmful effect upon Anglo-American relations 'of the many stories going about with regard to British abuse of lend-lease assistance from the United States'. This had special reference to the alleged misuse of lend-lease military articles, but the official in general wondered 'whether the best solution would not be for us to end lend-lease and in future to pay in cash for everything we received from America'. Already the Americans had listed certain exports to Britain as hardly suitable for incorporation into lend-lease appropriations; and again it was the reaction of Congress to the renewal of the Lend-Lease Act which they had in mind. There could be seen at work a steady process of 'whittling away on individual requisitions, applied to a degree varying with different parts of the British Empire'; yet, on the whole, the grants made under lend-lease seemed to show that F.E.A.'s bark was worse than its bite. The British Raw Materials Mission reported to London:—

Recently we have often failed to get F.E.A.'s approval of requisitions when the end-use statements have referred simply to percentages to be used for 'government contracts', 'essential home industry' and 'exports to Empire and Allied countries for essential war purposes'.

Officials had the impression, however, that the Americans 'seem disposed to adopt a reasonable attitude'; what was wanted was fuller information to satisfy 'F.E.A.'s new thirst for information'.

Yet, while the pressure upon the British was stiffening, the evidence was emerging that American civil consumption had not had to bear any reductions comparable to those imposed upon the British by the war effort.<sup>2</sup> By the end of 1942 'in every field except those which were in direct conflict with the war programme, there has been a very rapid expansion of consumption'. In the second half of 1942 civilian requirements were being met in part from stocks and 1943 must introduce inevitable cuts; but the American civilian would never in the foreseeable future drop to British levels. A British request for an addition of 100,000 tons of

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<sup>1</sup> In April 1943 it was agreed that supplies of American non-military items to South Africa should in future be on a cash basis, but lend-lease for military supplies continued until April 1945.

<sup>2</sup> See e.g. Chapter VIII, p. 120.

newsprint to the allocation for 1944 raised difficulties because of the campaign to reduce newsprint consumption in Canada and the United States; but it could be shown that British consumption had by the end of 1943 fallen by eighty per cent. from the pre-war level while American consumption had fallen by only ten per cent., though another fifteen per cent. cut was in prospect. The force of this argument was recognised by the Combined Paper and Pulp Committee of the C.R.M.B. and C.P.R.B. and the allocation was granted.

#### THE BRITISH EXPORT TRADE

While the challenge to British essential requirements under lend-lease was being parried, another element of British economic life had to face an assault, namely her export trade. As we have already seen,<sup>1</sup> the celebrated White Paper of September 1941<sup>2</sup> had narrowed the scope of Britain's overseas trade to certain defined limits, so that American materials should not be absorbed into Britain's exports. The conditions of war and the shortage of labour and raw materials had limited our trade still further. But in the spring of 1943 British representatives in Washington were being placed

in a serious dilemma. The Americans now tend to press that the entire export market (including in one case the United Kingdom market) for certain non-munitions goods should be supplied from the United States. They argue that this can be done by using American labour not required for the war effort, thus relieving our labour difficulties in congested areas such as Birmingham.

To this interpretation the British were bound to offer resistance. They could not view with equanimity a situation which looked as though their 'traditional markets are being transferred wholesale to the United States . . . in the name of combined planning'. They doubted whether American estimates of their capacity to satisfy export needs were really related to their future labour position. The British wondered also whether the White Paper was 'in any case a very appropriate document for present circumstances in which the Americans are our allies in war'.

So Britain made one of its aims the supersession of the White Paper, or at least a modification of its terms. In America there was some evidence that the Government was prepared to negotiate new conditions in place of those laid down in the White Paper. In the highest quarters in Washington there was a willingness indeed to regard the White Paper as out of date, if Britain's release of commodities to America under mutual aid reached substantial proportions. An increasingly tolerant view could be detected in informed

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<sup>1</sup> See above, p. 278.

<sup>2</sup> Cmd. 6311.

circles, and various plans were being examined, not for fighting for exports, but for planning and controlling them on an equitable basis. But, as we have already seen,<sup>1</sup> the real solution was ultimately found not in the modification of export controls but in the removal of a number of materials from the lend-lease schedules and, accordingly, their free use in the export trade. That was precisely what R.M.D. wanted. A few raw materials were, for various reasons not primarily connected with the export problem,<sup>2</sup> restored to a cash basis during 1943 and the first half of 1944, but it was in the latter months of 1944 that the export issue really came to the forefront. American and British differences of opinion were reconciled by the proposed removal from the lend-lease schedules of commodities likely to cause difficulty in the export field; and at the beginning of 1945, therefore, raw materials, with certain important exceptions,<sup>3</sup> passed out of reach of the White Paper and its inhibitions.

#### THE PROBLEM OF STOCKS

But by now another discordant note could be heard. If the removal of materials from lend-lease was a manifest attempt by Britain to reopen her export trade, what about the stocks of raw materials in Britain, alleged to be more than adequate at a time when shipping was scarce and import programmes cut?<sup>4</sup> Already in mid-1944, after the invasion of Europe, American army demands had taken a sharp upward turn, and this was producing an unfavourable climate for British requirements. Then in January 1945 F.E.A. cancelled United Kingdom requisitions for cotton, as well as for dried fruit and starch, on the grounds that stocks were 'unduly high'. The Minister of State had recently, during his mission to Washington, 'been continuously pressed on the question of United Kingdom stocks'. But there was reason to believe that such attacks came from individual departments and did not derive from official government policy in America. Mr. Hopkins, the Lend-Lease Administrator, had an open mind on the subject and was anxious to reach some agreement, based on inter-departmental discussion of our stock position and upon the most up-to-date information available. In March a new inter-departmental committee was appointed under the chairmanship of Mr. Crowley of F.E.A. to determine priority of need among the various overseas requirements (other than

<sup>1</sup> See above, p. 186.

<sup>2</sup> Notably certain copper and zinc products, which we no longer needed from the United States, in the last quarter of 1943, and Cuban molasses, which were affected by the American ruling of March 1944 that 'offshore' purchases were no longer eligible for lend-lease.

<sup>3</sup> Including cotton, woodpulp, paper board and paper, timber and synthetic rubber.

<sup>4</sup> See Chapter XIV, pp. 233-236.

direct military commitments) and between overseas requirements and those of the American civilian economy. The purpose of this new development obviously extended beyond the immediate controversy over British stocks, but it became more necessary than ever that the American official mind should turn away from the mirage of vast United Kingdom stockpiles. Meanwhile a press campaign was being carried on against Britain on the subject of stocks and so the discussion went on as the war drew to a close. The historical significance of the whole controversy is to be found not in what it achieved but in what it signified: the misunderstandings which were perhaps inevitable when allies faced with a virtually beaten enemy fell to discussions about their own resources.

#### POST-WAR PLANNING

Surveys of allied resources did not reveal scarcity in all fields. Early in 1944 there was every appearance of a large copper surplus in America as compared with a serious shortage contemplated only a few months before, though at the end of the year heavy American military demands looked like changing the position very much for the worse. There was, however, no doubt from 1944 onwards that many requirements had reached or passed their peaks, and the question of distributing the surplus came increasingly to the fore. There were, in effect, two claimants upon these supplies: the civilian populations of the victorious Allies, and the relief and rehabilitation requirements of the liberated territories. So the deliberations of the various Anglo-American organisations became increasingly concerned with post-war problems.

In 1943 the planning of the supplies for liberated Europe was seriously begun. The United Nations Relief and Rehabilitation Administration was formally set up in November 1943, four months after America and Britain had created a committee to co-ordinate policy, the Combined Civilian Affairs Committee. The United States had meanwhile been reorganising their own internal machinery for dealing with the problems of civilian supplies for liberated territories. At the beginning of June 1943 an inter-departmental 'Committee for Economic Policy in Liberated Areas' was set up under the chairmanship of an Assistant Secretary of State, with a series of satellite committees under it. At the apex of the pyramid of committees and sub-committees stood a new State Department agency, the Office of Foreign Economic Co-ordination.<sup>1</sup> At the same time the

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<sup>1</sup> Later absorbed, in September 1943, into the new Office of Foreign Economic Administration. F.E.A. was made responsible to the Office of Emergency Management instead of to the State Department as O.F.E.C. had been, but its powers and functions were to be exercised in accordance with foreign policy as laid down by the State Department.



functions of various other agencies<sup>1</sup> connected with the relief of liberated territories were more clearly defined, the main significance of this being the confirmation of the State Department's ultimate control over the economic policy to be followed in liberated areas. In Britain a new War Cabinet committee, the Relief Policy Committee was established in March 1944.

But the emergence of surpluses and the prospects of the end of the war threw another problem into high relief: the problem of de-control, especially in Stage 2, the period between the end of the war with Germany and the end of the war with Japan. America wanted relaxation as soon as a commodity ceased to be scarce; the British representatives in Washington viewed this attitude with misgiving. There were still military demands to be fulfilled. Should surplus material in America go into civilian production, or should British munition orders be transferred to America to release industrial personnel for the British Army? Moreover, Britain greatly needed capital and consumer goods as the slow process of reconversion in England got under way. On the other hand, American de-control would make it easier for Britain to obtain materials for her export trade. Some advance was made towards co-ordinated relaxation with an agreement in March 1944, between Britain, America and Canada, to exchange information on adjustments in production and material controls, through the central channel of the C.P.R.B.; but it would have been too much to expect American de-control to wait on Britain's recovery. The issue itself was settled by the defeat of the enemy in the summer of 1945. Victory, which had tarried so long in the last stages, came in the end with suddenness. And the end of lend-lease was no less speedy than the collapse of the enemy. It was terminated practically over-night on 17th August 1945<sup>2</sup> and many American controls soon followed it into oblivion. But combined organisations such as U.N.R.R.A., which lasted until 1948, and the C.R.M.B., now concerned with surpluses as well as scarcity, which lasted until 31st December 1945, as well as other combined committees and study groups, carried over into the new age and for new purposes something of the experiences of war.

In these last pages we have dwelt a good deal upon the conflicts of interpretation which were bound to arise as the two countries grew more intimate in their relations. The disputes were indeed a sign of the close collaboration which had been achieved and such discords

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<sup>1</sup> e.g. the Office of Foreign Relief and Rehabilitation Operations and the Board of Economic Warfare.

<sup>2</sup> On this date the President issued a directive naming America's official VJ-Day, later fixed for 2nd September, as the date of termination.

could only arise amongst nations working in free and frank association. For every example of conflict there could be given numerous examples of close liaison and major decisions to combine resources and policies: the Anglo-American Steel Committee, which went out in 1943 to survey almost the entire steel resources of the British Commonwealth, and set out to open up for the whole area the latest techniques and methods of control; the establishment of the combined Conservation Committee in August 1943; the further development of combined purchasing.<sup>1</sup> All these and a host of other acts far outweighed in importance the bickerings and suspicions which occasionally broke out in Washington and elsewhere.

Some of the difficulties of organisation, control and policy arose from fundamental differences in the history, economy and psychology of the two countries. In spite of her central rôle in the history of *laissez faire*, England in the Second World War, when she came to recognise control as essential, assumed it in the fullest sense, and 'business as usual' in time of war was banished to the limbo. The United States, for reasons into which we cannot enter here, kept alive as long as they were able the practices of *laissez faire*, even when a whole hierarchy of controls was established. The result was that the controls took longer to acquire those real powers essential to a totalitarian state of war. No less an authority than Mr. Bernard Baruch observed, long after the Second World War, that American 'trial and error' planning methods had prolonged the conflict by at least a year and added 100,000 million dollars to the cost of the war.<sup>2</sup> A British official, at the beginning of 1944 said of the existing position:

large numbers of individuals and agencies must be convinced before anything can be done. Even when M.E.A.L. has been convinced, it remains to convince F.E.A.; when F.E.A. has been convinced it has to convince the Divisional Requirements Committee and from there up to the Requirements Committee itself. Similarly, when we have convinced our colleagues on C.P.R.B., they still have to convince all the operating agencies concerned. The process of clearing every level is inevitably slow and exasperating and there is no effective short cut by high-level decisions.

He went on:

. . . It is important to recognise that there is no homogeneous body of 'Americans' on these matters, working as an articulated machine; there is a number of independent United States agencies which are working in separate compartments, but which do not take each others word for things.

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<sup>1</sup> See Appendix 34(b).

<sup>2</sup> Reported in *The Times*, 19th May 1950.

But these again were frictions to which such a giant machine was bound to give rise.<sup>1</sup> If one considers the hundreds of millions of people whose capacity to fight and live was controlled from the central organisations in Washington and elsewhere, the measure of collaboration and achievement was truly remarkable. The Combined Raw Materials Board, the Office of Lend-Lease Administration, the Foreign Economic Administration, the United Nations Relief and Rehabilitation Administration, to mention but a few, built upon solid foundations a combined war effort. It was suggested at the time that the prestige and achievements of the C.R.M.B. owed something at least to the important fact that less than half the materials it allocated came from the United States of America. In other words the supply came from *Allied*, not simply American, sources and the machinery rested squarely upon mutual aid. But no record can pay adequate tribute to the inspired generosity of American aid at every stage of the war.

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<sup>1</sup> There were also constitutional differences between the two countries which played their part in these relations. An American official was answerable in his personal capacity to Congressional investigation, if necessary years afterwards, for any of his administrative acts open to question. In fact he had something of the responsibility of a British minister to Parliament.

## CHAPTER XX

# BRITAIN AS A SOURCE OF RAW MATERIALS: LABOUR PROBLEMS

**E**VEN in the dark moments of inter-war depression Britain, as we have seen, never fully abandoned the traditional structure of her trade or the belief that she must import materials as freely and cheaply as possible and re-export them as the finished work of her hands and her machines.<sup>1</sup> We never adopted the extreme autarchic policies of Germany and Italy to search, at any cost, for domestic sources. Nor could war itself fundamentally alter the economic conditions which geography and geology had imposed upon us. We must still look for most of our supplies abroad, and without freedom of the seas we were undone. Yet the emphasis which must be placed on the shape and content of our overseas trade should not obscure the large ventures made during the war to extract to the maximum those materials which lay at hand.

Because the words 'raw material' range so widely from the ore or fibre, 'raw' in its most literal sense, to processed and semi-processed commodities such as tinsplate or grey cloth, we are really faced with two almost separate questions—one is concerned with the 'extractive' industries such as ore mining, flax growing and timber cutting, and the other with something almost distinct from these, the processing industries. In the first case we are concerned largely, though not exclusively, with labour questions, in the second with problems of both labour and capacity, and not with these alone. For this reason we must look first at questions of labour and postpone to the next chapter the problems of capacity.

The shortage of labour left its mark on all industry during the war. But in raw materials this scarcity was sometimes made more grave by special circumstances. In the first place, much of the work, particularly in the extracting side of the industries, was both arduous and uncongenial: iron ore mining and, indeed, most branches of the heavy side of raw materials production, compared unfavourably with the processing industries, of which light engineering is the best example. In any case, many of the undertakings were, by their very nature, in remote rural areas. Such industries could hardly offer to

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<sup>1</sup> See above, Chapter I.

workers the amenities of urban life, and they were lucky if they could provide reasonable accommodation. No less important, the wage-earning capacity in many cases was very considerably lower than that outside the field of raw materials, and this brought serious competition from the better paid, and often more congenial, work in the vicinity. In addition, as is well known, the quality of some industrial plant was obsolescent and poor, and the utilisation of labour was proportionately less efficient. We may say as a general rule that the 'extracting' industries raised more problems than the material 'processing' industries. The outstanding extracting industry was, of course, iron ore mining, and it is with the iron and steel industries that this survey must begin.

Nearly all the processes of iron and steel production (which in fact includes at least a dozen 'industries') had been brought under the general direction of the British Iron and Steel Federation in the last years before the war. About half a million men were involved; and the character and strength of the pre-war control by the Federation made it easily convertible to a war-time controlling body under the Ministry of Supply. For various reasons the Ministry of Labour granted to the industry a considerable measure of autonomy in labour matters; and similar powers were delegated to the chemical and non-ferrous metals industries. These we shall not consider here, and we shall take the iron and steel industry to exemplify the procedure and problems of a semi-autonomous, or as it was called, a 'ring fence' scheme.

#### THE IRON AND STEEL RING-FENCE SCHEME

The iron and steel industry, like other industries, was faced less than a year after the outbreak of war with a labour scarcity. In the expanding branches it could not *attract* sufficient labour to satisfy essential demand, nor indeed could it hold its own against the drift, particularly in districts of intense industrial activity, to better remunerated employment. The immediate need was to safeguard what labour force it already had. There was in the first place the call to the Services. Clearly the industry could not enclose itself in an ivory tower and hold out against the demands of the Armed Forces. At most it could prevent too catastrophic a lowering of the age of reservation, particularly for its key workers. This was a separate battle, or rather a prolonged series of engagements, which had to be fought out between the Ministry of Supply and the Ministry of Labour and National Service. But the wastage to other industries constituted a great and growing menace; and it was to deal with this that the Iron and Steel Control pressed for the extension of the provisions of the Essential Work Order to the industry.

Briefly, the object of the Order was to stabilise the labour force in a particular firm, but each firm was obliged to convince first the Ministry of Supply and then, with its assistance, the Ministry of Labour that it could legitimately claim the protection of the Order. The Ministry of Labour, however, was concerned not simply to maintain the production of essential commodities but also to safeguard the interests of those workmen who were now brought under the stringent control of the Order. Once the Order came into force, workmen were no longer free to seek other employment and the employers in their turn were obliged to forgo their right to dismiss a workman, except in cases of serious misconduct.<sup>1</sup>

But the Ministry of Labour assumed also a wider responsibility to the workmen who were now to be tied to their jobs. It was unwilling to impose the Order until it was satisfied that the wages and conditions of the employees reached certain minimum standards. The same applied to the direction of workers to industry. For example, when the question of directing workers to drop forgings arose in the winter of 1940-41, the Minister of Labour wrote to the Minister of Supply 'My officers have been making superhuman efforts to try and get labour for the industry . . . The results, as you say, are most disappointing but I do not think they are to be wondered at in view of the wages offered.' He added: 'I am not going to compel men to take work of this type unless the wages are radically improved, and if they are I do not believe that any compulsion will be necessary.' He held similar views about the scrap industry.

The application of the Essential Work Order raised, then, complicated and delicate questions of wage scales and conditions of work which might have long-term repercussions upon the industry as a whole. It was inevitably a lengthy and piece-meal process in any case, but what was needed now was some more drastic, immediate action. So the Ministry of Labour moved towards the idea of a ring-fence scheme, in other words the idea of turning the labour force of the industry into a self-contained unit. It was first mooted by the Ministry of Labour in February 1941 and was discussed by representatives of the industry during the spring and summer. For a time efforts were made to treat the Essential Work Order and the ring-fence scheme as two separate issues, but it soon became clear that the latter method could not be effectively employed until the labour had been frozen by the Essential Work Order. In theory the Essential Work Order, as originally conceived, was applicable only to those firms from whom maximum output was required; but, in view of the inter-relationship between the Essential Work Order and the ring-

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<sup>1</sup> It is of interest that inefficiency does not appear to have been mentioned as grounds for dismissal.

fence scheme, it became essential to extend the operation of the Order to the largest possible number of firms in the industry as long as they remained in operation at all. Negotiations were protracted, especially when difficulties arose in certain branches of the industry about establishing agreed 'fall-back' rates (that is basic minimum rates to be paid to workmen if they were available for work but not fully occupied by their firm).<sup>1</sup> Where problems of 'fall-back' rates appeared intractable, the general provisions of the Essential Work Order were replaced by an interim Essential Work (Iron and Steel Industry) Order until agreement was reached. Finally, in August 1941 the ring-fence scheme, covering operative, administrative and clerical labour, was introduced and the regional labour supply committees, for redistributing the available labour, began their work. As a result, the labour then engaged in the iron and steel industry was given shelter against calls to other industry, but not to the Services: and the Control was possessed of authority to redistribute its labour according to the changing requirements it had to meet.

But the ring was never unbroken. The industry continued to sustain losses to the Armed Forces and in other ways over which it had no control, as well as by the conversion of some iron and steel works to non-ferrous metals production. It was, therefore, unable to 'live of its own': indeed, even without these losses, it is doubtful whether the industry could have satisfied its labour demands unless some outside assistance became available. This assistance took the form of prisoners-of-war for iron ore quarries, Irish labour, especially for drop forgings, as well as preferential calls upon labour becoming available for re-allocation by the Ministry of Labour. Some female labour was also introduced. By the middle of 1942, 64,000 women had been brought in, and by the end of the year a further 19,000 had been absorbed. At the end of 1943 the total number of women in the industry had reached 95,000; but during 1944 a decline in their numbers began. In general a rough measure of equilibrium was achieved and maintained during 1943. By the end of the year iron and steel production had passed its peak, while the labour needs of the Ministry of Aircraft Production and transport were still in the ascendant and were accorded super-preferential treatment. Thereafter new breaches in the ring fence began to appear but, in the main, the chief anxieties about labour supply were over. So it was that in July 1943, when the demands for iron and steel were extremely heavy, the director of labour at the Control was able to report: 'Vacancies have somehow been filled and production has not really suffered'.

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<sup>1</sup> Particular difficulties were encountered in the case of scrap, nuts and bolts and hematite ore.

The ring-fence schemes, as applied to iron and steel, chemicals and non-ferrous metals, were efforts to isolate groups of problems for separate treatment. We must now look at two other extracting industries, refractories and timber, where such provisions were not made.

#### REFRATORIES

Here were really two industries: the mining and quarrying of the ore<sup>1</sup> and the production of the refractory goods. These were required in furnaces of all sorts as well as in fireclay ware, pipes and building bricks; but they had a special importance to the munitions industries<sup>2</sup> on account of their resistance to high temperature, slag and clinker action, abrasion and other destructive influences. In the main the industry was dependent upon home-produced materials, with the exception of certain quantities of chrome ore, magnesite and sillimanite, and the materials were worked in plants adjacent to the quarries or mines. Soon after the outbreak of war the whole industry experienced a labour shortage, especially in the silica, fireclay and sillimanite sections and in the manufacture of bricks, tiles, blocks and shapes.

In a remarkable fashion the industry was able to meet some of the shortage by increasing its female labour by 20 per cent. But what was needed most was heavy male labour. The work was arduous, uncongenial, not well paid and, in the silica branches, dangerous to health. Not surprisingly, by June 1940, the wastage to other industries was already evident. To stop the 'poaching' that was going on, the Ministry of Labour issued a circular to its exchanges to restrict this movement; and in the summer of 1941, the Ministry applied the Essential Work Order. But the labour supply was inadequate, and it was proving difficult to augment it with Irish labour unless the net earnings could be guaranteed at 85s. to 90s. per week. The Ministry of Labour was accordingly asked in July 1942 to 'designate' the industry, that is, grant priority, with certain munitions industries, for labour supply. This it was unwilling to do, especially as the refractories industry overlapped with a number of other less essential industries. The Ministry of Supply, however, reported that 'accumulated stocks have been exhausted, and present production is barely keeping pace with requirements, leaving no margin for safety'. It asked, therefore, for a blanket protection for the labour force in 50 firms for the following two months, but again the Ministry of Labour was unable to go so far.

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<sup>1</sup> Fireclay, silica, magnesite, chrome ore, dolomite and sillimanite.

<sup>2</sup> e.g. for all metallurgical furnaces, the production of steam at power stations, gas production, copper, lead, zinc, iron and steel production, boilers for locomotives and ships, oil refining, the production of synthetic rubber and of glass.



Some assistance was soon after forthcoming in the form of Italian prisoners-of-war, and the industry was listed amongst those from which women were not to be withdrawn for the Services. But still only certain of the jobs done by men were classed as vital war occupations: the great bulk could only be retained by renewed application for deferment. Some concession was granted in that former coal miners were not to be withdrawn for return to the mines; and the Ministry of Labour agreed later to include fireclay and ganister mines amongst those industries for which men under twenty-five could opt as an alternative to military service. In August 1943 the industry received a further important concession for which it had been asking for a long time: it was 'designated' and accorded super-preference for labour, similar to that enjoyed by the Ministry of Aircraft Production. Rates of pay were raised in September 1943. In January 1944, however, it was taken off the preference list and in March the situation in the silica and high alumina fireclay section was critical; in April the industry was re-designated. But in the autumn the Ministry of Labour was unable to grant 'first preference' for skilled men for refractory production, on the grounds that the skilled men wanted were not available anywhere except from within the industry. The Ministry of Labour proposal that certain firms on less important production should be nominated for the extraction of workers was tried in the case of two firms but failed to provide the labour. The situation remained serious and in the following September (1945) it looked as though inadequacy of labour might handicap the conversion of other industries to peace production. Thus, the refractories industry, employing only 15,000 workers in all, was unable to solve its labour problems at any stage of the war, and scarcity of supplies could be attributed solely to this labour bottleneck.

#### TIMBER<sup>1</sup>

If home production was to be raised above the pre-war figure of four per cent. of our total supplies, clearly more labour would have to be recruited and trained, for there was no reserve. The search for labour started at once and soon began to show results. By the summer of 1940 we had brought over Canadian, Australian and New Zealand military companies, and in expanding our native resources of labour we were drawing on pioneer companies, schoolboy camps and an invaluable regiment of women. Indeed the Women's Timber Corps, soon to become part of the Women's Land Army, provided a remarkable feature of an extremely remarkable story. Not only were they peeling the felled timber, but they were cutting some of the smaller

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<sup>1</sup> For a full account of labour supply in the timber industry see R. Meiggs, *Home Timber Production, 1939-1945* (1949).

trees and doing all this in conditions of considerable physical discomfort. A sub-committee of Members of Parliament, visiting one camp, were impressed by the diversity of occupations from which these girls had been drawn: shop assistants, hairdressers, domestic servants and a forewoman who had been trained as a ballet mistress! The sub-committee observed also that 'each camp has a recreation hut . . . almost entirely bare of any means of recreation';<sup>1</sup> but ere long the terms of service and conditions of labour and welfare were much improved.<sup>2</sup>

By the summer of 1941 the total labour force had been raised from 10,000 pre-war to 47,000, and, in addition, twenty-eight Canadian military companies and 2,000 Newfoundlanders were employed. By this stage we were meeting roughly seventy-five per cent. of our requirements in mining timber (hitherto supplied exclusively from abroad) and thirty per cent. of our sawn timber. But for such a large expansion of labour it was extremely difficult to find suitable accommodation, and there were other problems as well.

The expansion had been rapid. But there were serious labour shortages, particularly of skilled sawyers, at the very time when the Battle of the Atlantic Committee had called for an increase in the output of sawn timber by 500,000 tons in 1942. In reply, the Home Timber Production Department asked for twenty additional Canadian companies and 12,350 additional civilians by the end of March 1942. For these a special drive had to be launched by the Ministry of Labour, but timber production still had to face competition from other essential industries, particularly from munitions work of a more highly paid character. The labour that did come was, moreover, inferior to that originally provided and this was reflected also in the rising wastage rate. But women were responding well to the campaign of the Women's Timber Corps and by the summer of 1942 more than twenty-five per cent. of the civilian labour force in England and Wales was female. The application of the Essential Work Order to firms in England and Wales from August 1941, and in Scotland from February 1942, was meanwhile giving the industry some measure of security for its existing labour, but the effects of wastage could not be entirely overcome. The position at the end of June 1942 was that the Ministry of Labour had provided 9,037 workers against the demand for 12,350, and had also authorised the employment of ten Canadian companies. In addition, 1,000 men from British Honduras were brought over (although for various reasons, social and climatic, this effort proved a very limited success). We also brought 250 men

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<sup>1</sup> *Twenty-third Report from the Select Committee on National Expenditure, Session 1940-41*, paras. 6 and 7, 23rd October 1941.

<sup>2</sup> *First Report from the Select Committee on National Expenditure, Session 1941-42*, Appendix 10, 22nd January 1942, *Fourteenth Report*, Appendix 7, 1st October 1942.

from Eire. These recruits were mainly for the cutting of standing timber. Meanwhile, by an intensification of production within the industry, the output per man had been somewhat raised in the preceding year. At the same time no less heroic efforts were made to increase the labour for sawing the timber. But the programme of mill expansion had indeed to be seriously curtailed on account of the scarcity of skilled sawyers, while a proposal to bring civilian sawyers from the Dominions had to be abandoned. In other words, this side of the industry had to make do with what it had.

Throughout the greater part of 1942, the Ministry of Labour continued to provide the workers at the rate of about 900 recruits per month (which included some labour released from the woodworking industry), apart from what the Women's Timber Corps could recruit. In addition, 3,000 Italian prisoners were directed to timber production during the year. But 800 to 1,000 workers were being lost each month, and, during the last four months of 1942, the net civilian labour force in fact declined. To make matters worse, in the spring of 1943 the industry ceased to enjoy the special preference it had been granted in September 1941, though the situation was far from easy. Indeed, the Home Timber Production Department felt some anxiety owing to the failure fully to meet requirements of either sawn timber or pitwood; consumption of sawn timber had, in fact, to be cut by almost twenty per cent., while stocks were being reduced to the lowest possible level. Labour wastage had been aggravated by withdrawals for other industries, such as sugar beet, shipbuilding and agriculture, while 1,500 fellers under twenty-five were liable to be lost under the new call-up procedure. Moreover, there was always the danger that the Canadian Timber Corps might be withdrawn by decisions outside the control of the Ministries of Supply and Labour. In general, it was shown that the labour force was just sufficient to meet current production, and the Ministry of Labour agreed that the present strength of the industry was to be maintained and, if possible, increased; it accordingly restored the industry to the preference list in April and sent special instructions to the regional officers.

In the summer of 1943 wastage was more than offset by the volume of recruitment and in August 1943 the timber industry reached its maximum strength. But this phase was drawing to an end. It was anticipated that the civilian labour force must, in future, decline at the rate of 300-400 workers per month; and the planned cut in production for 1944 by fifteen per cent. led to a planned reduction in labour for that year by fourteen per cent. That is to say, the civilian force was to go down from 60,000 to 55,000 and the non-civilian force from 14,000 to 9,000. But during 1945, as a result of operational needs and requirements at home, particularly for housing, the consumption of timber rose at a time when imports were limited. It was

decided, therefore, to maintain the 1944 level of production throughout 1945, and the Ministry of Labour issued the necessary instructions for the maintenance of the existing labour strength. By the end of 1945, the reforestation programme inaugurated by the Government was raising new issues of labour supply.

To a very considerable extent, the Home Timber Production Department was able to meet the demands made upon it for timber, thanks to the maintenance of a satisfactory labour supply throughout the greater part of the period under consideration. This success, however, could not have been achieved without the direct intervention of the Government; until then recruitment had been hindered by the 'comparatively low wages paid, by lack of accommodation and (so far as the trade is concerned) by unwillingness to accept unskilled labour for training'. The Government was obliged to intervene, therefore, not only through the ordinary machinery of Essential Work Orders, preference lists and deferment arrangements, but by providing also military companies, prisoners-of-war and a considerable volume of female labour through the Women's Timber Corps.

#### THE LIGHT METALS

The limelight which played upon aircraft during the greater part of the war shed also a secondary lustre upon the light alloy industry. The light metals were required nine months before the completion of an aircraft, and it was estimated that one worker in this industry provided materials for twenty-five men engaged in aircraft production. In view of this, the requirements of the light metals industry were bound to receive very favourable consideration from the Ministry of Labour. The chief labour problems, however, varied in the two main branches of the industry—the raw materials section providing the ingot, and the fabricating section providing the processed material.

The aluminium-producing plants were naturally restricted to areas where there was an abundance of hydro-electric power. These proved to be in rural districts of Wales and Scotland and lacked the majority of amenities which could attract labour; the work, moreover, was heavy and uncongenial, like that in some branches of the iron and steel industry. Within this section of the industry, however, no serious shortage was experienced until the end of 1941, although the monthly wastage averaged between two and three per cent. During 1943 twenty-five per cent. of the total labour was lost through wastage and by this date the supply position of unskilled labour had become acute. The reservoir of physically fit young men was naturally being drained for the Services and other industries, and even areas such as South Wales, where the supply had hitherto been

good, were beginning to show marked signs of strain. The position was still more complicated in Scotland. The skilled men were already established in the district, but the bulk of the unskilled labour was made up of crofters who were allowed to migrate twice a year for harvesting. Under the pressure of a generally expanding demand for labour, it was moreover natural that aluminium works, dependent as they were upon unskilled workers, should suffer. The large gaps thus intensified the needs for Irish labour. When the industry began to adapt itself to female labour, however, mobile women were directed to it, and Kinlochleven received special consideration; but although this helped to ease the situation, it remained difficult during the whole period. In spite of these difficulties production rose from 25,000 tons of virgin metal in 1939 to 54,000 tons in 1943.

The fabricating section of the industry presented problems different in kind and of far greater magnitude, especially as our supplies of fabricated parts rested almost entirely upon home production. The firms were situated mainly in and around Birmingham, the most concentrated area of vital war production and where the competition for labour, as well as billeting problems, were most acute. It would have eased things if part of the fabricating industry could have migrated to the countryside, but this raised a new kind of problem. Even if labour had been more readily available there, the industry was already utilising to the full its administrative, managerial and technical staffs and had none to spare. This determined that plant expansion should take place in the main in those areas where the industry was already well established, and that the bulk of the new labour must be provided by internal economies and the employment of women. In the case of women, the Light Metals Control could draw on the experience gained in the iron and steel industry. At the end of December 1941 there were 1,500 unfilled vacancies for women, and it was not until the industry was scheduled under the Registration for Employment Order that the demand began to be met. The ability to absorb women was strictly limited by the hot and heavy nature of the work, but much was achieved by careful planning. At one stage, for example, foundry labour requirements included a thirty-three per cent. share of women; for a heavy industry this was no mean feat, made possible only by extensive mechanisation. How widely female labour was utilised is revealed in the fact that the *net* engagements during 1942 exceeded 2,000 during the first, second and fourth quarters of the year. Once again, the preferential treatment accorded to the industry helped it to recruit a greatly expanded labour supply in such unpromising circumstances.

The acute shortage of unskilled heavy male labour could only be countered in the fabricating industry by the recruitment of Irish labour, which began in May 1942, and the release of unskilled R.A.F.

personnel by arrangement with the Air Ministry. The latter were made available in two batches, one of 3,000 in January 1942, and another of 2,000 in 1943; and their physique and generally high morale and good discipline made them highly esteemed in the light alloy firms.

But by the beginning of 1942 not only unskilled labour was becoming acutely scarce. There was a great cry for skilled and semi-skilled labour and, particularly in the foundry industry, for workers such as moulders and casters. These men might have been found in the iron and steel industry but at present its 'ring fence' barred the way. The Ministry of Labour was unwilling to establish a new ring-fence scheme for light metals, but it usually extended to those sections feeling an acute labour shortage the priority accorded to the aircraft industry as a whole: in other words, they normally received first preference in their demands upon the general labour pool. At first they shared the special protection granted to the aircraft industry; then in 1942, under the new system, firms and products individually secured special preferences. But the serious lack of skilled men eventually forced the issue; in June 1942 the iron and steel ring fence was invaded, and a survey of all foundries resulted in 210 moulders being extracted for vital war work, of whom three-quarters were transferred to light alloy production. Later in the same year the brass industry was surveyed but with disappointing results. At the same time the Ministry of Labour, in co-operation with the control, extended to light alloys the training facilities already available to the iron and steel industry. In February 1943 the iron and steel ring fence was finally broken, and a very important survey was made of the light metal and steel drop forging industries so that skilled labour might be re-distributed. These and other surveys, together with increased training facilities, were virtually the only sources from which such labour could be derived.

In November 1943 the labour force in the light metals industry reached its peak figure of 96,000, but from the beginning of 1944, when the aircraft programmes were cut, M.A.P. lost its privileged position and had thereafter to rely upon designation for essential items in common with other service departments. Foundry labour remained the most serious difficulty as the industry tried to meet the 1944 engine programme, and it obtained this labour largely from the curtailment of other branches of light alloy production such as extrusions, as well as from Ireland. But neither now nor at any period of the war did labour problems in the case of the light metals stand in the way of the aircraft programmes, though capacity in the light metals industry had in fact increased fourfold. Where, we might ask, had all this labour come from? We shall find part of the answer if we look next at the textile industries.

## COTTON

The important place which textiles came to occupy in the British export trade fairly soon after the outbreak of war occurred at a time when the industry was losing a considerable portion of its labour force to more attractive civilian industry or to the Services. By the summer of 1940 the spinning and doubling sections were finding themselves already unable to meet the intensified demand, and, as a result of labour shortage, it was impossible to use more than eighty-five to ninety per cent. of the available capacity. Indeed, by that date, as the munitions industry was getting into full swing, the tempo of the drift from cotton was increasing. As a result, the trade associations and trade union organisations, supported by the Cotton Controller, asked that a standstill order should be brought into force to prevent any further losses. But as yet the Minister of Supply was unable to recommend so drastic a measure because of his anxiety not to prejudice the supply of labour to other essential industries in the same area. Such fears were not groundless: when cotton spinning was brought within the purview of the Essential Work Order in September 1941 the intake into Royal Ordnance and small arms factories markedly declined. Meanwhile, the decline in raw cotton imports during 1941, as a result of the shipping shortage, had forced us to run down stocks. The shortage of raw materials, combined with the shortage of labour, now led to the introduction of a concentration scheme for the industry, that is, the closing down of a section of the industry in order to concentrate the labour and materials on the remainder. This, however, did little or nothing to ease the industry's labour problems since many of the workers anticipated the closing down of mills and left the industry. The net result was a speeding up of the drift from the cotton mills to the munition factories, while many married women preferred to stay at home rather than travel farther afield when the mills near their homes were closed. Indeed, the view was expressed that the cotton industry, particularly the spinning section, had been over-concentrated and that requirements were in danger of not being met. The women who had been lost to cotton through concentration and had not found their way to the munition factories represented a labour reserve which could only be drawn upon if some of the closed mills were reopened.

Whatever relief the cotton industry obtained from the Essential Work Order, this could not exorcise the threat to its labour. The drift went on, and output was unable to meet demand. By May 1942 there was an estimated labour shortage of 4,100 males and 8,300 females, just when the gap between supply and demand looked like widening still further because cotton was being called upon to replace jute for many purposes. But the Ministry of Supply felt that it could not accede to the request of the Control to withdraw cotton labour from

munitions since 'it was not clear that the cotton industry had gone to the lengths to which the engineering industries had been forced in order to obtain the necessary production'. Against this it was argued by the Cotton Controller that the industry differed so fundamentally from the munitions industries that it could hardly adopt comparable methods. After discussion the Ministry of Supply agreed, however, that suitable cotton operatives should be transferred from the R.O.F.s at Chorley, Risley and Kirkby back to the cotton industry, and that the possibility of other transfers should be considered. Non-essential industries were to be pressed to give up cotton workers to the maximum extent. The first bulk transfer of ex-cotton operatives was accordingly begun in May 1942. Meanwhile the cotton industry agreed for its part to take internal steps to improve the situation and raised working hours by eight per cent. The Cotton Controller also undertook to make a survey of suitable areas where mills, closed under the concentration scheme, might be reopened to draw upon the immobile women available.

But the steady wastage of labour continued. In April 1943 further measures were planned. An intensified drive was to be made to recruit juveniles, whose conditions of work were to be improved at the same time. Preference was to be given to the cotton industry in the placing of immobile ex-cotton workers in the north-west, north-east and Scottish regions; and a priority list was to implement this process in detail. Ex-cotton workers employed on maintenance or storage in closed mills were to be moved to productive mills. In the following July, the Ministry of Labour decided on further steps to increase the labour force, notably by a special registration of women ex-cotton workers; by permitting mobile women of registration age to go into cotton as an alternative to other forms of vital war work; by directing back to the industry those directable cotton workers who were outside the age limit of the Registration for Employment Order; by permitting ex-cotton operatives engaged in munition work, other than M.A.P. work, to volunteer to return to cotton; by making additional withdrawals from munitions under a quota system, 330 from Ministry of Supply work per month, 50 from M.A.P., and 50 from the Admiralty. The special registration of workers needed to fulfil these policies was carried out in September 1943, but the unpalatable fact remained that of the 90,000 who had registered no more than 10,000 expressed a willingness to return, and a large proportion of these appeared, for various reasons, to be more willing than able.

The various attempts to secure a return of labour from the munitions industry had, from time to time, to be slowed down because of their effects upon designated work; and the inability of M.A.P., in districts where ex-cotton workers were found to be concentrated in munitions firms working for M.A.P., to release more than fifty opera-



tives per month was a severe handicap to cotton recruitment. In many ways this was inevitable, since the labour supply position in the north-west was generally stringent and the aircraft industry was itself failing to replace its own wastage. By the summer of 1944, the impetus given by the special registration of ex-cotton operatives had already lost much of its momentum, and the position in the card room section in particular was becoming increasingly difficult. This, coupled with the continued loss of younger men to the Services, resulted in a further deterioration of the position; but the trade unions were unable to reach any agreement with the Government about the employment of prisoners-of-war in the cotton industry. Thus, although between October 1943 and May 1944 wastage was fairly well balanced by the employment of new, or the restoration of old, labour, after May the position began once again to deteriorate. The post-armistice prospect was, therefore, a cheerless one. By May 1944 the number of male operatives stood at 64,300 as against 112,000 in June 1940, while the female labour had shrunk from 230,000 to 147,000 over the same period. The decline was fairly described as 'catastrophic'.<sup>1</sup> In fact, in September 1944 the industry was working below fifty per cent. of its capacity. The supply departments, however, maintained that they were unable to release 3,000 ex-cotton workers in the Oldham and Rochdale area. By now also the labour situation in the weaving section was only a little less critical than in spinning and doubling. The progressive decline throughout the industry is borne out by Table 50.

Table 50. *The labour situation in the cotton industry in 1939, 1942 and 1944*

	1939	1942	1944
(a) Total labour actually at work (in October):			
Spinning and doubling . . . . .	159,640	103,505	92,706
Weaving . . . . .	163,560	103,410	96,880
(b) Total mills in operation:			
Spinning and doubling . . . . .	932	626	633
Weaving . . . . .	1,051	674	683
	<i>Quarterly average</i>	<i>Actual</i>	<i>Actual</i>
(c) Output of cotton yarn per quarter (in thousand tons)			
	135	93.3	88.3
	135	90.8	84.7
	135	87.2	79.7
	135	91.4	80.5
<b>TOTAL</b> . . . . .	<b>540</b>	<b>362.7</b>	<b>333.2</b>

<sup>1</sup> For example, one survey revealed that 'In the sixty-three firms investigated 1,003 males and 2,305 females left during the year February 1943 to February 1944. This represents a wastage of 13.2 per cent. of total employment and in terms of the whole spinning industry it amounts to a wastage figure of about 10,000 persons per annum. This is the real cause of the present critical position in spinning as very few departing workers are replaced by similarly skilled persons or even persons capable of filling the actual vacancies which have arisen. Indeed few spinning firms now have a balanced labour force and to a large extent this throws an unbearable burden on many of the remaining operatives who, eventually being unable or unwilling to carry the load, also leave the industry and are themselves inadequately replaced, if indeed they are replaced at all'.

By the beginning of 1945, of 5,590 in theory available under the quota system, only 1,322 had in fact been transferred. Indeed, it was said in the following June that 'the relatively small numbers transferred from other employment are the result not of any obstruction on the part of the supply departments . . . but mainly of the reluctance of the workers to return to cotton spinning'. The decline was not, in fact, arrested until September 1945, in spite of the recruitment campaign to bring back ex-operatives as well as to bring in juvenile employees. In the autumn of that year the industry was faced with the task of recruiting 90,000 workers for the spinning, carding and doubling sections alone,<sup>1</sup> but at the end of 1945, the total labour force was still only 60 per cent. of the pre-war figure.

Thus, the various problems of the drift from an ill-paid industry in a 'difficult' labour area proved largely insoluble. It is perhaps possible that the concentration scheme applied in the early stages of the war was not closely integrated with the labour situation in the different areas, and the position might have been slightly alleviated if certain mills had been kept open where the supply of immobile labour was comparatively plentiful. This step, however, would not have contributed to a solution of the larger issues of the structure and conditions of the cotton industry, which were reflected in the gravity of its labour problems.

#### WOOL

The depression through which the woollen industry had been passing in the period between the wars had left it with redundant plant and labour. Accordingly, as civilian consumption declined and the export trade ceased to enjoy its brief importance of 1940, the woollen industry continued to yield a considerable proportion of its labour to other industries and to the Services. But the inroads made by these losses were, by the beginning of 1942, showing serious consequences. In the spring of 1942 the wool spinning and weaving and the worsted weaving sections were still producing slightly in excess of demand, but in the worsted spinning section a deficit of 17½ per cent. was already evident. It was further claimed that, in the cotton, wool and hosiery industries as a whole, production was falling below requirements, and that in each case the shortage of labour was the main limiting cause. Against this it was argued that hours should be lengthened; but the Wool Controller pointed out that, although it should be possible to increase production in some cases by lengthening hours beyond forty-eight, this proposal would hardly meet with much response from the older married women employed in the industry. Though the original proposal to concentrate the wool industry,

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<sup>1</sup> *The Economist*, Vol. CXLIX, p. 758, 24th November 1945.

embodied in the White Paper of March 1941,<sup>1</sup> had proved unacceptable to the Wool Control, a voluntary scheme much less drastic in consequence was evolved by the Wool Textile Delegation and was introduced in the second half of 1941.

The issue came to a head in May 1942.<sup>2</sup> The Controller felt that the position had been reached at which either the Government must reduce its demands upon the woollen and worsted industries or the labour withdrawals must cease. The Minister of Labour was unwilling to accept this dilemma. He pointed out that in his view the woollen industry had not made a sufficiently intensive effort; that there had been very little concentration of production; that no overtime was being worked and that little or no part-time employment had been introduced. He complained that 'a peace-time attitude to production was prevalent'.

At the end of 1942 the controversy was still unsettled. On the one hand the Controller pointed out that, by the very nature of the industrial techniques, some sections in each firm were probably idle from time to time, but that concentration of their plant would not substantially improve conditions. He claimed also that in the pre-war period the industry had owed a great deal of its export trade to its ability to produce an enormous variety of products, and that this also limited the extent to which the industry could completely re-orientate itself by concentration. Against this the critics of the industry felt that too much old machinery was being used when production should have been centred upon the more up-to-date equipment, and that the maintenance of 'closing'<sup>3</sup> firms was utilising about 4,000 workers at a time when their energies could have been diverted to productive efforts. Nor was the view of the Controller that concentration would not ease the labour situation universally accepted.

While these subjects were under discussion the war situation and the service demands for men made it necessary for various industries to yield up more of their labour force to meet these needs. Amongst them the wool industry was required to reduce its total strength between 1st July 1942 and the end of December 1943 by 16,000–20,000 men. This proposal created a new complication. The United States Government was unwilling to see our cloth production reduced still further, thereby increasing the burden upon American industry; and it was agreed, therefore, to reduce the original figures of labour transfers. Meanwhile the complaint was heard that in any case the 2,000 people expected to be released from the worsted spinning in-

<sup>1</sup> Cmd. 6258, dated 5th March 1941.

<sup>2</sup> See also Hargreaves and Gowing, *op. cit.*, pp. 392–396.

<sup>3</sup> A 'closing' firm was not a *closed* firm. It was kept alive as a channel for the distribution of raw materials to nucleus firms which had taken over its work. Though it did no manufacturing itself it continued to employ its managerial, warehouse and dispatch staff.

dustry were in fact not forthcoming. In reply to this it was shown, for example, that a withdrawal system applied in 1942 was:

distributed among the firms with little or no regard to either the type of output or the labour position in the particular firm with the result that in some cases production was embarrassed and in others the large pool of labour held by the firm still allowed them to carry on on short hours.

In 1944 an entirely different problem came to the fore. The Ministry of Supply was engaged in preparing rough estimates of the labour requirements of certain industries in the post-armistice period. The woollen and worsted industry, with a total force of 230,000 workers before the war, had lost during the war approximately 100,000 of this total, dispersed among the armed forces, munitions and civil defence. By November efforts were being made to facilitate the transfer of former wool textile operatives back to the industry but it appeared that more drastic action might become necessary. The problem was particularly urgent since the industry was suffering from abnormally high wastage and absenteeism because of the relatively high age level of the employees. The average age for men, for example, had increased during the war by eleven years, while about 10,000 women, not in fact registered as part-time workers, were themselves only working a 30-35-hour week. Already deliveries in fulfilment of Materials Committee allocations were  $12\frac{1}{2}$  per cent. down, while new demands, such as for the liberated countries, were imminent. But once again the Ministry of Labour was unable to accept the gloomiest prognostications. In March 1945, however, it agreed to take the following steps:

- (a) that operatives with two years previous experience in the spinning and weaving sections of the industry should be given priority of release when redundancy occurred in a factory or other establishment, and
- (b) that when they became available for placing they should be returned to the woollen mills unless required for skilled preference vacancies.

The Wool Control on its part agreed to rely on these arrangements, together with the intake of juvenile labour, to satisfy its demands, and not to indent on the general labour pool.

By June 1945 the wool spinning section was a serious bottleneck and therefore preventing the full absorption of labour in the weaving section as well as threatening a severe shortage of cloth in the manufacturing industries. Wool combing also was becoming critical; hitherto very heavy stocks had enabled the demand for tops to be fulfilled, but by now the output was only 41 per cent. of the normal pre-war figure, which meant that both home and foreign require-

ments, where industries were built on the import of our tops, were likely to suffer.

It was evident, therefore, from a glance at the general state of the industry at this period, that the satisfaction of even a limited civilian demand in the post-war period was in jeopardy. It was recognised that the labour force must be increased by more than 22,000 by the end of 1945 if the position was to be alleviated, and the industry had first and second preferences for labour, according to the condition of individual sections. Moreover, de-concentration was under way. In the altered conditions of peace the Ministry of Labour was becoming increasingly reluctant to use compulsion in the transfer of former operatives, but it was 'confidently expected that during the next few months, as the tempo of demobilisation from the forces and release from munitions is accelerated the labour force in wool will see an overall increase'. By the end of September 1945, the number of employees had increased by about 4,500. The uncertain factor, however, was whether the industry would be able to improve its working conditions sufficiently to attract the necessary labour.

We have seen then that, in conditions similar to those experienced by the cotton industry, the wool processing industry suffered continuously from a drift of labour, as well as from difficulties in utilising its existing labour effectively on account of the technical state of the industry. Moreover, in the absence of the fullest information it was hardly possible at any stage to get an agreed picture of the state of the industry and to settle what measures of compulsion were necessary. Nor is it easy to determine how far the concentration policy focused labour upon the most up-to-date plant or to what extent a reduction in the varieties of product and a partial changeover from worsted to woollen production might have lightened the industry's burdens. Clearly, however, it never suffered any crisis comparable to that experienced in the cotton industry, but the end of the war found it with a depleted labour force at a time when there was no surety that the existing conditions of work would enable it to restore its labour supply to pre-war proportions.

From this brief summary of the problems of selected raw materials it is possible to trace certain general trends. The most important of the causes of the labour crises was, outstandingly, the general shortage of labour, but this was a national problem and not peculiar to raw materials. Nevertheless, a remarkable measure of success was achieved, not least in heavy industry, by dilution and the employment of women. The Ministry of Labour was unable to modify the nature of work inherently unhealthy or unattractive, which limited recruitment, but it was able to delay the imposition of the Essential Work

Order until the remediable aspects of conditions and pay had been dealt with. The diversion of manpower to the Services and other industries was likewise a national problem, but the very great emphasis placed upon the more dramatic materials sometimes imposed an unduly heavy burden upon the less favoured materials. Weaknesses in the technical state of some industries were an inheritance of the pre-war conditions, but it is possible that a concentration policy less concerned with the interest of each firm, or less anxious to maintain the pre-war structure of an industry, might have increased the proportion of modern plant submitted to intensive use. It remained of course true that there could be no general labour policy applied to all raw materials but each question had to be considered on its merits. Thus light metals fell to be treated as part of the aircraft supply problem; iron and steel were subjected to a special system which aimed, for a time at least, at completely cutting off its labour from the impact of other demands. But there was no raw materials 'ring fence' to encircle all raw materials nor would one have been either practical or desirable. There was a Ministry of Supply labour department but at no stage a raw materials labour department. It is more than doubtful, however, whether any greater successes in raw materials labour questions could have been achieved without a drastic reorientation, impracticable in war-time, of the whole of British industry.

In general the raw material industries were able to satisfy their minimum labour requirements, and the scarcity of manpower did not in itself (with the exception of certain commodities such as refractories and cotton yarn) seriously limit the contribution made by domestic raw materials to the war effort. The shortage of heavy labour, however, such as for iron ore mining and quarrying, drop forging and timber felling, did impose strains upon the capacity of the industries to meet their commitments. For them special organisations and policies had to be devised and it was only by the most intense efforts that the position could be alleviated. At first the machinery of priority and preference proved clumsy and in part ineffective. For example, it was found in the summer of 1941 in the case of iron ore mining that, 'although the industry had been given priority during the last six weeks, the result had been almost negligible'. 40,000 men had been nominated for release from the cotton industry but

there was no effective procedure for seeing that men nominated were in fact released or that, if released, they went into munition work . . . . There was comprehensive machinery in the labour supply inspectorate for dealing with skilled workers, but there was no such machinery for unskilled labour.

Later these growing pains were eased and a much greater efficiency

was attained. It was an uphill struggle throughout, and in some cases, such as quarrying and timber, no solution would have been found without a positive contribution by the Ministry of Labour in the shape of the Women's Timber Corps, Irish labour and prisoners-of-war. But the controlling machinery on the whole worked well; for example, although the demands upon the iron and steel industry increased in 1942 over those of 1941, its labour problems became less acute, thanks to the operation of the 'ring-fence' scheme and the recruitment of women on a scale hitherto undreamt of in heavy industry. These successes, however, sometimes brought other difficulties in their train. We have seen the reluctance of 'super preference' industries to release labour even at a time when pressure upon them for output was diminishing. Similarly it had been found earlier in May 1941 that an

insistence on the overriding priority of R.O.F.s had resulted in the denial of forty workers who were urgently needed for a factory making abrasives . . . work possessing no priority but which was nevertheless of the greatest importance.

The textile industry, which had been the greatest source of recruitment for other trades, was itself greatly weakened by 1943 and 1944; in the words of one high official 'it had been robbed at will for munitions'. But when the need for a transfusion arose as the industry prepared to strengthen itself to meet post-war demands, the potential donors who had benefited in 1940-42 were now reluctant to meet the call. It is true that the textile shortage of 1945 and 1946 was undoubtedly due in part to the inability of the industry to utilise its labour to the maximum extent, on account of the technical state of its plant; it arose also from the general conditions of work and pay, which still compared unfavourably with those in the new industries. But in the end, the war-time successes, by their very magnitude, contributed inevitably to some of the critical labour scarcities of the post-war period.

## CHAPTER XXI

# THE SUPPLY OF RAW MATERIALS FROM HOME SOURCES: PRODUCTION PROBLEMS

**W**E have been considering in the previous chapter how labour was supplied: now we must examine how it was used. But more than this is involved in the complex and many-sided story of how Britain supplied her needs from home. In adjusting herself to profound changes in demand and in the building of new capacity and the adaptation of old, Britain passed through what might almost be described as an industrial revolution, whose consequences reached well into the troubled years of peace. Once again the narrative falls into its two component parts; first, the extraction of the materials in their raw state; and secondly the processing of materials up to the stage at which they left the control of the Ministry of Supply, or the Ministry of Aircraft Production in the case of light metals. In the first context we must consider, as examples, timber, iron ore and flax, in the second, iron and steel and the light metals.

### TIMBER

The home production of timber provided one of the most impressive stories of the war. Yet its outlines are simple enough and fall within the limits set on the one hand by labour and on the other by the available resources, standing timber. Though the question of equipment was not unimportant, the demands for it were relatively easy to satisfy.

Various causes operated in the period between the wars to diminish the available supply of standing timber. The First World War had already made heavy inroads into existing reserves, and the position was worsened by the ill-repute of some of the immature timber hastily flung on to the market in these war conditions. This reputation survived the war, and buyers turned as soon as they were able to the imported material, which was often cheaper. As a result it was not always economic to make the periodic thinnings of woodlands which were essential if trees were not to be stunted. And while timber was becoming uneconomic to sell it was becoming even more difficult to grow and maintain, whether on private property or on the government estates controlled by the Forestry Commission. Private owners, faced with heavy taxation and death duties, had little capital to spare



for reforestation: indeed, a new owner often felt bound either to replenish his capital by heavy cutting or to break up his estate and sell part of it to someone else, who might be tempted or obliged likewise to fell excessively. The Forestry Commission in theory had larger capital resources to draw upon, but it also had to face the periodic assaults upon government expenditure which the depressions of the inter-war years brought in their train. Nevertheless it had planted some 361,000 acres during the period, and by the outbreak of war about 434,000 acres, approximately one-seventh of the total woodland, were publicly owned. The amount of timber available was not exactly known because the census was incomplete when war came, but an estimate made after the outbreak put the total quantity of standing timber at about 2,800 million cubic feet. This was evenly divided between softwood and hardwood, but a greater proportion of the hardwood was over 10-inch quarter girth. There were, in addition, 575 million cubic feet of hedgerow and park timber, mainly hardwood<sup>1</sup>. Taking the position as a whole it looked in 1939 as though hardwood, except of the first quality, would probably be adequate, softwood would be scarcer and pitwood might be very scarce.

The means by which the labour was found to cut these trees has been described in the last chapter. Here we need only briefly record the rapid rise in the total strength from 19,000 at the end of 1939 to 53,500 in the middle of 1941, and then the slower rise to the peak of 73,000 in the middle of 1943. The quality of the labour was inevitably far from uniform. The military units were almost without exception excellent. But there were sometimes technical and administrative difficulties in utilising the Dominion military units, normally organised and equipped to cut timber on a much grander scale than our own slender and scattered resources would permit. The early civilian recruits, coming as they did from country districts or from outdoor occupations such as building, were of good quality, those coming later from concentrated industry or from shops and offices naturally found the process of adjustment more difficult. Many of the women performed heroic tasks. Imported Irish labour varied a good deal in quality. Some of the prisoners-of-war, particularly the Germans, did first-class work. No exact estimate of output per man-hour has been found possible because of the difficulty of reducing all the different factors (nature of the timber, distance, processes, etc.) to a common unit; but in broad terms the rate of production appeared to be maintained right through the war until 1944, when the effects of dilution, fatigue and inadequacy of rations began to take their toll.

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<sup>1</sup> But not all the timber was available for cutting. Some had to be left standing for agricultural purposes; some provided camouflage for military objectives, though the Home Timber Production Department established contact with the service departments to limit the requisitioning of areas containing valuable stands of timber.

What of the equipment to cut and saw the trees? The Canadian military units brought as much as possible of their own; the rest had to be acquired by the Ministry of Supply. Originally it had been hoped that members of the trade would purchase machinery through the Home Timber Production Department but, even on hire purchase terms, this proved unattractive since they saw no prospect of large-scale home production after the war. So arrangements were made to hire the machinery to the producers where purchase was out of the question. Extraction and haulage equipment raised most difficulties during the early part of the war until the heavier tractors, which were particularly scarce, began to be imported from America. Drop forgings for wagon axles and wheels were also in short supply, until railway company workshops came to the rescue. Other equipment for moving the timber proved inadequate from time to time and new construction, including the construction of narrow-gauge railways, and masterly improvisation were called for. On the sawmilling side of the industry far less difficulty arose in providing the equipment. But some mills none the less had obsolescent machinery and lacked also the space to expand and lay out modern plant in the most economic fashion; others had to switch over from imported softwood to home-grown hardwood, with all the technical difficulties that that transfer entailed. Mechanisation began to come into its own in the shape of the intensified use of cranes, conveyor belts and mechanical chain saws, but the size of some of the mills, as well as the conservatism of some of the owners, set bounds to this expansion. The supply of hand tools appears to have been adequate during the whole of the war.

Table 51. Home production of timber 1940-45<sup>1</sup>

Thousand tons

	1940	1941	1942	1943	1944	1945
Softwood .	444	711	745	720	490	325
Hardwood .	496	653	920	1,129	1,044	915
Pitwood .	1,494	1,434	1,592	1,801	1,506	1,260
Plywood <sup>2</sup> .	10	21	26	26	27	13
TOTAL .	2,444	2,819	3,283	3,676	3,067	2,513

Source: Based on *Annual Abstract of Statistics No. 86*

<sup>1</sup> For a comparison with imports of timber see Appendix 27.

<sup>2</sup> Technical plywood only.

So the woods on private and public estates became the scene of immense activity as men and women, soldiers and civilians, from all parts of the world, began for the second time in a generation to take whatever timber Britain had left to offer. The figures in Table 51 give some measure of the achievement. Thus in 1943, the peak year,

total production of timber was fifty per cent. greater than in 1940. The most marked proportionate increase in output was in plywood where production doubled in 1941 and went higher still after that. Home production of hardwoods also increased to a peak of well over 100 per cent. above the 1940 level, while the increase in home supplies of softwoods was not far short of 100 per cent. Pitwood showed the smallest proportionate increase, although even here supplies from domestic sources had risen by as much as twenty per cent. by 1943, while the quantitative increase was remarkable.

#### IRON ORE

It will be remembered that before the war home sources supplied two-thirds of the total tonnage consumed. But a purely quantitative statement obscures two very important facts: that in metallic content native supplies satisfied only fifty per cent., not two-thirds, of our needs and secondly, we were particularly short of hematite ore. Thus, if home production were increased, the ores would be lean in metal but high in phosphorus. It followed that increased output would take a toll of labour, transport and fuel. Moreover, if hematite supplies did not rise to meet the demand, the consumer would have to switch his requirements from acid to basic steel, with all the consequential difficulties of production and end use.

These problems had already darkened the prospects before the catastrophes of the first year of war descended upon us. In the early months of 1940 internal transport tasted the discomforts that ice, black-out and war could bring. And, already, the labour situation in hematite ore production showed what was in store. This ore could be mined in only small quantities in Britain, principally in Cumberland, so in peace-time we had been heavily dependent upon imports. Now imports were threatened, but a report prepared just before the war had already revealed that the existing mines in Cumberland were hardly likely to increase their production, though more could be hoped for from long-term expansion in new districts.<sup>1</sup> One mine was reopened in August 1940 but had to be closed again soon after for more than a year because of the grave dangers of subsidences in the town; the other project proved abortive because of insuperable difficulties in shaft sinking. But if stocks were diminishing, so was the output per man-hour, and no efforts succeeded in either improving industrial relations or generally increasing output in the Cumberland area.

The conditions in the hematite areas were exceptional. In phosphoric ore what was needed was not new sources but the labour to work the ore and the transport to carry the material away. Hours

<sup>1</sup> See also *Geological Survey, Geology of the Iron Ore Field of South Cumberland and Furness* (D.S.I.R., 1941, Wartime Pamphlet No. 16, Section XI).

were lengthened, and the struggle to shelter the diminishing labour supply culminated, as we have already seen, in the ring-fence scheme of August 1941. This did not mean complete victory for the Iron and Steel Control, particularly from 1943 onward; but it provided at least a large enough labour force to continue the marked increase of output that was already evident.

Not only the men but the machines also had to be maintained: in some cases new plant had to be provided. In the early stages, stimulated by increased demand, some of the iron ore companies sank additional capital in plant extensions and improvements. Later they turned increasingly to the Government for financial assistance, pointing out that by raising their current output they were wasting their assets and that, in any case, there was no evidence that post-war demands would justify their expenditure on increased capacity. The Government replied with an assurance that it would give consideration, at the end of the war, to the whole question of compensation arising from expanded production called for by the Iron and Steel Control. But as an incentive this alone could not suffice. So the Ministry of Supply itself began granting financial assistance for capital equipment, more particularly for haulage systems and electrical plants. By the end of 1943 the Government had expended over £2 million in this way.

These various efforts brought notable rises in output. In the year 1940 total ore production stood at 17.7 million tons, some 3.5 million tons above the peak output of 1937. In 1941 it had risen by more than a million tons and in 1942 it was a million higher still. In fact production for this year was little short of 20 million tons; and the target set in the first months of the war to raise output by six million tons over the 1937 peak of 14.2 million tons had been largely fulfilled. From 1943 output was allowed to fall as part of the planned raw materials policy of that year.

The general picture was good then, and even during the air raids of 1940-41 there was no serious decline in output. But in the case of west coast hematite ore the picture was consistently gloomy. Production fell steadily, except for the year 1940, from 761,000 for 1939 to 535,000 tons in 1944. Elsewhere the production of hematite ore at around 200,000 tons was maintained until 1943. Hematite supply from home sources thus failed to hold its own, let alone ease the critical situation arising from the steep fall in imports. Consumers were obliged therefore to switch their demands from hematite to phosphoric ores, a process which was bound to bring technical difficulties in both production and end use. Yet, on the whole, steelmakers, armament manufacturers and other users adapted themselves speedily and well to the new situation.

The total increase of ore production necessarily imposed heavy

burdens upon the inland transport system. The British iron and steel industry had, for historical reasons, not followed the same lines as its American and German counterparts. In Britain there was far less vertical integration: the steel might be made at a great distance from where the ore was mined. Many steelworks were indeed situated near the ports through which the imported ore had come. Now they must take their ore wherever they could get it, and sometimes that meant many miles away. For example, Northamptonshire and Oxfordshire ore went to places as far afield as Glasgow, Lancashire, the north-east coast and South Wales. And home ore was usually a lean ore, so more had to be carried per ton of steel produced. Not surprisingly then, it was being said in February 1940 that the internal transport system was 'strained to the utmost, particularly in the steel producing areas', and by the middle of 1940 the main lines were carrying sixty per cent. more ore than in the peak year, 1937. The vast bulk of the increased supply came from the Midland ore fields, and here the bottle-neck grew increasingly narrow. The number of 'hopper' wagons for carrying the material was also proving inadequate, and more had to be built; while the facilities for the calcining of ore were also extended, in part to lighten the transport load. By the spring of 1942 the Iron and Steel Control was reporting that: 'It is probable that the limit of the use of home ore which is set by the transport facilities available has now almost been reached.' The difficulties of transport due to the general overload continued and even increased in 1943, but it was the planned reduction in the steel demand in April in any case which set the limit to ore production.

Non-ferrous ores could yield no comparable results. There was a time when the United Kingdom derived most of her non-ferrous metals from home sources; but in most cases those sources had either been worked out or were not, in normal circumstances, paying propositions. Cornwall was indeed the birthplace of tin mining, but, once large-scale mining was developed in the colonial Empire, it became in most cases uneconomical in peace-time to work the remaining small seams in this country by hand mining. Before the war home-produced tin was still being obtained, chiefly from three Cornish mines, but there were unmistakable signs of their gradual exhaustion. Some minor schemes were inaugurated through the Non-Ferrous Mineral Development Control, which was set up in January 1942, but production in 1942 was actually smaller than it had been in the earlier years of the war, 1,400 tons as compared with 1,600 tons in 1939 and 1940 and 1,500 tons in 1941. There were also some developments on a small scale in wolfram and zinc production. In December 1942, however, the Ministry of Supply decided that, in view of the labour position and the small contribution which home-produced ores in general could make to total supplies, further development

should be held up except for the extraction of materials from dumps where immobile labour was available.<sup>1</sup> In fact, of the fifty or sixty proposals examined by the control during the first ten months of 1942, only about six or eight were practical propositions for even a limited production of the ore.

#### FLAX

The entry of flax into this narrative reminds us of the wide area over which the Raw Materials Department exercised its control, for here was an *agricultural* product competing with other crops for its share of the soil. In peace-time, the United Kingdom imported most of its flax. The finer flaxes, which were manufactured into such articles as clothing and household linen, thread and aeroplane fabric, came largely from the Low Countries to be spun and woven in Northern Ireland; the coarser flaxes came from Russia and the Baltic States to Dundee, to be made into heavy goods such as canvas, hose-pipes and tarpaulins. The possibility of expanding home production of flax in time of war had been under consideration for many years since it was obvious that war-time supplies from the Low Countries must be regarded as problematical. During the First World War Russia had been one of our main sources of supply; at the end of 1938, however, the Soviet Government had prohibited the export of flax. So, under the shadows of war, it became urgent to expand production at home. At that time virtually our only domestic source was Northern Ireland, but here the total acreage in 1939 was only 21,000 compared with 110,000 acres in 1918. The output of fibre in 1938 was just over 4,000 tons as against the average annual consumption of 60,000–70,000 tons; that is seven per cent. or less came from home. Here was the story of timber told in a new setting.

Flax was a strategic material wanted alike by the Services and the export trade, and it was decided that expansion in Northern Ireland must be supplemented by increased production in Great Britain, which had for many years been growing flax only on an experimental scale. No detailed plans were made before the outbreak of war, but in May 1939 it was decided that the Admiralty<sup>2</sup> should take over on 1st October 1939 as a pilot plant the Linen Industry Research Association's experimental station in Norfolk. On the eve of war the total acreage sown in England and Scotland reached 3,500 acres in all, of which 1,100 acres were in Norfolk.

The decision to expand flax production at once raised problems of price, technique and capacity, and the dissimilarity of conditions in Britain and Northern Ireland added further complications. In

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<sup>1</sup> It was, however, decided that, as the course of the war could not be foreseen, it would be wise to continue a certain amount of exploratory work.

<sup>2</sup> The Admiralty was in May acting as agent of the future Ministry of Supply.

Northern Ireland flax was a traditional crop, grown largely by small-holders who themselves carried out the preliminary stages of processing the fibre for spinning. There was, therefore, a nucleus for expansion, and lack of experience was not a serious problem, although processing capacity might prove inadequate. On the other hand flax was an industrial crop. It played no part in most crop rotation systems but required considerable care in cultivation and more labour for harvesting and preliminary processing than many other crops; in other words, it did not enter into the farmer's customary scheme of crop alternation and involved him in a heavy expenditure of time and trouble. Its production was accordingly very sensitive to price changes. But the price offered to the farmers had not only to overcome the attraction of other crops; it had also to counteract the psychological effect of depression during the inter-war years, when spinners preferred to use imported rather than home-produced flax. In England there was very little to build upon, and lack of experience of cultivation and processing was thus the main limiting factor upon expansion. This lack of experience, and the different social structure of agricultural England, precluded any attempt to expand flax production on the Irish model, and the need for the maximum production in the shortest time was an additional reason for choosing different methods involving large-scale factory processing. In England, therefore, problems of technique and capacity occupied the centre of the stage. Flax was closely linked with the Ministry of Agriculture's planned production programme, under which prices were fixed as far as possible to avoid competition between crops; price problems accordingly played a far less spectacular role than in Northern Ireland. In any case, as the English farmers did not have to expend any time or trouble on processing the straw, many of the relative disadvantages of flax which normally made price considerations so important were removed.

English farmers did not therefore need as much financial persuasion to grow flax as their Irish counterparts. The main financial problem was to fix prices which would both provide a sufficient return to inexperienced farmers, who could hardly be expected to produce a magnificent yield from only the most rudimentary knowledge, and yet at the same time give an incentive to those farmers who produced a better quality crop. In other words should payment be based on the quantity of the crop or its fibre content? Various methods of payment were used at different times, and in this context we shall not try to do more than clear a path through the labyrinths. At first farmers were paid either according to the fibre content of their crop, or at a flat rate per ton of straw suitable for processing into fibre.<sup>1</sup> In 1941 a new uniform system of payment was introduced,

<sup>1</sup> Straw not fit to process was paid for according to the seed value.

which was based on the height and condition of the crop in other respects, rather than on its fibre content, in order to encourage inexperienced farmers to grow flax. In 1943 an alternative system based on fibre yield was introduced, as an experiment, to supplement the existing method of payment; in other words, the two principles of payment for tonnage and payment for fibre content existed side by side and this system continued, with modification, for the rest of the war.

Far more difficult than the question of prices was the question of technique, upon which a great deal depended. Indeed the Ministry had to embark upon what amounted to the technical education of many farmers and processors. Flax straw could be sent in one of two forms to the processors for the fibre to be extracted, either retted, that is soaked to rot the gum attaching the fibre to the straw, and then dried either in the open or by mechanical processes; or as 'green' fibre, that is unretted. In Ireland the flax was normally retted; in England, shortly before the war it was decided that production should be concentrated mainly upon green fibre. Many reasons contributed to this decision: the opinion of the Admiralty and the War Office that their equipment could be produced from the natural fibre; the greater speed with which results could be achieved through saving all the time spent upon retting and drying; the very difficult problem of disposing after retting of the effluent, ten times as strong as ordinary sewage where flax was tank-retted. Moreover, the experiment in 1917 of producing retted flax in England with insufficient experience had proved a costly failure. But top-grade retted flax was essential for aeroplane fabric, and by 1942 this material looked like becoming extremely scarce. Meanwhile the spinners were loudly lamenting the difficulties of processing green flax instead of the retted flax hitherto imported. The urgent advice of the Select Committee on National Expenditure in 1943 that retting facilities should be introduced wherever practicable and desirable came at a time when these steps were already being taken.<sup>1</sup> But to meet aircraft needs some of the flax had to be sent to Northern Ireland for retting, though the results were disappointing. The shortage of retted flax suitable for aeroplane fabric was eventually overcome by the development of a process of boiling the flax in the rove; this meant that use could be made of certain types of Irish dam-retted flax which would otherwise have been unsuitable for aeroplane fabric. The production of retted flax in England remained very small; even during the last year of war it was less than ten per cent. of total production.

If criticisms were made against the type of flax produced, even

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<sup>1</sup> *Fifth Report from the Select Committee on National Expenditure, Session 1942-43*, para. 17, 25th March 1943; see also reply of Ministry of Supply, *Ninth Report from the Select Committee on National Expenditure, Session 1942-43*, Appendix 5, 1st July 1943.



louder criticism was heard about the size of the yield, particularly of the 1940 and 1941 crops. In 1940 596 tons of flax had been produced in England and Wales, in 1941 over four times as much, 2,500 tons, and in 1942, twice as much again, nearly 5,000 tons. In 1943 output rose to 7,000 tons after which it began to fall again. Proportionately, on the basis of the figure for 1940, this was a steep rise but in terms of total demand for the material and of the total acreage sown the situation was discouraging. The early yields fell very short of the original estimates,<sup>1</sup> in part because of the need for speedy extraction of the seed from the 1940 and 1941 crops for later sowings when imported seeds came to an end, which delayed the processing of the fibre; in part because of the time lag between the growth of the crop and the completion of the plant to process it. Plant, much of it necessarily experimental in type, indeed proved to be a serious limiting factor. Apart from this, the technical education of the farmers upon which the Ministry of Supply had embarked was far from complete, and the mechanical assistance provided sometimes let them down. And then, when things were looking up, bad weather intervened to damp the flax and the rising hopes of the farmers.

In Northern Ireland the problems were, as we have seen, somewhat different. The question of green flax was of relatively little importance as farmers already possessed the facilities and experience for retting a large part of the increased production. But some additional processing capacity was needed, particularly when it was decided in the autumn of 1940 to endeavour to double the 1940 acreage for the 1941 crop. A Select Committee on Unemployment (Northern Ireland) declared in December 1940 that it was 'amazed that no attempt has been made by the Government to ensure that sufficient modern plant and facilities will be available to deal with this increased acreage'.<sup>2</sup> After discussion with the Irish linen trade it was agreed in January 1941 that the Ministry of Supply should erect or adapt factories in Northern Ireland to tank-ret or process into green fibre the flax for which no dam-retting facilities existed. These factories were to be leased to Irish firms.

Apart from this financial assistance the responsibility of the Ministry of Supply towards flax production in Ulster was limited to paying for the flax produced and making seed available; the Northern Ireland Government was responsible for increasing production. But problems of technique and capacity were overshadowed by the issue of prices. High incentive prices, as we shall see in Chapter XXIII, had to be paid to farmers to induce them to increase the acreage under

<sup>1</sup> In September 1940 it had been estimated that the yield from the 1940 crop alone would be 4,000 tons of long fibre and 2,000 tons of tow; but by December 1941 the Control had purchased less than 1,000 tons of flax and just over 600 tons of tow.

<sup>2</sup> *Interim Report of the Select Committee of the House of Commons (Northern Ireland) on Unemployment*, 11th December 1940 (H.C.515).

cultivation. Again, as in England, output rose, from about 8,700 tons in 1940 to 19,200 tons in 1944. This was a significant achievement, but there is evidence that the yield per acre was falling, and that the quality of the flax was also declining.<sup>1</sup>

These bold schemes, both in England and Northern Ireland, failed then for various reasons to fulfil the highest expectations. Agricultural innovation was always hazardous and flax, in our climate, seemed to add hazards peculiarly its own. Yet against this must be set the fact that, between 1941 and 1945, roughly half our total supplies of flax came from Northern Ireland alone.

With these remarks about flax we must leave the 'extractive' industries and turn to those industries which brought the materials in a processed form nearer to the final consumer. The steel industry is outstanding amongst this group and we shall consider it first; from that we must turn to the remarkable story of aluminium.

#### IRON AND STEEL

During the period of the war the iron and steel industry underwent no major revolution in its structure or equipment. With the exception of alloy steel and drop forgings, and to a lesser degree certain specialised steel commodities, the industry ended the war largely as it had begun it. But it had indeed begun it under very good auspices. Its ingot capacity in 1939 was 14 million tons, more than was available to all the Allies in 1917 before America came into the war, and nearly twice as much as the industry could dispose of in 1914. No wonder the Iron and Steel Controller was able to report at the beginning of April 1940 that the industry had 'already more steel capacity than could be supplied with the raw materials; and the capacity for fabricating more finished forms of steel was still greater'. He 'could see no reason whatever at the present time', he went on, 'for a complete new steelworks'. Not capacity but imported raw materials would determine how far Britain could help herself. But the imported raw materials came from vulnerable sources, Scandinavia, Spain and North Africa; and when these were lost or under grave threat, in the summer of 1940, his general analysis was confirmed. The demand for steel was also changing its character, partly because of changes in the supplies of ore, partly because of the changes in the demand for munitions.

The home production of ore, as we have seen, rose steeply but it was of lower average metallic content than imported ore, and in hematite ore domestic sources were entirely unable to fill the large gap caused by the loss of imported hematite. Now two things followed from this greater reliance upon home sources. The blast furnaces

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<sup>1</sup> See p. 371, Table 56.

making pig iron from the ore had to handle a leaner ore, in other words, work longer or use more capacity for the same output of pig iron. Secondly, the consumers of acid steel had to find some other steel in its place.

Let us look at pig iron first. The British steel industry of the inter-war period, as is well known, had not achieved the same degree of vertical integration that had come about in Germany and America. In 1937, for example, of a total consumption of  $6\frac{1}{4}$  million tons<sup>1</sup> of pig iron in British steelworks, 650,000 tons had to be imported. This disparity between pig iron production and steel capacity widened during the war as the metallic content of the ore fed into the blast furnaces dropped. In 1941 the gap was nearly one million tons. Where were the million tons to be sought? It is true that this figure was nearly reached in 1941, when 500,000 tons came from America and 434,000 tons from India, but a year later total pig iron imports were down to 339,000 tons, and in 1943 they had moved only slightly upwards to 349,000 tons. Could more pig iron be made at home?

One possibility was the erection of a fully integrated steelworks, based upon domestic ores, on similar lines to Corby. These proposals had a very short life. Such a project was hardly acceptable save as a long-term venture, and the spring of 1940 seemed hardly the time for long-term ventures. In any case the problem was not simply to get more steel but to produce more pig iron to keep the *existing* steel furnaces in operation. In place of this scheme a series of proposals were now made for erecting, in all, six blast furnaces, to produce between them 850,000 tons of pig iron. But the capital costs looked like being very heavy, and not all the proposed plants were within easy reach of ore. Once again the schemes were modified, but some new blast furnaces were erected and modifications were made to existing plant, including conversion from hematite to basic iron production. By the end of 1944, £2,645,000 had been spent on pig iron capacity, of which the Ministry had contributed sixty-seven per cent.

But other forces, besides shortages of capacity, were operating to keep production down. Transport was heavily overloaded. Materials and labour were not always up to highest standards either in quantity or quality. Fuel was scarce: as the trade journal of the industry observed, with perhaps pardonable exaggeration, 'the somewhat curious position arose in the steel trade [in 1942] that the only raw material to give cause of anxiety was coal, the only one which we do not import'.<sup>2</sup> These handicaps were reflected in the output figures: in 1940 pig iron production was high at 8·17 million tons; in 1941 it dropped to 7·32 million, in 1942 it rose slightly to 7·59 million, in

<sup>1</sup> B.I.S.F., *Statistics of the Iron and Steel Industries (for the year 1937)*, Table 19.

<sup>2</sup> *Iron and Coal Trades Review*, 8th January 1943, pp. 39-42.

1943 was down to 7·19 million and in 1944 was lower still at 6·74 million tons.

The story of scrap we shall tell elsewhere.<sup>1</sup> But since it was an important raw material in the steelworks we must say here a few summary words about it. The import of scrap fell from nearly one million tons in 1940 to a mere 5,000 tons in 1943; but home sources, partly through voluntary effort, aided from the spring of 1942 onwards by requisitioning, provided enough and more than enough to replace the deficit. Home supplies, in fact, went up from 6½ million tons in 1940 to more than 7¾ million tons in 1942 and 1943.

When we leave scrap we come, as it were, to an intermediate stage in the steel industry, the provision of raw steel ingots for the steel furnaces. In peace-time Britain did not import the ingots, though she did bring in a certain amount of semi-finished steel (billets, blooms and slabs), mainly from France and Belgium. But her capacity to produce ingots was determined by her ability to provide raw materials. It was expected early in 1940 that Britain's steel-making plant (including alloy steel) would rise to 15¼ million tons by the end of the year, but by the spring of 1940 her productive capacity had outrun her supply of materials. Already some steel furnaces had been idle; and these threats to British productive capacity were never banished throughout the war. Home production of carbon steel ingots and castings was 12·15 million tons in 1940, dropped by nearly a million tons in 1941, then rose by little more than 100,000 tons in 1942 and in 1943 was still only 11·44 million tons. In 1944 it dropped again to 11 million tons. The story is thus straightforward in outline. No new capacity for carbon steel was called for because raw materials were inadequate. Another aspect of the same situation was the continued import of ingot steel, about half a million tons annually from 1940, and of semi-finished steel which remained at a million tons or over until 1943, when it fell to 850,000 tons. The British steel industry, dependent so heavily on imported raw materials in peace-time, rested precariously upon them in time of war.

The story of alloy steel is profoundly different. Demand rose steeply to meet the intensified call for munitions; indeed, the rearmament programme of the pre-war period had already stimulated the erection of additional plant. But the maintenance and increase of supplies depended in essence upon two things: the adequacy of the alloying elements, which came almost entirely from abroad, and the expansion of capacity in time to meet the changing demands of the various armament programmes.

The ores themselves, manganese, chromium, tungsten, molybdenum and vanadium, were not scarce at source in the early part of the war,

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<sup>1</sup> Chapter XXII, pp. 359-361.

or indeed until the outbreak of war in the Pacific. But shipping had before that set limits to the amounts which could be brought, especially of manganese ore from India. Imports from that country fell from 234,000 tons in 1939 to as low as 89,000 tons in 1941; but the Gold Coast made up for the losses and, in fact, forced up its exports to us from 30,000 tons in 1939 to more than 290,000 tons in 1942 and 1943. By 1944 they had risen to 305,000 tons. But Pearl Harbour deprived us of five-sixths of the tungsten-bearing ores and we had to experiment with imperial sources, which brought little result. Portuguese exports increased somewhat but were accompanied by heavy rises in price. Very small quantities of wolfram were also obtained in Cornwall. The replacements were inadequate and the substitution of tungsten by molybdenum from the United States therefore became inevitable, though this material in its turn was brought face to face with a supply crisis at the end of 1942. The reduction in the demand for alloy steel from the spring of 1943, however, neutralised this danger. Vanadium and chrome ores, though they from time to time looked like becoming scarce, never in fact were in critical supply.

The history of the ferro-alloys followed roughly the same pattern as that of the ores; but in this case we were also a domestic producer. The dangers of the loss of ferro-silicon and ferro-manganese supplies from Scandinavia had led to the accumulation of considerable stocks, so that when Germany blocked our Scandinavian imports from the spring of 1940 these stocks, helped by Canadian supplies, were ready to take their place. But, as our demands upon Canada continued to move upwards, the power shortage, in particular, threatened to limit the help we could expect. The situation was met by a Treasury-aided scheme in Canada and by similar aid for producers in this country. By expanding domestic production, by intensifying economy in consumption and by the reclamation of scrap, the Ministry of Supply was able to face 1943, a time of falling demand, with an abundance of supplies.

The materials for making alloy steel were thus usually available, but everything turned on whether the steel-making capacity could meet the rapidly rising demand. The highest level of pre-war production had been half a million tons, and less than half of this, some 200,000 tons, had consisted of electric steels. By 1942 developments of major importance had occurred. Total production was on the way to one and three-quarter millions, and electric steel was going to provide about half of this amount. How was this achieved? The answer was found in part by converting furnaces hitherto producing carbon steel to alloy steel-making, partly by the building of special plant: in particular, thirty-two new electric furnaces were installed, and the bulk of these were in operation before the end of 1942. In all

the Government spent about £7 million on alloy steel capacity. Moreover, much of the new building, as well as the conversion of carbon steel furnaces, took place outside the Sheffield area, the traditional home of alloy steel-making. Yet, in spite of the increases, we remained to a certain extent dependent upon alloy steel imports from the United States, for a quarter of our supplies in 1941, though in 1942 the proportion showed generally a downward trend; it rose somewhat in 1943, to fall again in the following year.

Last, in the iron and steel industry, we come to the semi-finished or finished products. As was to be expected, war changed the whole character of these requirements and revealed in some cases a surplus of capacity, in others a dearth. For example, the decline in civil requirements of light iron castings for building and other purposes at once threw up surplus capacity, as happened also in the tinplate industry at a later stage in the war when the export trade declined almost to zero. All efforts made by the Ministry of Supply and the Board of Trade to concentrate the iron castings industry met with effective resistance and had to be abandoned, while in the tinplate industry the voluntary closing down of some plant obviated the necessity for any further concentration. In steel sheets, however, an organised concentration scheme was worked out by the Iron and Steel Control and the industry, in collaboration with the Board of Trade, during the latter half of 1940; the scheme resulted in the temporary closing down of about fifteen per cent. of the existing capacity.

In other branches of the industry, which bore the main impact of the munitions programmes, special capacity had to be provided. For example, when the demand for steel castings doubled between 1939 and 1943, it was met to a certain extent by adapting plant built for other purposes, such as iron foundries, and for the rest by creating new capacity. But some castings presented great difficulties, for example, armour castings and tank track links, and certain orders, particularly in 1940-42, had to be met from America. Similarly bullet-proof and armour-plate demands determined the provision of new plant to increase output by 190,000 tons per annum; but when the War Office requirements, with certain important exceptions such as tanks, were scaled down in 1943 and the Admiralty demand dropped, the Ministry of Supply found itself with surplus capacity, estimated enough for 50,000 tons per annum. Drop forgings likewise called for the construction of considerable new capacity, and the same applied to gun forgings. These heavy demands for certain products, mainly for munitions purposes, naturally involved the Government in great expenditure, since industry could hardly be expected to satisfy these esoteric needs at its own charge. On castings the Government spent nearly £8 million, on drop forgings more than £7 million

and on gun forgings more than £4 million. *Pecunia nervus belli*. Money—and steel—remained the sinews of war.

#### ALUMINIUM

When we turn from iron and steel to aluminium we turn from one of the oldest to one of the newest of British industries. Men were making and using iron implements in this country before recorded history, whereas it was not until some sixty years ago that the Hall-Heroult process opened up the revolutionary prospects of a new metal, strong and durable, yet light in weight, to civilian industry and to war. In iron and steel Britain taught the world its techniques, to be outpaced later in some fields by Germany and America. In aluminium British industry on the eve of the war had a fair complement of the highest quality plant. But there were other barriers which stood in the way of a large expansion of the British light metals industry. None of the raw material, bauxite, was mined in this country and nearly five-sixths of the 302,000 tons imported in 1939 came from France. Four tons of bauxite were needed to provide one ton of ingot metal and the production process was normally based on hydro-electric power, itself dependent on favourable weather conditions. The demand for the metal, though it was rising, was very small indeed compared with that for steel. On the outbreak of war ingot productive capacity for 31,200 tons was available, and this indeed represented a steep rise over the preceding three years under the pressure of the expanding aircraft programmes.

The fabricating side of the industry presented a somewhat different picture. Under the inspiration of aircraft demands, and with increasing state aid, the capacity to manufacture fabricated materials had mounted rapidly from 6,000 tons in 1936 to an estimated 53,000 tons in September 1939. All our demands for processed aluminium were being satisfied from British plant. But British plant was consuming ingot metal at the annual rate of 80,000 tons in 1939, more than twice as much as home industry could provide. In other words, on the outbreak of war, even under the most favourable weather conditions, home supplies of virgin metal could only feed the processors for four and a half months in the year. What would happen in war when Britain set out to build air armadas of unparalleled dimensions?

In fact two things happened. Domestic output of ingot was increased by extensions, begun in 1940 and 1941, which raised production to the rate of 54,200 tons per annum before the end of 1943. Yet limitations of power, lack of material and inadequacies of labour set an inescapable limit to the production of virgin metal. Without any other aid, therefore, domestic production could have satisfied only one-sixth of the demand for metal when it stood at its peak, in 1943, at 300,000 tons. But there was other aid from domestic sources and

this brings us to one of the most remarkable stories of the war: the reclamation of the metal.

Scrap metal had always been collected and re-melted for those purposes for which it was considered suitable. Before the war, however, the only scrap allowed by specification to be used in aircraft construction was the process scrap arising in the aircraft constructors' own works. All other scrap formed part of a secondary aluminium industry, entirely separate from aircraft production. With the expanded production of aircraft, which took almost ninety-nine per cent. of aluminium during the period 1940-44, and with air warfare, the supply of scrap grew to enormous proportions: and, if aircraft constructors could not widely employ secondary metal, no one else could. Hence, the Light Metals Control's efforts to secure Air Ministry approval for the use of certain high-grade secondary aluminium in aircraft construction. New specifications were devised and a system of scrap segregation and collection was instituted, all designed to ensure the fullest use of any available scrap. These efforts proved extremely successful. By the year 1943, more than 100,000 tons of secondary metal were going into new construction; and the long trailers bearing shattered aircraft on their way to the Ministry of Aircraft Production's two recovery depots became a familiar sight on the roads of Britain.

So at its peak half the total consumption of the metal came from home; the rest came from Canada, a land of abundant water power and in the same hemisphere as the principal remaining source of bauxite, British Guiana. The signal contribution made by Canada in this field makes an impressive story; and without such aid the whole situation would have been profoundly different. This dependence upon overseas sources for the metal was inevitable. It was both impracticable and undesirable to carry such a bulky commodity as bauxite on its hazardous journey across the Atlantic at a time when every ton of shipping space in the area was a scarce commodity. Our other Empire supplier of bauxite was the Gold Coast, and it was to this source that some United Kingdom demands were switched in 1940 and development projects introduced. In spite of delays, shipments to the United Kingdom started in 1942, and in 1943 were as high as 121,000 tons. The other important source to be developed was Northern Ireland. Irish bauxite was low in metal content but, being nearer home, provided a valuable economy in shipping space. In 1943 supplies from Northern Ireland were as high as 90,000 tons. But there was a limit to our demands for bauxite. Electric power and labour, far more than ships and materials, curbed the ambitions of production departments.

In fabricated products we began the war, and save in exceptional circumstances always remained, wholly independent of overseas supply. But new capacity took a long time to construct, sometimes as



much as two years. It is certain that the expansion programme of the beginning of 1938 took too little account, through inexperience, of the tremendous rise in demand which aircraft production would stimulate; the revision of January 1939 came much nearer the mark. But until the blueprints became factories, the fabricating industry for the first eighteen months of the war had to press existing capacity into fullest use: a six- or seven-day week on a three-shift basis. From 1941 onwards new capacity came into production; but none the less grave shortages remained. At first the bottle-neck (aggravated by misbalanced production in the form of undue concentration on the output of heavier sections) appeared in extrusions, particularly of small extruded parts and special sections for bombers, and the expansion of capacity was pressed on. Indeed by the end of 1943 extrusion capacity was enough, and more than enough, for current needs. Sheet and strip, on the other hand, had a less hectic history. This section of the industry had begun the war in better trim and it expanded its capacity as circumstances determined: enough to meet demands and sometimes even build stocks. Standardisation also helped to augment the capacity of the sheet and strip mills. Only in one phase of very heavy demand, in the second half of 1943 and the first quarter of 1944, did this section of the industry fail fully to respond, and large emergency imports had to come from the United States. Forgings were also scarce in the early stages of the war, and we were particularly short, especially of heavy forgings, in 1942-43 when faced with the expanded demands for heavy bombers. But castings probably presented the greatest difficulty of all, particularly as expansion of output depended far more upon the supply of labour than of machinery, as compared with other branches of the light metals industry. The urgent necessity for aero and tank engine castings and for high-strength special alloy castings for airframes led to an intensified quest for labour and the breaching of the iron and steel ring fence in February 1943. In spite of these efforts, however, of all the fabricated materials, castings gave rise to the greatest anxieties over the longest periods.

What all this meant can be seen in the figures of output, which rose from approximately 8,000 tons per month in September 1939 to approximately 33,000 tons per month in the first quarter of 1944. But even this quadrupling of output does not tell the whole story. Quality changed, higher strength alloys were called for, designs grew in number and in complexity, though the Light Metals Control, in collaboration with the industry, achieved a large measure of standardisation of specifications. It is probable that, if we could assess these developments on a numerical basis, we should find that output in effect was increased more than fourfold.

So by these efforts the British light metals industry remained

independent of overseas supplies for about fifty per cent. of its ingot and virtually all its fabricated materials. But aluminium had become a metal of war, and no manufacturer could foretell what peace-time uses, if any, might be evolved to take the place of airframes and aero-engines. For this reason the Government felt bound to bear the cost of much of the war-time expansion: forty-four per cent. of the capacity for virgin metal production and seventy-five per cent. of the fabricating capacity. Some of this aid was given as shadow factories, but by far the greater part of it took the form of rental and contributory schemes, largely on the site of existing factories. In all the Government spent £24 million in developing bauxite and ingot production, and £28½ million on the provision of fabricating capacity. It also made loans totalling 55·6 million Canadian dollars to Canadian producers to expand aluminium production in the Dominion.

No single volume can pay adequate tribute or evaluate fully the extent to which Britain, a great manufacturing nation, sought also to become a source of raw materials in time of war. But it is perhaps appropriate to end this chapter with a brief statistical summary (for certain materials) of the extent to which the United Kingdom was able to meet her needs from her native earth and efforts. (Table 52.)

*Table 52. Percentage of total consumption of certain materials met from domestic sources 1940-45*

Material	1940	1941	1942	1943	1944	1945
Iron ore <sup>1</sup>	77·3	89·6	88·3	90·1	86·0	77·3
Finished steel	..	96·5 <sup>2</sup>	96·0	94·5	99·7	108·9 <sup>3</sup>
Virgin aluminium	18·6	19·5	24·0	26·8	23·6	33·6
Secondary aluminium <sup>4</sup>	100·0	100·0	100·0	100·0	100·0	100·0
Timber: Softwood	18·5	26·3	36·9	36·7	29·5	18·3
Hardwood	47·6	58·7	70·2	77·4	80·9	72·0
Flax <sup>5</sup>	22·0	57·0	67·0	57·0	62·0	57·0

Source: Based on *Annual Abstract of Statistics, No. 84*

<sup>1</sup> On the basis of total tonnage of ore mined and consumed, irrespective of metal content.

<sup>2</sup> This is a percentage of total net deliveries of finished steel and not, as for the later years, of net deliveries for home consumption.

<sup>3</sup> i.e. home production was more than adequate to meet home demand and stocks were built up.

<sup>4</sup> Production always exceeded consumption and large stocks were accumulated.

<sup>5</sup> The flax figures were taken from the Flax Control records and represent home supplies as a percentage of total supplies.

## CHAPTER XXII

# THE CONSERVATION OF RAW MATERIALS<sup>1</sup>

**R**EQUIREMENTS and supply: these are the two bases upon which this study of the war-time control of raw materials has perforce been erected, for these determined the functions of control. But control over distribution meant also control designed to economise in the use of scarce materials. In this, as in so many fields of activity, the war turned upside down the accepted economic doctrines of peace. In peace the danger which faced the distributor (and producer) was declining consumption and excess supplies. In war, one of the tasks of the distributor, that is the raw materials controller, was to make consumption decline and stocks rise. Here was economic revolution indeed; but it did not come overnight.

The word generally used during the war to cover this wide area of control was *conservation*, and soon there sprang into existence a whole complex of committees and organisations whose energies were devoted wholly or partly to some aspect of this onslaught upon the consumer. It is as well, therefore, to begin with a definition of the term 'conservation' as it came to be employed in the war-time strategy of raw materials. The function of the conservation agencies, broadly conceived, was to reduce the consumption, and conserve the maximum quantities, of those materials which were, or were likely to become, in short supply. A special aspect of conservation policy embraced the very important work of *substitution*, the substitution of a critical material by one more easily available. Related to this was the recovery and re-use of commodities either in their existing form or after further processing; hence the importance of salvage. Finally the exploration and development of new indigenous sources of material, and the increased exploitation of existing sources, played a massive part in reducing our demands for overseas supplies. All these questions come up for study in a chapter on conservation, but since the last of them, the derivation of materials from home sources, has called for separate treatment in Chapters XX and XXI, we shall only consider such matters when they impinge more particularly on conservation. Lastly, we must say a word about the types of organisation and control to which the work of conservation was allotted.

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<sup>1</sup> This chapter is a revised version of the 'Memorandum on British Methods of Raw Material Conservation' which the author wrote in 1944 for circulation in Washington and London.

A well-known feature of the German economy in the last years before the war was the remorseless drive towards autarchy.<sup>1</sup> Such a process fitted logically into the plan for conquest because of the heavy dependence of Germany upon imported raw materials; and the quest for substitutes kept pace with the advance to war. Thus imported rubber was taxed in order to provide the wherewithal to build equipment for the manufacture of synthetic rubber (Buna); and staple wool (Zellwolle) won for itself an important place amongst the textile raw materials.<sup>2</sup> Perhaps some of the substitutes were markedly inferior in quality, perhaps the significance of this work was insufficiently understood in the democracies, but the very term for substitutes, *ersatz*, acquired in the west a derisory connotation. In the United Kingdom, as we have seen,<sup>3</sup> the impetus for such a movement barely existed. The whole character of Britain's overseas trade, and her special relations with the Dominions and dependencies, militated against the provision of substitutes for her imported raw materials. The familiar story of depressions in the rubber industry confirmed that she was faced not with scarcity but with *embarras de richesses*. A war-time shipping crisis or enemy occupation of an important source might turn plenty into scarcity, but pre-war estimates gave little grounds for anxiety on that score. Substitution, salvage, and revision of specifications were at most in an experimental stage when war came.

Nor did the early months of the war greatly hasten the application of conservation measures. Few materials could be regarded as 'critical.' Great Britain was at war with Germany alone: Germany's allies and satellites were still neutral and prepared to sell raw materials—at a price. Britain was sometimes buying supplies simply to deprive Germany of them. Tropical materials from Africa and the Pacific were plentiful, and the ships carrying the materials were in most cases able to come and go in peace. So no drastic cuts were either generally imposed or in prospect.

But this was not uniformly the case. Timber was already scarce and would soon be scarcer still; the Timber Control was wielding its axe from the first day of war. In steel no cheerful prospect opened for the civilian consumer, though the service user was for a moment sheltered from the view. But it was not only upon zealous controllers that the economy efforts depended; the Ministry itself was moving into action. By the end of February a number of departments within the Ministry were reporting on the work of substitution upon which they had

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<sup>1</sup> See Maxine Y. Sweezy, *The Structure of the Nazi Economy*, Harvard Studies in Monopoly and Competition, No. 4, Cambridge, Massachusetts, 1941 (pp. 21-23 and Chapter VII, pp. 108-124); and Gustav Stolper, *German Economy 1870-1940: Issues and Trends* (1940), Part V, The Third Reich, pp. 246-53.

<sup>2</sup> *Survey of International Affairs*, Royal Institute of International Affairs (1937), I, 83.

<sup>3</sup> Chapter I, p. 27 *et seq.*

already embarked. Earlier in the same month the Supply Council of the Ministry of Supply had recommended the formation of a Substitutes Committee to operate under the guidance of the Advisory Council on Scientific Research and Technical Development of the Ministry, and in July it began its work. Other bodies must take charge of the daily struggle, but here would be a means for hammering out a general approach.<sup>1</sup> With a deteriorating military position, the need for a tighter grip upon the work of substitution found favour in some quarters, and the notion of a central substitutes department within the Ministry was canvassed. This never in fact came about, and different aspects of the work of conservation passed within the spheres of different organisations, either already in existence or newly formed. But before we study the organisation we must say something of the methods.

#### ECONOMIES IN CIVILIAN DEMANDS

From the beginning the most promising field for these economy activities was what was described as 'consumption not essential to the war effort'. Everyone knew that civilian consumption could be cut, and most people believed that service requirements could be trimmed. But where was the line to be drawn and who should draw it? It was sometimes said that decisions were based on the 'essentiality' of the end use.<sup>2</sup> But the term is open to objection not simply on literary grounds. It implied that there was some hard and fast line to be drawn between an essential and an inessential use. In primitive battle, nothing was essential to a man except the gun he held in his hand and the food he carried on his back. The more complex the war, the wider the range from highly essential down to barely essential. That scale was modified also by the changing conditions of supply. From this arose the difficulty of determining with any exactitude what was and what was not essential, though it became increasingly practical to say what was more and what was less essential. Since manifestly amongst the 'less essential' were many civilian requirements, these were made the earliest objects of attack.

The story of how the civilian tightened his belt has been already told in Chapter VIII. Here we need only look at the problem from the more technical aspects of conservation. In some cases the use of a scarce commodity in the manufacture of certain articles was prohibited outright, in others the permitted quantities were progressively reduced. For example, the Non-Ferrous Metals Control, within a

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<sup>1</sup> A War Cabinet sub-committee on conservation came into existence in July 1940 to survey the work of substitution and, after presenting its report at the end of the year, ceased to function.

<sup>2</sup> War always breeds horrors, not solely on the battlefield, and amongst its lesser horrors was the word 'essentiality'. Other blows at the English language were 'returnability' and 'substitutability'.

few months of the outbreak of war, prohibited, or reduced by forty per cent., the issue of copper and zinc to a number of trades and by the middle of 1941 their use had either been completely eliminated in these trades or reduced to five or ten per cent. of the pre-war figures. If, for instance, we consider the following group of articles: pins, safety pins, slide fasteners, domestic cylinders and boilers, coffin furniture, bag frames, hearth furniture, jewellery, curtain rails, rubber stamp mountings and various types of stamped brass foundry, we find that the pre-war annual consumption was 17,000 tons of copper and copper alloys (including those containing zinc); by the middle of 1942 it was down to the rate of 2,000 tons per annum and the bulk of this was going into domestic cylinders and boilers, hardly items that could be easily dispensed with. As early as the middle of 1941, the Control was reporting that, as far as copper and zinc were concerned, it saw little further scope for the reduction of purely civil consumption. After Pearl Harbour tin became scarce, and by the middle of the following year a fifty per cent. cut in consumption had been planned, to fall, for example, on collapsible tubes, tinfoil and solder.

In timber the Control also acted swiftly. By 12th September 1939 it had prohibited the release of timber for house-building, except for houses which were almost complete, and for weather-proofing existing structures. Where only the foundations had been laid no timber at all was to be released. In July 1940, it was decided that no timber should be released for domestic furniture, and no appreciable quantities were indeed allocated for this purpose until the utility furniture scheme came into operation at the end of 1942, although very small amounts of timber were made available from December 1940 onwards to meet urgent needs, such as for bombed-out and evacuated families. When the use of timber for civilian products was permitted at all, the lowest quality wood, probably unserviceable otherwise, was made available: 'cheap and wormy mahogany' for printers' blocks, and for toys only 'small dimension stock from home-grown slabs and offcuts not required in the national effort'. For rubber, restriction began in the same month as the Pacific war. Its use in many civilian articles, such as corsets, tobacco pouches and toys, was prohibited whether the material was crude, waste or reclaim.<sup>1</sup> In the next month rubber (whether sole crepe or unvulcanised) went out of shoes;<sup>2</sup> then within a few more months it had been banned for bumpers, trays, pedal covers, comforters and other articles.<sup>3</sup> But the implementing of policy raised complexities. Some finished products had both civilian and service uses, so that the attack on civilian consumption had to be

<sup>1</sup> Control of Rubber No. 2 Order (S.R. & O. (1941) No. 2094).

<sup>2</sup> Control of Rubber No. 4 Order (S.R. & O. (1942) No. 30).

<sup>3</sup> Control of Rubber Nos. 9 and 14 Orders (S.R. & O. (1942) Nos. 440 and 1051).

launched from another angle. Rubber conveyer belts, for example, were used in munition factories and for conveying cigarette cartons. The Control felt that in the straitened circumstances of 1942 it could not release materials for the latter purpose and required, therefore, from the belting manufacturer full details about the ultimate use of his products. Similarly, new tyres could be released for civilian cars only when the purchaser held 'E' (essential) petrol coupons.<sup>1</sup>

In plastics we have the interesting example of a 'substitute' material itself becoming scarce and therefore brought under closer control. In the first year of war there was no control over plastics, but soon service requirements were expanding while some of the plastic raw materials were becoming scarce. In October 1940 came the first controlling order imposing limitations upon civil consumption; then certain types of plastics were restricted to specified uses. For example, after October 1941 grade A cellulose acetate moulding powders could only be used in fulfilling government contracts. Cotton woven fabrics, from March 1942, could not be used in the preparation of laminated materials, except for the Services, unless the intended use had received prior approval from the Control. In other words, the material to which the civilian had been driven when other materials grew scarce was now being progressively denied to him as the general pressure upon supplies stiffened. It was no longer a question of economies in the use of *scarce* materials but of planning the most effective use of *all* materials.

In imposing these cuts the controls were not working without allies. A great quantity of non-ferrous metals was conserved, not by control order, but by central government policy prohibiting or limiting the output of a host of peace-time articles, including houses and private motor cars. Action in these two important items alone saved steel, timber, rubber and many other raw materials as well. The prohibition in May 1940 of the wrapping of many commodities saved paper and hemp, to say nothing of labour.<sup>2</sup> But long before this process was complete, the task of conservation had been extended well into the preserves of the Services.

#### SERVICE AND 'ESSENTIAL' USES

Before we consider substitution in service and other specifications, we may consider the opportunities offered for the complete elimination or drastic reduction of the consumption of materials *without substitution*. There were a variety of ways of achieving this. The most obvious was simply by reducing the number of articles produced, even though the end use was fully justified. For example, to save

<sup>1</sup> Control of Rubber Tyres No. 4 Order (S.R. & O. (1942) No. 596).

<sup>2</sup> Control of Paper Order No. 16 (S.R. & O. (1940) No. 792).

timber, the production of matches was reduced from 22 million gross pre-war to 12 million gross at its lowest. The War Office agreed to withdraw its application for timber for 500,000 soldiers' boxes, on the grounds that they could be dispensed with entirely in time of war. This meant a saving not simply of 5,000 tons of timber but of the iron as well, which would have gone into screws, hinges and other accessories. The release of zinc for galvanising tubes was permitted only for certain Admiralty requirements, and its consumption for this purpose fell accordingly from 5,000 tons in 1941 to 500 tons in 1942. In the case of plastics, after negotiation the Chemical Defence Department cut down considerably its requirements of eye-shields while the army demands for tooth-brushes were reduced by half.

Apart from this, there was still scope for reducing the consumption of material per unit. Government departments were induced to save lead in cables by reducing the thickness of lead sheathing, so far as was consistent with safety, and by installing overhead lines instead of underground ones wherever possible. Tinfoil was saved by progressively increasing the size of the packs for preserved cheese from half an ounce to fourteen pounds. There were still better opportunities for this kind of economy in timber, since it was used in such great and increasing proportions for packing purposes; in 1941 they took nearly a quarter, and in 1944 over a third, of total softwood and hardwood consumption, with additional quantities of plywood. A special section of the Timber Control analysed the packing requirements of each trade and secured the adoption, wherever possible, of crates in place of close-jointed boxes. When that was not possible, the thickness of the wood was reduced below that considered necessary in peace-time. Standard boxes were devised, which showed a saving of fifteen to twenty per cent. of material over previous types and yet were found to be stronger because of the framed panel or batten ends, which stood up well to frequent handling in transport. In another sphere it proved possible to modify the specification of War Department hutments, so that only one standard of timber was used where previously two were required. In 1940 on one order alone 20,000 tons of timber were saved. Similarly, by agreement with the Admiralty, timber of 2-inch rather than 3-inch thickness was used for gun platform sparring. It was likewise possible to achieve a bulk saving in rubber by switching even highly essential uses from one type of tyre to another: if practicable, from 'run-flat' to 'cross-country' and from 'cross-country' to standard tyres. At the same time the thickness of the rubber in cables, belting and hose was reduced.<sup>1</sup>

Not every economy of this sort proved successful. For example, at one stage the galvanising of signal wire thimbles and signal pulleys

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<sup>1</sup> Control of Rubber No. 8 Order (S.R. & O. (1942) No. 439).



was prohibited, but the Non-Ferrous Metals Control subsequently reversed this policy when it emerged that it might lead to the jamming of signals. Yet, on the whole it was remarkable how much could be achieved in raw materials conservation without having to provide compensation out of other materials through substitution.

#### SUBSTITUTION

It was in the field of substitution that the economy measures were most flexible and most promising. At first substitution flowed along the lines of least resistance. In the early days when certain materials became scarce the consumer naturally turned to an alternative material in more plentiful supply. Steel was becoming scarce but timber was scarcer still, so the consumer made pitprops wherever he could out of steel instead of timber. Before Dunkirk the supply position of zinc was good as compared with copper and aluminium, so zinc began to replace these materials. But after Dunkirk zinc was itself a material for which substitutes were sought. Similarly tin, and more frequently lead, were welcome substitute materials until Pearl Harbour. But after Pearl Harbour tin was lost by the Japanese hold on Burma and Malaya, while lead supplies were threatened as the sea routes to Australia became hazardous. Indeed, as the war spread to the five continents, the problem of conservation changed its character.

We see something of the complexities of the position if we look at timber. The timber supply position, especially for softwood, was critical soon after the beginning of the war, and constant pressure was applied to local authorities and government departments to search for a more freely available substitute such as prefabricated concrete, wrought iron, hardboard and so on. These efforts met with considerable success. Path edgings in War Office and Air Ministry camps were made from pre-cast concrete in place of timber. Nissen hut ends were made of asbestos cement sheets with a light timber framing in place of the usual structure, by which, on a single contract in 1940, nearly 1,500 tons of timber were saved. The Ministry of Food likewise agreed to use kraft or pulpboard in place of timber for their packs wherever practicable, and the Home Office instructed its regional officers that timber should be used for A.R.P. purposes only where it was shown that steel, concrete or brick was not available.

Where it was not possible to substitute timber by another material, the Control's aim was to substitute imported softwood by home-grown timber, hardwood where possible, or, failing that, a 'difficult' imported timber by an 'easy' one. But the substitution of native oak or elm for imported timber brought technical difficulties in its train. Oak and elm warp and twist unless seasoned with exceptional care and are also to a large degree faulty. Yet by dint of research and service collaboration, the changeover was effected in many cases such as

observation huts, Nissen hut floors and Anderson shelter bunks. An extremely interesting and valuable feature of this work of substitution was the replacement of solid timber wholly or partly by plywood in numerous articles such as packing cases, furniture, doors, shelving and roofing. In general, three tons of solid timber could be replaced by two tons of plywood without any loss in the efficiency of the finished article. But the United Kingdom was heavily dependent upon Canada and the United States for plywood, and the shortage of the material in a number of cases enforced the re-substitution of plywood by solid timber. Thus, whereas in May 1942 the main line railways re-designed 5,500 covered wagons for the 1942-43 programme to use resin-bonded plywood in place of solid timber for the roofs and sides, the fact that the plywood could not be supplied caused the railways to revert to the superseded designs, with a consequent loss of 4,800 tons of shipping space.

Rubber also offered ample scope. In tyres, for example, the quantities of crude rubber per tyre were progressively reduced between February and August 1942 by the substitution of reclaim, crumb and soft black. The proportion by weight of these materials in tyres was raised from 23 tons in February to 49 tons in August per 100 tons of crude rubber. Considerable use could also be made of synthetic plastics such as polyvinyl chloride (in cables), oils, nitro-cellulose, leather, fibre, cork and felt; and special fillers and extenders such as aromatic petroleum residues were introduced. Ground sheets before Pearl Harbour consisted of 50 per cent. rubber incorporated with zinc oxide. Zinc oxide was substituted by whiting just before the outbreak of war in the Pacific, and afterwards crude rubber was replaced by reclaim or nitro-cellulose in increasing proportions. In the end crude rubber entirely disappeared from this use. Mortar bomb covers were originally proofed with eighty per cent. rubber; specifications were progressively de-graded until only 20 per cent. rubber in a cotton fabric was employed, and then rubber was completely eliminated and replaced by nitro-cellulose material. By the middle of 1942 the rubber content of rubber knee boots had been reduced from  $2\frac{1}{2}$  to  $1\frac{1}{2}$  lb. per pair, and the rate of rubber consumption for cables had been cut to fifty per cent. of the 1941 figure, while a further reduction of 20 per cent. was anticipated. The cable, the proofing, and the soles and heels industries proved particularly fruitful fields for economy. Sometimes the finished product itself was 'substituted'. The Army introduced trailers in place of self-propelled vehicles wherever practicable, with a possible saving of five per cent. of the total army requirements for tyres in 1943, while instructions were given by the Air Ministry to ensure the use of rail, canals and bicycles in place of motor transport to the maximum extent.

In hemp we see much the same process as in timber, first the sub-

stitution of a scarce by an 'easier' hemp and then the attempt to dispense with hemp altogether. Originally manila and true hemp presented the greatest supply difficulties, so the Control tried blending these with other hems: for example, ropes were made of a mixture of fifty per cent. manila with fifty per cent. sisal. But in 1942 first manila had to go altogether from many articles, and soon sisal was following it and giving place to coir wherever practicable. But the Control was already looking outside its own materials for substitutes. To relieve the demand for sisal, jute was now being brought in for cordage and small twine items, and cotton and flax waste went into tent ropes. Sisal was also giving place to jute in haybands.

Sometimes, however, the process of substitution had to make a circular tour and finish up with the original material. For example, during the early months of the war concrete was strongly recommended as a substitute for timber; but the heavy demand for concrete in the summer of 1940 led to a cement shortage and timber had therefore to be released for fencing posts and other articles. Aluminium was used before the war for milk bottle caps, but at the beginning of the war was replaced by zinc. Then zinc became short, so a tin-zinc alloy was substituted in which only eight per cent. zinc was employed. Then the tin supply position deteriorated and once again milk bottle caps were made of their original material, aluminium, now in better supply.

Problems of productive capacity sometimes intervened in the work of substitution. For example, cast brass was specified in the middle of 1941 for many water fittings in place of stamping quality extruded rod because productive capacity for this process was in heavy demand. For comparable reasons copper wire was suggested wherever possible in place of brass wire. But brass had to go on being used for some fuse caps because of inadequate steel rolling capacity; and breech blocks for Sten guns had to go over from steel to aluminium bronze, although this material was more scarce than steel, simply because they could then be produced more speedily and with less call upon machining capacity. For similar reasons the tails of aerial torpedoes ceased to be made of steel and were cast in aluminium bronze instead.

Sometimes the ultimate use of a piece of equipment set limits to the type of conversion which could take place. Plastics were good substitutes for wood and metal where rapid production, low density and good electrical properties were called for. But, against this, plastics had low impact strength and in some cases were 'incompatible' with explosives, though other groups of plastics were found to take their place. There were also difficulties in the fibres. For example, experiments to use raffia in cordage nets in place of hemp proved unsuccessful and, indeed, in the majority of cases, raffia as a hemp alternative was found wanting. Attempts completely to replace true hemp in

some binder twines failed to produce an article strong enough for the required purposes, so they had to be made of a mixture of Indian and true hemps. Similarly, Chilean hemp was not in practice a suitable substitute for flax in the manufacture of East African fishing nets, nor coir for sisal in marine cordage. Electric steel was scarce and some users were directed to non-electric steel. But when mortar cases were made of this material they failed to stand up to service tests and the project had to be abandoned. Yet, for those experiments which proved abortive, there were innumerable examples of substitution which far exceeded the original hopes and which opened up immense prospects for the conservation of materials.

#### SALVAGE

The story of the salvaging of raw materials does not admit of simple treatment. It embraces not simply the *recovery* of material from a discarded product but extends to the control over its collection, distribution and use. Indeed, even before these processes could come into operation, there was one form of salvage which offered the greatest economies of all: the re-use of the article in its original form.

For example, containers, if they found their way back to the original distributors, could be used over and over again. Fully alive to this, the Timber Control negotiated agreements with trade organisations under which consignees were charged high prices for boxes as an inducement to return them speedily, and the railway companies improved their facilities for the return of 'empties'. Imported packing cases were reconstructed where necessary to make possible their frequent re-use in this country. In addition, a general drive was undertaken to keep all articles, whatever the material, in use and circulation as long as possible. This not only saved material, it also economised in labour. Rubber tyres were re-treaded and, to ensure that tyres should not be allowed so to deteriorate as to make their re-use impossible, it became an offence to run car tyres after the fabric had begun to show.<sup>1</sup> The whole approach was part of the process of 'make do and mend', a phrase which the civilian consumer came to know so well.

Of course, much more could be anticipated from the collection and utilisation of scrap; and when one thinks of scrap it is the steel industry which at once comes to mind. To the steel-maker, scrap always has been a raw material in its most economic form since it is entirely metallic in content and does not have to be extracted from the ore. According to one estimate, a ton of scrap, on the average, saves two tons of fuel and three and a quarter tons of ore.<sup>2</sup> In 1937

<sup>1</sup> Motor Vehicles (Restriction of Use) No. 2 Order (S.R. & O. (1942) No. 2533).

<sup>2</sup> H. of L. Deb., Vol. 127, Col. 110.

the industry had consumed some 7½ million tons of scrap and nearly nine-tenths of this had come from homesources. On the Continent at this time the search for scrap was indeed going on at a tremendous pace. In 1938, 'metal gutters and leaders were stripped from houses; iron fences broken up and remelted into new steel; iron balconies and grilles taken for the general pot'.<sup>1</sup> For us, the crisis was not yet so acute.

But as soon as war came a great public interest was awakened in scrap. From October 1939 onwards various suggestions were being made in the House of Commons about extracting scrap from trophies of the First World War, derelict motor cars, traffic beacons, tram lines, railings and all manner of sources;<sup>2</sup> and the Ministry of Supply was being bombarded by advice, not all of it practicable, from the general public. Before Dunkirk the work was mainly exploratory, afterwards the Ministry began to turn its face towards a policy of requisition. It took the first step in this direction in July 1940, when local authorities with a population exceeding 10,000 were required to provide efficient schemes for the salvage of various materials, including scrap metal.<sup>3</sup>

By the end of the year the position was graver still. The flow of scrap from the United States was being slowly but surely reduced and, within the United Kingdom, the supply of 'goodwill' scrap from voluntary collections was nearing exhaustion. But a new major source was appearing in the shape of 'blitz' scrap and there were still derelict bridges, factories, railway lines and ordinary railings which, once the Ministry possessed the power and the means to take possession of them, promised a rich harvest. But months had to elapse before negotiations with local authorities could be brought to issue. Then, early in 1942, scrap imports from America ceased and the case for requisitioning became unanswerable. In March 1942 the Government assumed the necessary authority and soon domestic reserves were yielding their bounty. In just over a year the contribution from railings alone had passed the half-million mark,<sup>4</sup> though not without criticism from the victims because of the methods of collection and the damage caused in the process.<sup>5</sup>

While these developments were attracting a great deal of public interest, there were significant moves in the field of industry to tap

<sup>1</sup> G. A. Roush (ed.), *The Mineral Industry during 1938* (New York, 1939), p. 322.

<sup>2</sup> H. of C. Deb., Vols. 352, Col. 43; 353, Cols. 57-58 and 1238; 356, Cols. 1142-43; 357, Col. 57; 358, Cols. 1203-04, 1604-05 and 1636-37; 360, Cols. 45 and 206.

<sup>3</sup> Later this power was extended to authorities with a population exceeding 5,000.

<sup>4</sup> *The Times*, 5th July 1943, p. 2. For an American recognition of some of the difficulties of collecting scrap here see E. R. Stettinius, Jr., *Lend-Lease—Weapon for Victory* (Penguin Books, 1944), pp. 210-11.

<sup>5</sup> H. of C. Deb., Vols. 377, Cols. 1197 and 1514-15; 387, Col. 1985; 379, Cols. 1324-26, 1719-21.

the other main sources of scrap: the various industrial processes. But it was important to segregate, standardise and collect the material as it became available. Alloy scrap, in particular, providing some of the most urgently needed alloying elements such as tungsten, was keenly sought. This kind of scrap, however, needed the most careful treatment, since inaccurate estimates of the alloy present, or the existence of unsuspected impurities, could seriously reduce the usefulness of the finished product. So the Control embarked on special campaigns within industry and gave all the technical assistance it could, with noteworthy results. Between 1940 and 1942 the total provision from all domestic sources of iron and steel scrap rose from  $6\frac{1}{2}$  million tons to over  $7\frac{3}{4}$  million tons and was only 27,000 tons less in 1943; in fact it replaced all the lost imports and exceeded the supplies obtained from all sources in 1937.

We have dwelt long on steel for obvious reasons. But in other materials we should find also records of impressive achievements. In non-ferrous metals there was the same scouring of industry and domestic sources, the same control of industrial scrap to prevent contamination and to maximise recovery. In aluminium there was at the time of the Battle of Britain a famous and colourful campaign which penetrated into the very kitchens of the British housewife. In timber the by-products of felling and processing, hitherto burnt at the mills or sold as firewood, found their way into more essential uses. The service departments began to use building slabs consisting of eighty-five per cent. sawdust and fifteen per cent. cement.<sup>1</sup> Indeed, the Ministry of Supply sometimes included in its contracts with manufacturers a clause requiring the articles to be made from waste and off-cuts. In one contract alone a thousand tons of waste were absorbed. Meanwhile, in 1942, the salvage from crates and bombed premises was providing 2,400 standards of timber per month. Scrap rubber also played its part to the tune of 115,000 tons for the year as a whole. The salvage of waste paper was pressed on through national and local campaigns and its consumption in the peak year, 1941, was thirty per cent. higher than before the war. The proportionate consumption of rags climbed higher still: by 1941 it was fifty-eight per cent. above the 1939 figure.

Of course, these remarkable efforts made demands upon labour, and the time came when this was more scarce than many scarce commodities. As a result the salvage of domestic tins and cans was called off at the end of 1943. The return in metal hardly justified the cost in labour and transport. The salvage campaign was not yet over, but this decision perhaps foreshadowed the future prospects of a

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<sup>1</sup> See also *First Report from the Select Committee on National Expenditure, Session 1941-42*, Appendix 10, 22nd January 1942.

return to the more traditional methods of obtaining raw material supplies.

#### THE MACHINERY OF CONSERVATION

In this broad outline of the governing principles of conservation we have seen how the economy campaigns penetrated into every aspect of the war effort. While the principles were taking shape, organisations and committees were being adapted or specially created to evolve, interpret and enforce the principles over an ever widening area of control. It was difficult during the middle years of the war to discover any organisation which did not consider itself in some way involved in this work of conservation. The full list of such bodies it would be impossible to discover, let alone describe, and in this survey of the economy organisations we must inevitably restrict ourselves to a summary of the administrative processes.

At the centre of all these activities there stood the raw material controls themselves: the executive arms of the Ministry of Supply. Many of them had their own 'economy branches', the watchdogs over consumption; but the other branches were also deeply involved in the work. The very nature of a raw material control spelt, in war-time, the restriction of consumption in the interest of the war effort and of economy. The quality and strength of control varied from material to material and from time to time, but it is clear that the more powerful ones, dealing with those materials truly called strategic, took the consumer along the hard road of economy at the quickest pace. About this, and the other functions of control, we shall have something to say in Chapters XXIV and XXV.

Over the work of conservation the Raw Materials Department of the Ministry of Supply exercised a general supervision, and it had its own 'technical branch' to advise it on practical questions, particularly in relation to chemicals. The Ministry of Supply also allotted certain duties to specialised organisations: for example, to the Directorate of Economy (Raw Materials), set up in 1940<sup>1</sup> to collaborate with the economy officers of the Services, and, more particularly, to organise the disposal and re-use of surplus materials and obsolete and redundant stores; to the Directorate of Salvage and Recovery there fell the work of planning salvage policy and campaigns and negotiating with local authorities and industry; for the surplus textiles and clothing of the service departments, a Directorate of Textiles and Clothing Disposals was established in 1942; the scientific research arising from the various economy measures came within the purview of the Directorate General of Research and Development of the Ministry of Supply, which dealt, amongst other things, with chemical

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<sup>1</sup> It subsequently became a division of the department of the Senior Economy Officer.

research and development and the technical problems of metallurgy.<sup>1</sup> The Materials Committee, first under the Ministerial Priority Committee, then from March 1942 under the Ministry of Production, was the principal allocating body for materials. Since metals, timber and paper were probably the most scarce of all commodities, the Materials Committee soon created committees specifically to investigate economy measures arising from their use: in 1940 a sub-committee on metal boxes was established which in 1942 widened its functions to cover all containers; the paper sub-committee was also set up in 1940 and the one for timber in November 1939. The Substitutes Committee, as we have already seen, was created as a clearing house for the continuously growing body of knowledge upon numerous aspects of conservation. The Anglo-American Conservation Committee, and the similarly combined committee for packaging, aimed at bringing the conservation policies of both countries into harmony.

The problem of conservation was attacked throughout the whole field of raw materials and on the basis of the practical needs of the time. Cuts were rarely sudden and complete, though so short was timber that for many uses only complete elimination would do. But, in most cases, the raw material controls preferred the progressive rationing of supply to the drastic elimination of certain end products. Rationing, it was felt, served sometimes as a temporary but valuable expedient for a three-fold purpose; it cut the consumption of the material but gave the manufacturer time either to adapt the article to a substitute material or to adapt his machinery to produce a more essential article; it also avoided grave dislocation in the labour market. It may be that a 'powerful' control drove the consumer to find his alternative material from a control of less severity;<sup>2</sup> but that was sometimes a reflection of the relative scarcity of one material as against another. An examination of the existing methods and machinery of conservation, made after one year of war, pointed out that 'There is no comprehensive system for securing economy in the matter of raw materials'. It added that 'the whole system of studying economy needs to be made more comprehensive and uniform' and recommended the establishment of one central body to discover and lay down policy over the whole field of conservation. No single, all-embracing organisation of this sort ever came into being and, as we have seen, the work was shared out among a number of officials and committees. Hopes were also expressed from time to time that a scientific scale of substitutes would be devised so that the consumer

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<sup>1</sup> For a useful discussion of technical problems of substitution see H. Bennett, *Substitutes* (New York, 1943).

<sup>2</sup> Cf. the correspondence in *The Times* of August 1949 on the substitution of steel for timber.



and the controls would be able to determine, in the light of labour, shipping, supply and other considerations, whether the substitution of one material for another in fact led to a real economy in terms of the total war effort. But such a schedule was never in fact drawn up; there were too many issues which were bound to elude an all-embracing formula. What the machine lost in this respect, if indeed it lost anything, it gained in adaptability. Though the economy measures were sometimes uneven and unsure, when they reached maturity they proved themselves equal to the utmost severities of war.

## CHAPTER XXIII

# RAW MATERIAL COSTS AND PRICES

**F**OR a whole series of complex reasons, the British Government was forced to play a dominant role in the fixing of raw material prices. For without such control her war economy must have foundered. A rising price level, particularly if the rises were sudden and violent, assaulted the economic stability of the State, and at the same time threatened to cut off essential supplies. These assaults came in fact from a number of angles.

It was sometimes said during the war that financial policy as such was not allowed seriously to influence the evolution of war planning and production. If by that was meant simply that peace-time financial considerations no longer held the centre of the stage and that the exchequer purse-strings were loosened, then the dictum has force. But it cannot mean more than this. For, if run-away inflation was for some nations a nightmare in peace-time, in time of war it threatened consequences as disastrous as those wrought by the most remorseless enemy. True, the purse-strings were loosened, but had control over our raw material prices grown lax, then the whole field of production would at once have faced the threat of inflation. But the pressure upon raw material prices was none the less constantly exerted, both from overseas sources and from home supplies.

The Government appeared on the market in a variety of guises. Sometimes it was the sole purchaser and excluded British nationals, and, if possible, its allies, from the market in which it was interested. This became increasingly the case in the purchases it made abroad, as we have already seen.<sup>1</sup> The Government also entered the domestic market as sole purchaser for some commodities but by no means all. Where it was sole purchaser it was in a position to reduce competition and negotiate purchase prices with either governments or private interests, though sometimes at a heavy charge to itself. In those cases where it was not a purchaser it had to search for other means to keep prices down. When we have considered the purchase prices we shall have to investigate the methods by which the Government controlled the *issue* prices, the prices at which the consumer bought his material. But we must, throughout the chapter, bear in mind the two constant and conflicting pressures upon the Government's price

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<sup>1</sup> Chapter X, p. 143 *et seq.*

policy: the pressure to raise prices to meet rising costs and to act as incentives to producers, and the pressure to keep prices down so that the Exchequer would not have to meet all or some of the rises in cash and the nation meet them in the consequences of inflation.

#### PRICE POLICY IN OVERSEAS PURCHASES

Every scarce commodity naturally displayed to varying degrees the inflationary consequences of war. Sometimes the price rises were the reflex actions of competition for limited supplies; sometimes as the normal sources were overrun new sources were brought in but at new cost levels substantially higher than the old. But often, even where the source remained unchanged and competition for supplies was eliminated, British purchasers had still to contend with an adverse movement of prices. Let us, for example, look at a commodity which continued throughout the war to come from the same source and in roughly the same types and qualities: American cotton. Table 53 gives the price per pound for this material a year before war came and then nearly three years after its outbreak.

*Table 53. Cost of importing American raw cotton (middling  $\frac{18}{32}$  inch) in 1938 and in July 1942*

	Pence per lb.	
	1938	July 1942
Price to grower . . . .	4·46	11·23
Internal transport, etc. . . .	0·14	0·30
Price at New Orleans . . . .	4·60	11·53
Ocean freight . . . . .	0·22	0·90
Marine insurance . . . . .	0·015	0·095
War risks insurance . . . . .	—	0·625
C.i.f. price at Liverpool . . . .	4·835	13·15
Port, merchanting and inland transport charges . . . . .	0·105	0·30
TOTAL . . . . .	4·94	13·45

Thus, before the war was half over, the price at source had more than doubled, the cost of ocean transport had increased fourfold, marine insurance had increased sixfold and, on top of that, a substantial sum had to be paid for war risks insurance.

But what happened when our ordinary sources were closed to us? Iron and steel is perhaps the best example to demonstrate the new situation which could arise. In 1938, of our total imports of iron and steel, two-thirds came in the shape of iron ore, mainly from Sweden. In 1941 the total tonnage of iron and steel imports was about the same but imports of iron ore had dropped to less than one-half of the

total. This decline in iron ore imports was a demonstration not simply that the usual sources of iron ore had been lost but that we were making our purchases in a different shape—steel rather than iron ore. But our normal pre-war supplies of steel from France were inaccessible and we had to turn to the United States where steel prices were much higher. We may then summarise the position in Table 54.

Table 54. *The price of steel billets: 1938 compared with September 1942*

£ per ton of steel billets

	1938		September 1942	
	Swedish iron ore <sup>1</sup>	French steel billets	British iron ore <sup>2</sup>	U.S.A. steel billets
F.o.b. average . . . . .	2·0	—	—	10·0
Freight and marine insurance to British port . . . . .	0·8	—	—	3·25
War risks insurance . . . . .	—	—	—	0·65
C.i.f. price . . . . .	2·8	6·5	—	13·9
Import duty . . . . .	—	0·7	—	—
Cost in Great Britain . . . . .	2·8	7·2	2·75	13·9
Internal costs of transport, manufacture and distribution . . . . .	5·05	0·65	6·25	1·0
TOTAL . . . . .	7·85	7·85	9·0	14·9

<sup>1</sup> 180 tons of Swedish hematite ore = 100 tons of steel billets.

<sup>2</sup> 200 tons of British hematite ore = 100 tons of steel billets.

In 1938 there was no price difference to the consumer of steel billets if Swedish ore were imported and processed here, or if steel billets were imported direct from France. Four years later the cost of the manufacture of steel billets in this country from British ore as compared with the cost of steel imports from the United States showed a great disparity in favour of manufacture here, if we could get ore, labour and plant! In practice, of course, we were sheltered from the consequences of these American price rises by the passage of the Lend-Lease Act in March 1941.

Until December 1941, we had been sheltered in another way. Before the United States became a belligerent, we were in some ways in a strong trading position since many markets were buyers' markets, and competition to supply became the greater as our import programmes were cut progressively. We were, therefore, often able to buy at competitive prices, although the full use of our bargaining powers was frequently tempered with expediency, either for diplomatic, strategic or purely economic reasons. But with the entry of Japan into

the war, supplies of a further group of vital raw materials were seriously depleted,<sup>1</sup> while for all materials there were enormously increased demands. These additional demands more than offset any increase in United States production; and pressure of American demands on their own supplies manifested itself in rising American prices as well as in shortages of materials.

Admittedly, in the early months of the war sellers had imposed conditions either to safeguard themselves against, or to profit from, the effects of war. There was also competition between allies as well as against enemies or neutrals. There were also rising freight charges. After Pearl Harbour the position markedly worsened. Once again, new and uneconomic sources, at new and uneconomic costs, came into the picture. In a sense we had already had at least one experience of what happens when an uneconomic source has to be exploited, in the case of flax. But that story belongs more appropriately to home prices and we shall tell it there. Meanwhile let us summarise the purchasing methods already evolved before Pearl Harbour.

In the earliest days of the war peace-time methods of commercial purchasing had continued, though their scope had progressively narrowed and by the summer of 1941 they had been virtually superseded. The rise and extension of governmental purchasing led in some cases to the use of official agencies employing commercial methods, in others to direct inter-governmental agreements for long-term purchases. The most usual was a contract made by the control on normal commercial terms, save for the distinction that the point of purchase was 'free-on-board' instead of 'carriage including freight United Kingdom' (c.i.f.), in order to benefit from government freight and marine insurance. Alternatively, for a limited number of materials, long-term purchase agreements were made by the State with individual firms or governments overseas. These agreements were either for specific quantities or for the whole exportable surplus in any one year, or for the duration of the war. For example, it had been arranged by November 1939 to purchase the whole of the exportable surpluses of wool from Australia and New Zealand for the period of hostilities and one year thereafter.<sup>2</sup> In the case of virgin aluminium, contracts for specific quantities were usually negotiated on a yearly basis; and long-term purchase agreements were also made for copper, lead and zinc, alcohol and its derivatives, sisal and pyrethrum. The agreements with overseas suppliers usually contained a basic price, derived from pre-war competitive market rates, to which were added allowances for increases in costs of production, including wages, transport and fuel.

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<sup>1</sup> See Chapter XI, p. 165 *et seq.*

<sup>2</sup> See Chapter X, pp. 144-145.

It is useful at this stage to compare the price history of three non-ferrous metals with that of rubber. In Table 55 are given the average price level of July–August 1939 for electrolytic copper, zinc and lead and the maximum price level in the middle of December of that year.

*Table 55. Prices of electrolytic copper, zinc and lead: average prices July–August 1939 compared with maximum prices fixed in December 1939*

	Average prices July–August 1939 <sup>1</sup>			Maximum prices established by No. 5 Order 18th December 1939 <sup>2</sup>		
	£	s.	d.	£	s.	d.
Electrolytic copper .	51	5	0	62	0	0
Zinc . . . . .	16	5	0	26	10	0
Lead . . . . .	16	7	6	25	0	0

<sup>1</sup> Approximate c.i.f. prices.

<sup>2</sup> On the basis of delivery to the buyers' premises.

These authorised rises were steep indeed in view of the short period which had elapsed since the outbreak of war, though approximately £2 per ton must be allowed for the change from 'c.i.f.' to 'delivered buyers' premises'. The large initial rises could perhaps be justified as an insurance against the instability caused by small escalator rises; but it is impossible to establish whether an insurance of this magnitude was needed so soon. It is of significance that these prices remained virtually unchanged until the end of the war. Not until 11th June 1945 was it necessary to authorise fresh rises for zinc and lead, though even then the copper price remained unchanged. Apart, however, from this initial rise, it is clear that, taking the period as a whole, the total rise was not high. But these materials came, in most cases, from their usual sources and rising prices were expected to meet rising costs there and little more. This was remarkable stability.

The story of rubber prices in Africa displayed all the features to be expected when old and adequate sources gave place to new sources of limited prospects. Until Pearl Harbour the Pacific supplies of rubber were considered sufficient for current needs; and the existing price controls organised by the International Rubber Regulation Committee were accepted by the British Government as a satisfactory means of stabilising prices on a commercial basis. But within a few months of Pearl Harbour all these supplies were lost, and slowly, and on a piecemeal basis, Ceylon and the slender rubber reserves of the African sub-continent began to replace these staggering losses. But it was not only the British Government which appeared on the African market. Soon it was reported that there were other bidders,

some bidding very high, and that sellers were refusing to sell except for dollars. In face of these dangers, inter-Allied talks were opened. America withdrew from the whole of the African market, except Liberia where she had special connections, and the Ministry of Supply became sole purchaser of rubber, first in British territories and then in French and Portuguese possessions.

But this could only clear the path. It could not provide the rubber at economic prices. There followed a sequence of price negotiations with the various territories, and price rises to meet increased costs, to provide incentives or to stop a black market; but even so returns were small. We may perhaps cite the Abyssinian adventure as an extreme case. When the campaign to exploit these rubber supplies was begun a price of 1s. 6d. per pound was offered; then it went up to 2s., and heavy expenses were incurred employing a para-military unit to collect the material. Then the price rose to 2s. 9d. but still practically no rubber was forthcoming. In all twenty-five tons of rubber were collected which cost, apart from the official price of 2s. 9d. per pound of rubber, some £40,000 for the body of troops sent out, and another £32,500 in Ministry of Supply expenses. In all, it cost £72,500 for twenty-five tons of rubber. This works out at 25s. per pound, plus the official price of 2s. 9d., approximately 2,300 per cent. above the price of Malayan rubber before Pearl Harbour.<sup>1</sup>

Here then were strong contrasts in purchase price developments overseas. Between non-ferrous metals on the one hand and rubber on the other we could trace all manner of price systems which brought varying degrees of success. The most satisfactory, for war-time purposes, were the inter-governmental contracts for bulk purchasing, of which wool was the outstanding example. By these long-term contracts, so far as was possible, stable supplies and stable prices were guaranteed. But when the Ministry of Supply had to scour the earth and press into service unskilled labour for unwonted tasks, then the difficulties multiplied: the failures were more likely failures of supply than of pricing policy. It was war, not the producer, which exacted the heaviest price.

#### PRICE POLICY FOR DOMESTIC SUPPLIES

Where a raw material, purchased overseas solely by the Government, was also available from domestic sources, the Government undertook the purchase of the domestic supply in order to fix a common issue price; or it might enter the home market for other reasons. Home-produced materials were usually bought at prices which reflected their costs of production, with the important exceptions of wool and flax where the price was influenced by

<sup>1</sup> i.e. 1s. 1½d. per lb. This was the average price for standard rubber sheet in London. The price in Malaya would be lower still.

general agricultural policy. But sometimes prices paid for domestic supplies had to provide also an incentive for producers to expand their output. Domestic cost rises, however, were passed on to a varying degree, and intensified inflationary movements in this country. How then could domestic purchase prices perform the dual function of stimulating output yet holding the door against inflation?

Perhaps the problem of flax production in Northern Ireland is one of the best examples of the enormity of this task. In September 1939 flax was being purchased there at an average price of about £75 per ton. But our main source of flax at this time was Belgium. Belgian prices were rising and she was, moreover, uncomfortably near to the enemy; so, although no evidence yet existed of rising flax costs in Northern Ireland, it was thought necessary to provide an incentive for an increased acreage in 1940. The price for the 1939 crop had been fixed in October 1939 at £112 per ton; in February of the following year the price was settled at £160 per ton for the 1940 crop but was increased by a further £20 per ton the following September to cover increased wages. We need not accompany flax prices any further in their upward journey throughout the war. Let it suffice here to say that by June 1944 the price stood at £228 6s. 8d. per ton and on top of this there was an acreage payment to growers of £10 per acre, making a total price to the Government of roughly £278 per ton. In other words, between 1939 and 1944 the price rose by about 270 per cent.

But this is not the whole story. Not only did flax become more and more expensive but the quality declined. Table 56 shows the difference in quality between the 1939 and 1944 crops of dam-retted flax, that is the majority of the flax produced.

Table 56. Comparison of quality of Northern Ireland flax crops of 1939 and 1944

(Percentages of crops falling into each grade)

	1939	1944
Grade 1 . .	1·88	0·10
Grade 2 . .	16·75	1·41
Grade 3 . .	54·90	15·35
Grade 4 . .	21·40	46·81
Grade 5 . .	3·64	25·59
Grade 6 . .	1·23	8·30
Lower . .	0·20	2·44
	100·00	100·00

Furthermore, 1944 was the only year in which the target acreage—the object of these price incentives—was actually attained. But a



direct comparison between prices and output cannot fully establish either the merits or the defects of this price policy, which had to be tempered to suit the varying conditions in each flax-growing country.

In the materials we have been considering so far the Government stood, as it were, between the supplier of the raw materials and the consumer. As a result the Government could, where prices had risen steeply, take upon its own broad shoulders some of this price rise so that it would go no further and diffuse right through the production processes. The *issue* price, in other words, could be *less* than the purchase price. All this might cost money but the method of dyking up against the price rise was theoretically simple. No such simple prospect offered itself where the Government did *not* purchase the commodity but only controlled the price.

#### MAXIMUM SELLING PRICES, WITHOUT GOVERNMENT PURCHASE

Before the war competition between producers, where it existed, tended to equalise costs, and therefore prices; and the high-cost producer was often squeezed out of the market. Where competition had been eliminated, either by amalgamation or by cartel agreement, the consumer was again presented with uniform prices, if not uniform costs. War necessarily held these usual economic processes in suspense and the price mechanism was superseded by administrative control. What was needed was *supply* and that as quickly as possible. The uneconomic, high-cost producer now had his part to play in the company of his more successful, low-cost brethren: each concern formed part of the capital of the nation. So far, so good; but how could one calculate a price which took account of all this? What uniform price was high enough to allow the high-cost producer to stay in production yet not so high as to bestow what looked like an unearned increment upon the low-cost producer, at the expense of the nation?

First let us look at the mechanism and procedure of price fixing. When, on the outbreak of war, the Ministry of Supply thought that a home-produced material or semi-manufactured commodity was sufficiently important, or sufficiently scarce, to call for price control, the Ministry aimed at the establishment of a maximum price schedule, either by statutory order or by voluntary agreement amongst the producers. In essence the maximum price system included an element of incentive. A producer was, therefore, encouraged to increase his profits by efficiency and economy in production. The Ministry concerned itself not with setting a target profit for the individual firm but for the industry as a whole. Where a firm earned more than its share of the target, the Ministry took no steps to exact repayment of any excess save in very special cases, which we shall consider shortly.

The declaration of war could manifestly not wait upon the labour of an army of cost accountants, even if such a vast corps of technicians had been available. So the initial maximum price schedule was merely the pre-war price schedule frozen and sanctioned by the Ministry. This was regarded as a temporary expedient which was bound to guarantee to monopoly and cartel producers the advantages of their existing monopolistic profits, at least for the time being. War, it was held, must soon bring rising costs to the raw material producers themselves and soon there must be demands for upward price revisions. That is precisely what happened. But the producers asked the Ministry to examine *changes* in costs; only in rare cases, as in cotton spinning and weaving where pre-war profits had been very low, was the Ministry requested to examine *total* costs. So, by and large, the maximum prices fixed at various stages of the war took cognizance of those factors which had come into operation *since* the outbreak of war but did not usually embark on the complex problems of examining the origins of the basic price, which had come into existence in time of peace.

Clearly, in some cases costing of every stage was essential to arrive at a fair price. But however desirable a full knowledge of total costs might be as a basis of price fixing, there was not the means to obtain it. The Public Accounts Committee<sup>1</sup> drew attention early in the war to the need for full information of total costs in each case and not simply the evidence of increased costs since the outbreak of war. But the heavy burden of investigating total costs the Treasury felt bound to decline arguing that, in view of the prodigious labours involved, costs could only be fully analysed in those industries or firms where a *prima facie* case existed for so complete an investigation.

Having abandoned the principle of full costing from the outset in every case, a simple expedient was adopted to gauge whether September 1939 prices should be adopted or not. The pre-war market conditions of an industry were taken as a rough and ready guide. Thus pre-war selling prices arising under competition were normally exempt from such an investigation. On the other hand, where total British production was in the hands of a monopoly, a full cost investigation was comparatively easy: only one firm was involved. The difficulties arose with that large group of industries which belonged to neither category, and in which trade was conducted by a trade association fixing prices by agreement, or in other conditions of imperfect competition. Such an industry was the light metals industry.

In the various fabricating branches of the light metals industry, pre-war prices had been fixed by trade associations, cartels or similar organisations. In view of this the Air Ministry, by virtue of its concern

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<sup>1</sup> Report from the Committee of Public Accounts, Session 1940-41, Item 50, p. xxvii.

with the manufacture of aircraft,<sup>1</sup> felt unable, when war came, to allow these prices to be accepted by aircraft constructors working on Air Ministry contracts. This viewpoint was confirmed by an investigation, completed by that Ministry in June 1939, into the operations of four light alloy firms, when it was disclosed that their average profit for 1938 had reached thirty-seven per cent. The industry considered the high profits justifiable in view of the necessity to write off heavy capital expenditure incurred specifically for war production. A second investigation revealed that profits earned during the years 1936-39 had not only enabled all such capital expenditure to be written off but had provided also for the payment of reasonable dividends, for normal depreciation and for the accumulation of substantial reserves for other purposes. This was reasonable enough since the Air Ministry had not accepted contingent liability for redundant assets should the war be of short duration. After 1939, however, the level of output rose further, while the industry retained its monopolistic price-fixing practices; but the additional capital expenditure incurred had been largely financed by the State. Even where the industry had been called upon to provide capital, the provisions of the E.P.T. 'reserve' fund were adequate to cover any new fixed assets and, in any case, the industry had already accumulated considerable reserves to carry it over the post-war difficulties. On this basis the Government felt that a clear case had been made out for profit control.

The chief obstacle to the effective control of light alloy prices by prescription lay in the very wide range of products involved.<sup>2</sup> The Wrought Light Alloy Association price list prescribed prices for thousands of items, but these fell only within the categories of sheet, strip and extruded materials, and even these categories excluded special sections. Other materials for specialised aircraft work were produced on contract and no general price list could therefore be drawn up. Some products carried a higher profit return, others were more difficult to produce and efficiency was far from uniform. Some firms had also received more financial aid from the department than others and no system of rent charges could satisfactorily discount this factor. The same difficulties applied to castings and forgings but were intensified by the fact that most of these items were manufactured to individual specification and that, while sheet, strip and extrusions were produced by about a dozen firms, there were approximately 100 forgers and 500 founders. In addition, light alloy work formed only a small proportion of the total output of many forging and casting producers. Above all, the changing aircraft requirements, modifications

<sup>1</sup> This function passed to the Ministry of Aircraft Production in August 1940.

<sup>2</sup> These were roughly: 9,000 items of sheet and strip; 24,000 items of extrusions; 20,000 items of forgings; 15,000 items of castings.

in design and reallocation of orders amongst fabricators to prevent overloading, made profit limitation by the prescription of prices a practical impossibility. After two years and two months of negotiation, a scheme was agreed between the Ministry of Aircraft Production and the Wrought Light Alloy Association, which was later extended in principle to the other branches of the industry where they were not already covered.

The scheme adopted was, in essence, a 'rebate' scheme, although labelled a 'discount' scheme to avoid constitutional and other objections made by the Board of Inland Revenue.<sup>1</sup> Control was operated through prices as distinct from profits and this discount on prices was acceptable to the Board of Inland Revenue as a working expense for individual firms. It could, therefore, be deducted from profits when assessing taxation. The rebate (or discount) to M.A.P. was fixed at a level which reduced prices sufficiently to ensure that the industry retained only a reasonable profit. The level of profit was determined as a rate per cent. on capital. Except for the retrospective adjustment, the rebate was calculated before the actual figures of profits were known. There was, therefore, an element of risk in that an individual firm might realise profits in excess of, or below, the level fixed.<sup>2</sup> These discrepancies might arise either from bad estimation or from the increased efficiency of the firm. In this way the incentive to increased production and efficiency was preserved and M.A.P. could, at its discretion, grant a further allowance (additional to the fixed rates of 10 per cent. and 1 per cent.) of up to  $2\frac{1}{2}$  per cent. on industry's capital and 1 per cent. on M.A.P. capital. The importance of, and necessity for, profit limitation can be gauged when it is considered that the industry voluntarily made reductions in the prices of its products representing approximately £11½ millions during the period 1st July 1939 to 31st March 1943, while the 'rebate' scheme yielded about £40,000,000<sup>3</sup> over the period 1st September 1942 to 31st July 1945, when it was abandoned.

In contrast to the difficult problems which the determination of maximum purchase and selling prices raised, fixing an issue price was a relatively simple matter, since here no incentive effect was involved. It is to a consideration of the Government's price policy in this connection that we must now turn.

<sup>1</sup> The main objection, supported by the Treasury, was that the scheme involved the 'passing of part of a profit to a non-contracting party in the person of M.A.P. and therefore raised a very wide constitutional issue of a form of taxation imposed without specific Parliamentary consent and through the medium of a department other than the Board of Inland Revenue'. The second objection was that it was doubtful whether a rebate calculated under the proposed scheme could be classed as an allowable deduction from profits in assessing taxation.

<sup>2</sup> For the past year, 1941, it was fixed at fifteen per cent. on industry's own capital and three per cent. on M.A.P. capital. For later years it was fixed at ten per cent. and one per cent. on their own and M.A.P. capital respectively.

<sup>3</sup> *Public Accounts Committee, 1946-47, Question 3839.*

## ISSUE PRICES

Between the price received by the producer and the price at which the consumer bought a commodity, there stood a whole series of charges for distribution and storage, administration and overheads, which somehow had to be met before the consumer got his goods. Apart from all this, the total supply of a commodity in any one year came from various sources and, therefore, at various prices. How could all these different pressures upon the price level be harnessed to produce for each commodity a uniform price and, what was at least as important, a stable price?

We have already seen that for various considerations, of which price policy was only one, the Government had in an increasing number of cases become the sole purchaser and therefore the monopoly seller. This of course facilitated price stabilisation: it provided the physical means for establishing settled prices though the financial means for doing so had to come from some pocket, from the Government or, in some cases, from the consumer. The routes to this goal were diverse and complex and it is worth traversing some of them before we examine the goal.

In the early days of the war the Treasury laid down the policy that the issue price of an imported commodity should be at least sufficient to cover the cost of importing and distributing it. In rough terms, the selling price was to be the average between current costs, which were known, and future costs which were, of course, estimated. Into this average price were to be incorporated all the costs intervening between producer and consumer, except those elements of cost which were not peculiar to any material (for example, storage and general administration), which were to be met by the addition of the same percentage charge for all commodities, usually three per cent. It is possible to see this policy applied to flax, hemp, jute, cotton, wool, leather, rubber, imported timber, many of the metals and other materials. But iron and steel requires special examination.

Before the war, the stabilising policy applied to iron and steel prices had involved the adoption of the 'Spread-over Fund', derived from a levy of 5s. per ton on home-produced ingot steel. With this money it was possible to subsidise imported materials,<sup>1</sup> mainly scrap, since at that time British prices were lower than world prices. Two years later, in 1939, it was decided to separate the scrap levy from that for other materials, since the proportion of scrap used by steelmakers varied greatly. A 'special levy' was created to equalise home and imported scrap prices, while the sum of 5s. per ingot ton continued to be levied for subsidising other imported materials. War modified, but did not supersede, these arrangements. In September

<sup>1</sup> It was also used, in one case, to subsidise the pig iron production of a high-cost firm in the United Kingdom.

1939 a 'Central Fund' was set up from levies on producers, with the intention that this fund could be used to offset the rising costs of imported steel and steel-making materials. The Spread-over Fund (now called the Special Fund) was also retained and used for special purposes. Subsidisation was thus extended to imported iron ore (and to home-produced iron ore where it had not been competitive in peace-time) and to imported steel. These measures did not prevent all increases in prices but did restrain the price of home-produced steel from rising to the price level of imported steel. The price changes which did occur<sup>1</sup> were chiefly designed to swell the funds of the equalisation pool, in order to meet the anticipated heavy rise in both quantity and price of steel imports. By the end of 1940, finished steel prices in the United Kingdom were, on the average, forty-five to fifty per cent. higher than pre-war. In November of that year it had been decided to stabilise steel prices, among others, at the current level and rises in the costs of home production were offset by subsidies from the steel levy and past surpluses of the Central Fund.<sup>2</sup> After 1940, therefore, no general increases in steel prices took place, and the iron and steel price index rose by only two per cent. between November 1940 and December 1943.

The device used was as follows. The Central Fund fed the specially constituted Prices Fund which, in its turn, paid individual producers. The methods of payment varied but the policy applied to the heavy sections of the industry broadly indicates the process at work. Selected items were costed quarterly and an estimate was made of the rise in price per ton necessary to maintain profit at the 'normal' rate, usually that for the year 1936-37. The amount required to maintain this for the total tonnage was then paid into the Prices Fund, which made the necessary payment on the tonnages produced to each producer. But there were exceptions to this policy. No payment was made if it would bring a firm's total profits above the 'standard' rate. On the other hand, if the full tonnage payment was not sufficient to bring profits to the standard rate, no further payment was made unless profits fell below twenty-five per cent. of this standard, when they were brought up to that figure. In the case of 'fringe products', detailed control was at first much more difficult and the price policy led to a rise in profits in some branches during the early part of the war.<sup>3</sup>

<sup>1</sup> *Changes in steel prices, November 1939-November 1940*

November 1939—average increase of 8½ per cent.—for the equalisation pool funds.

February 1940—average increase of 5½ per cent.—for the equalisation pool funds.

July 1940—average increase of 7½ per cent. to offset increased domestic costs.

November 1940—average increase of 9½ per cent.—for the equalisation pool funds.

<sup>2</sup> Imports did not reach estimates because of lack of shipping and shortages of supplies. Therefore the Fund had accumulated a large balance of undistributed funds.

<sup>3</sup> *Fourteenth Report from the Select Committee on National Expenditure, Session 1942-43*, para 198, 4th November 1943.

After the introduction of lend-lease supplies of steel in 1941, the levy was used exclusively to keep down internal prices since we were able to ignore the influence of increases in the price of our 'free' American steel, which was released at a notional price. Meanwhile in November 1940 the Central Fund levy had reached 45s. 6d. per ton plus a 3s. levy on pig iron. The levy was reduced by 10s. in September 1944 and a further 10s. was taken off in March 1945. With the help of the Central Fund, however, it was possible to avoid any significant price change until the end of the year.

Iron and steel prices played their part not only in the cost of munitions but in the cost-of-living index as well, so there was a double reason for government intervention. A number of other materials were also of considerable significance in the cost-of-living index, notably cotton, wool, timber, non-ferrous metals and fertilisers. It was decided, therefore, in February 1941 that any proposed increases in the selling price of these materials should be referred to an *ad hoc* sub-committee, which the Lord President's Committee set up for the purpose. An additional reason operated in the case of wool, since the Australian and New Zealand Governments were extremely anxious that the British selling price should not rise to such a degree as to encourage any further use of substitute materials. Dominion wools were therefore sold 'at a price sufficient to meet their costs including freight' while the price of home-produced wool, which was dearer, had to be subsidised at the dominion price level.

Then, in April 1942, the Treasury enumerated a number of cases where it seemed undesirable to raise prices to cover rising costs. These included:

(i) Any raw material, increases in the price of which 'would substantially affect the retail price of an item in the cost-of-living index', an expression which comprised several materials, such as cotton and wool, already under the ægis of the special sub-committee of the Lord President's Committee.

(ii) Any commodity which was entirely, or almost entirely, embodied in goods for government purchase. This was in order to prevent inflation of contractual costs and profit margins, particularly where the material passed through a number of different stages of semi-manufacture.

On the other hand, it was admitted that some price rises might be desirable, even if they increased the price of manufactured goods to a government department, if at the same time they served to restrict consumption of that material or divert consumption to an alternative material in better supply. However, the general shortage of raw materials precluded the possibility of much substitution coming about in this way.

In the case of lend-lease materials, we were bound by our under-

standing with the Americans on the subject of private profits.<sup>1</sup> Generally, the issue prices of lend-lease goods were fixed at a low level, covering notional United States costs before shipment, plus all subsequent charges and overheads. There were, however, numerous exceptions to this rule, which were set out as follows:

- (i) Where a stabilisation policy is desirable;
- (ii) Where lease-lend supplies are pooled with supplies from non-lease-lend sources, in which case the issue prices should aim at covering the average total costs, notional and other;
- (iii) Where an identical or closely substitutable article is privately produced in the United Kingdom, imported lease-lend supplies should be sold at a price which is in line with the existing United Kingdom price, in order to avoid upsetting the general price structure and contractual relations on it;
- (iv) Where lease-lend materials enter into the export trade, it may be necessary to increase prices in line with American costs in order to avoid charges of subsidising exports;
- (v) Where under the general rule the price would be lower than the recently prevailing price in this country, the latter might continue to be charged.

But it was doubtful whether the price of raw materials going into exports should be rigidly restricted. The same argument applied where a quantity of the material went to a minority group of private consumers. In recognition of the different problems raised by these categories, it was decided in January 1943 to charge a differential price for raw cotton used in export goods. The cotton subsidy had been running at £8 millions a year, a quarter of which was absorbed by exports; and an export subsidy of this sort was particularly hard to justify since manufacturers of cotton goods were operating on a sellers' market. A more general increase to allow all raw cotton prices to rise to their economic level, although suggested, was rejected on the grounds that it would create pressure on behalf of other stabilised raw materials, encourage speculation already evident and substantially increase merchants' profits, which were calculated as a percentage on raw cotton prices. When, however, the government demand for cotton declined, the existence of the utility clothing scheme enabled price control to be maintained where necessary at the conversion stage, and the subsidy on raw cotton was accordingly withdrawn. The issue price thereupon rose to the 'economic' price which was reflected in the cost of non-utility clothes. A similar story could be told of flax. In January 1942, it was decided to stabilise flax issue prices at the existing level; but at the end of the year twenty per cent. was added to the issue price where the flax was consumed in the export trade. By the autumn of 1943 the twenty per cent. was in-

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<sup>1</sup> See p. 279.



adequate and, after lengthy discussions, differential export prices were discarded in May 1944 and flax issue prices were raised to a more economic level.

The central theme was stabilisation; but each material seemed to require its own approach. For example, the selling price of leather was frozen at the July 1941 level, and the Ministry of Supply made periodic adjustments in the price of imported hides, which it provided, in relation to the controlled selling prices. For fertilisers, yet another scheme was adopted. A direct payment was made per ton of output so as to provide what was considered a fair profit margin for the industry as a whole. Where the number of producers was limited, for example in the production of borax and boric acid, and wide discrepancies existed between the costs of individual firms using different technical processes, a pooling scheme was introduced. Each producer either paid into, or obtained from, the pool a sum sufficient to provide every firm with a reasonable profit margin. In one isolated case, that is sodium bichromate, the bulk of home production was obtained from an old, high-cost firm, while the remainder was supplied by two modern plants. Here, the Ministry found itself obliged to sell the imported raw material to the high-cost producer at a reduced price while modernisation of plant was undertaken. For yet other materials, the department bought domestic supplies on a costed basis from each producer, and resold them to industrial users at an average price based upon the costs of home and imported supplies. This was the method adopted with acetone, where there were considerable difficulties in the way of fixing a fair statutory price owing to a wide disparity in costs, costs which fluctuated widely with unavoidable interruptions in production.

In 1943 the Treasury began discussions on price policy for the immediately post-war period, and in the spring of 1944 the stabilisation policy was restricted to five materials, iron and steel, wool, leather, alcohol and fertilisers. For other materials the direct subsidy element was eliminated as far as possible and issue prices were raised to a more economic level, although allowance continued to be made for costs peculiar to war-time, such as abnormally high insurance and freight rates.

These, then, were some of the devices for controlling and stabilising the prices of raw materials. They obviously involved the Government in substantial expenditure. Subsidies, by definition, cost money. But there were also substantial returns on that money. These we cannot measure in precise terms. But it is fruitful none the less to compare the wholesale price rises of raw materials in the Second World War with rises in the First. If we use the figures of the Sauerbeck index as our source we can summarise the broad changes in wholesale raw material prices during the two wars (Table 57):

*Table 57. Index of wholesale raw material prices in the First and Second World Wars*

(1867 - 77 = 100)

First World War		Second World War	
Date	Index figure	Date	Index figure
August 1914 . . .	88.6	September 1939 . . .	107.4
November 1918 . . .	201.8	December 1943 . . .	166.7
		August 1945 . . .	181.3
Percentage price rise for 52 months . . . .	128%	Percentage price rise for 52 months . . . .	55%
		Percentage price rise for the whole war . . .	69%

Source: Based on the Sauerbeck index.<sup>1</sup>

On the basis of the table it is thus possible to see that the percentage price rise in the First World War was 128 per cent., in the Second sixty-nine per cent., in other words fifty-nine per cent. less. If, indeed, we examine the figure in the Second World War when it had lasted exactly as long as the First, the disparity is even greater. The rise was fifty-five per cent., that is less than half the rise of the First World War.

The stabilisation policy admittedly provided some producers with opportunities to make high profits<sup>2</sup> and these could not always be countered by detailed cost investigation. But when one considers the remarkable price stability which was maintained, it seems reasonable to argue that the price the nation paid was not too heavy.

<sup>1</sup> Published in the *Journal of the Royal Statistical Society* and *The Statist*.

<sup>2</sup> See, for example, with reference to steel, *Fourteenth Report from the Select Committee on National Expenditure, Session 1942-43*, paras. 180-201 and Appendix IV, 4th November 1943.



## PART IV

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# Conclusion: The Organisation of Control



## CHAPTER XXIV

### MANNING THE CONTROLS

**T**HE First World War had increasingly changed the shape and content of British trade. It turned the Government into an importer, producer, distributor and consumer and, in spite of itself, into a controller. Elsewhere<sup>1</sup> we have drawn attention to the half-hearted and haphazard way in which this was accomplished. The War Office controlled imports of wool, flax, hemp, jute and leather; the Board of Trade imported timber and cotton and, through a special paper controller, paper and the pulp for its manufacture; and the Ministry of Munitions found itself controlling the purchase and distribution of many raw materials, particularly the metals needed for armaments. The final pattern was a mosaic of controls of unequal power, prestige and consequence. The opening days of the Second World War displayed a marked contrast to these tendencies. The First World War began without a single raw material control, and responsibility for raw material supplies was at first only gradually and reluctantly accepted as circumstances dictated. The Second World War began with at least eight major controls possessing statutory powers over iron and steel, non-ferrous metals, timber, aluminium, fertilisers, flax, silk and wool. In addition there were controls exercised by the Raw Materials Department itself and a number of voluntary controls. The Government, in other words, assumed from the start direct responsibility over the supply and distribution of many raw materials. What, we may ask, were the principal functions which it felt could only be performed by a specially erected controlling machine?

If we succeed in driving a path back through a wilderness of control regulations we find their genesis in the problems of supply. Mounting requirements, particularly of munitions, hastened the Government along the road it was taking; but the statutory controls derived in the main from anxieties over supply. Iron ore, many of the non-ferrous metals, timber, wool, to mention only the outstanding examples, passed immediately under a fully developed raw material control, which assumed at once supreme authority over purchases abroad.<sup>2</sup> Where would the process end? Early in 1940 the Minister of Supply (Dr. Burgin) expressed himself as 'loath to increase the number of

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<sup>1</sup> Chapter I and Appendix 1.

<sup>2</sup> See also Chapter X and Appendix 17.

controllers'. He pointed out that:

In so far as commodities which involved substantial shipping considerations were concerned, controllers had already been appointed. He would prefer the control of imports not subject to controllers to be exercised by the banks.

Against this it was argued by the Chancellor of the Exchequer that: the objection to control by the banks was that a bank could only consider each transaction by itself, and was not in a position to relate our total imports of any commodity to our national requirements.

Paper-making materials, already under control, were made the subject of centralised purchase in February 1940. Stocks of bromine virtually gave out in the same month, and this was one of the reasons why a statutory control was established; cotton reached the same goal of centralised purchasing by a more circuitous route in April 1941. The spring of 1941 saw the passage of the Lend-Lease Act: after this the role of the private British purchaser in the United States dwindled to insignificance. Government spoke to government: the raw material controls had to do the things which had hitherto been done by private purchasers, and a great deal more. Pearl Harbour and the beginnings of full intergovernmental organisation for economic purposes meant that, for the overwhelming majority of materials, there could be no more talk about purchases on private account. By the end of 1941 most raw material controls were trading controls, purchasing on behalf of the nation.

This was what happened in the case of imports, and, *pari passu*, the field of control was widened over domestic supplies. Here the control was in some cases not simply a purchaser, it was also a producer, either alone or in partnership with private trade. Thus, to mention but a few direct government activities, it cut trees, mined iron ore, searched for non-ferrous minerals and made magnesium out of sea water. Where it was a purchaser from private suppliers, difficulties sometimes arose. Some timber merchants, for example, in the early part of 1940 were 'refusing to sell timber from their stocks even to firms with government contracts'. There were various reasons, for example:

As private supplies are becoming short, some merchants try to reserve their stocks for their regular customers rather than sell to firms who are unknown to them or to government departments. There is also a tendency to delay sales in order to spread profits over as long a period as possible and so to avoid the incidence of excess profits tax. As a result, the situation is becoming increasingly serious. A considerable number of firms working on general Ministry of Supply contracts have been delayed for several weeks because of inability to obtain timber, and the construction of an ordnance factory has been held up for the same reason.

So authority to requisition was assumed, not for its own sake but as a threat to recalcitrant firms. In other words, the control over domestic supplies was incomplete without the power to transfer ownership to the State, after payment of compensation. So the State was perforce obliged, in the field of supply, to extend its grasp and tighten its hold.

But the control of supply was also a means to an end: the control of distribution, so that war materials would flow swiftly to the makers of munitions. Looked at from another angle, we may say that the Government was not only a buyer, it was also a seller, directly or by proxy. These functions of control we have already considered in various contexts: the licensing of end use, the control over prices, the direction to the consumer where he should turn for his material. Again the area of control widened as the tide of war turned against Britain, and we shall see in the next chapter how that was reflected in the function and structure of the whole governmental war machine. But before we come to that, an important question arises from the processes we have already described. If the Government usurped the functions of the trader, if the controls were, as they were often called, trading controls, what was meanwhile happening to the members and organisations of the trading community?

Obviously many of them went straight to the raw material controls. Sometimes a trade association, like the British Iron and Steel Federation, was translated into a control; sometimes a company was granted the office under the Ministry, like the British Aluminium Company, which became the Aluminium Control; sometimes, as happened in the great majority of cases, a leading member of the trade became controller. But not all traders could move in that direction, even if they wanted to. Some found their *métier* in the half-way house known as government agencies. For a time also, as members of the Liverpool Cotton Exchange, the cotton merchants carried on at least some of their original functions of pricing and distributing, until the tightening of cotton control finally deprived the Exchange of its war-time uses. But still there was the need for some merchants to handle and distribute the cotton under Control direction. The scrap merchants went on handling scrap, again under control, right through the war, though their functions in the case of requisitioned scrap were transferred to the Ministry of Works in March 1942. Timber importers, with little to import, took to the handling of the home-grown material. These examples could be multiplied vastly. But in some cases the decline of available materials, in others control itself, rendered the services of the traders superfluous. Whatever the reason, it soon became clear that some producers and some distributors would not be fully employed. Hence the question of compensation became one of the burning topics of the early part of the war.



There were two possible ways in which existing interests could be compensated for loss of earnings in war. One of them we may call overt compensation, payments in cash, not for services rendered, but for services which might have been rendered had there been no war. The other type of compensation was less open and took the form of employing 'existing agencies', even though in war-time more economic methods were available. Against this the Ministry of Supply set its face at the beginning. It suggested, as a general policy, that departments should:

make use of existing trade agencies to the full wherever this can be done without substantial increase in cost or loss of efficiency. . . . But when the cost of using existing agencies substantially exceeds the cost of the alternative methods, the cheaper method should be adopted.<sup>1</sup>

It felt that 'it is clearly impossible to compensate everybody whose business is deranged by war conditions'. Nor was it practicable to isolate for favourable treatment those whose losses had been the result of 'direct government action'.

For example, the fact that we have bought all the Empire copper may make imports of copper from Chile redundant, but in any case such imports might be impossible on account of shipping or exchange difficulties.

In a word, you could not 'compensate people for loss on account of business which they in fact do not do on the ground that they can no longer do it'. If logic and economy dictated such an attitude, the Ministry of Supply was not unaware that there would be a price to be paid for it, if not now, then at a later date. It was aware not only that there would be hardship but, in addition:

there will inevitably be a great deal of dislocation and there may be a disbandment of a good deal of trade machinery that has been useful in the past and may be useful or essential in the future when the trade in these materials returns to its normal channels.

Hence it desired to maintain existing trade machinery 'so far as is reasonably possible'.

The whole problem of employing merchanting organisations 'in a period of control' came, shortly afterwards, before an interdepartmental committee on economic policy. In particular, the problem of employing or compensating brokers was 'acute'. Three trades especially were needing the early attention of the committee and the Ministry of Supply:

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<sup>1</sup> For the expression of a similar view by the Ministry of Food see *Fourth Report from the Select Committee on National Expenditure, Session 1939-40*, para. 74, 7th May 1940.

(a) *Metals.* Although the Government would be the sole importer and distributor of metals, the London Metal Exchange had submitted a request that they should be permitted to reopen. There was, however, no real function for them to perform.

(b) *Wool.* The London Wool Importers had suggested that their services should be used in appraising and distributing the wool purchased by the Government in Australia and New Zealand. The Ministry saw no useful function for these merchants to perform in view of the fact that this wool would not in any case be brought to London and would, prior to importation, be appraised in the country of origin. Moreover, the London Wool Market was already on the decline before the outbreak of war.

(c) *Timber.* The timber trade had suggested that some arrangement should be made to keep in existence the timber agents although their services, unlike those of the timber importers, would not be required by the Timber Control to any considerable extent.

The committee held views similar to those already expressed by the Ministry of Supply, namely that it was opposed to expenditure for 'maintaining in existence extensive organisations not required during the war, but of possible value to the national economy after the war'. It might be that individual cases justified financial assistance from the Government, but 'very powerful considerations would need to be advanced'.<sup>1</sup>

At the following meeting, however, Lord Stamp, at that time adviser on economic co-ordination to the Government, felt some distinction must be made between losses sustained as the result of the 'general war policy of the Government', where compensation could hardly be expected, and losses arising because the Government had assumed some of the functions of private traders; but this interpretation was again contested by other members of the committee. The Ministry of Food was seeking a way round the difficulty by arranging, in some cases, payments to the trade association as a whole for services rendered, and allowing the association, if it wished, to make compensatory payments to 'those sections of the trade which had no function to perform in war-time' but whose services were likely to be required again in conditions of peace. It was held that the costs to the Ministry of the services they obtained from the trade association were based upon a pre-war level of profits, less that element in the profits which was based on speculative operations. To this policy the Treasury had no objection.

This process of paying an association of firms for their work, and leaving it to them to distribute part of their profits to hard-hit

<sup>1</sup> One of these special cases was the abandonment by the Government of its normal policy of abstaining from insuring its property. This abandonment, and the consequent expenditure, was due to the Treasury recognition of the importance of the insurance industry 'especially from the point of view of invisible exports and the earning of foreign exchange'. (*Report of Committee of Public Accounts, No. 105, para. 49, 30th July 1941.*)

members, had obvious attractions. It exempted the ministries concerned on the one hand from the charge that they were driving people out of business, and on the other that they were paying sums of money as compensation and were receiving no service of any sort in return. It may be that in fact the Government was making compensatory payments within the price schedules, but it is impossible to determine what part of these compensatory payments came from the profits of the firms and what part came out of the price paid by the consumer. It is known, however, that there was a very marked fall in the profits of wool and metal brokers. But sometimes certain traders were not altogether happy to see wide powers committed to a trade association: some of the independent scrap merchants, for example, viewed with misgiving the authority enjoyed by the Central Scrap Agency in its relation with the Iron and Steel Control. The critics claimed that the smaller firms 'found their way to co-operate with the Government blocked by this agency';<sup>1</sup> the Ministry of Supply, however, argued that the existing system left room for all classes of merchants.<sup>2</sup> The Timber Control worked differently, and each merchant was given a quota out of the total trade which remained; but again, though consumers criticised the procedure, it is impossible to estimate what share of the price paid was in essence a compensatory payment for the under-employment of the merchants. The same question might be raised about the Liverpool cotton merchants in the early part of the war.

When the concentration schemes came into being in 1941, experience of various forms of compensation was already available; and the system of global payments, and the redistribution of profits between closed and nucleus (i.e. open) firms, had, in this context, special qualities to recommend it. Here, unlike the case of the brokers, the Government by direct action was putting certain producers out of business. Moreover, it was quite certain that many of these firms, or at least the most efficient of them, would be wanted after the war. So the price policy, which was bound to accompany the concentration policy, allowed for compensatory payments to closed firms, and, in addition, sums of money to provide for the care and maintenance of the idle equipment. Though this naturally cost the nation money, it was economically and militarily (in terms of manpower) a more paying proposition than the methods adopted in the First World War when, without concentration, cotton mills stayed in operation on a part-time basis, with all the accompanying extravagances in the use of manpower. So the distinction, adumbrated at the

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<sup>1</sup> *Ninth Report from the Select Committee on National Expenditure, Session 1943-44*, para. 6, 16th November 1944.

<sup>2</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1944-45*, Appendix 4, pp. 12-14, 7th June 1945.

beginning of the war, between losses arising from war itself and losses which followed as the direct result of government policy in a particular trade or industry, was shown to have a wide validity in the practical problems of war production.

War and government policy, each in its own way, intervened with decisive effect upon the normal processes of trade. In these last pages we have been considering some of the things that happened to those members of the trade who were outside the control organisation, but who lived daily under the shadows of its decrees. Now we must turn to the men who had been their pre-war colleagues, and upon whom the heaviest burden of responsibility had now descended: the personnel of the controlling bodies. But before we do so we must glance briefly backward and remind ourselves how the position stood on the eve of war.

During the last years before the outbreak of war, and particularly from the middle of March 1939 when the Germans entered Prague, the plans for the control of raw materials assumed, as we have seen,<sup>1</sup> practical shape. From the somewhat abstract contemplation on a part-time basis of the economic problems of war, the C.I.D. and its satellite committees suddenly, as the result of the events of that spring, found themselves flung into the hurly-burly of eve-of-war preparations and obliged to take decisions whose influence was to extend during and beyond six years of war. What is remarkable in the circumstances is not the difficulties which flowed from such swift decisions but that the transition from peace to war was so smooth. Undoubtedly some of this must be attributed to the German abstention from aerial action against the Western Powers, as well as to the fact that we were able to rely so fully upon the normal machinery of trade. In addition, neither economically nor militarily had we yet fully entered the lists. But because so many decisions and actions had to be crammed into six critical months some decisions were in reality not taken at all: at least, proposals of primary importance were formally accepted by the C.I.D. and the Cabinet with considerable speed, but no evidence has survived of any detailed scrutiny of such proposals. One such issue, which received in the end little more than cursory examination, was that of the control structure and personnel.

Although the question whether personnel should be drawn largely from the trade under control or from the civil service had been raised long before the war, it was never officially answered. But as the links between the Board of Trade Supply Organisation and the trade associations grew closer with the increasing use of the associations in an advisory capacity, so it seemed to satisfy many practical needs to look to these organisations to provide the controller-designate. Each pro-

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<sup>1</sup> Chapters III and IV.

posed official was in turn approved by the C.I.D. as suitable for the appointment; indeed, it was this which occupied the most attention, not the fundamental problem of whether it was the right approach or not. The planning bodies were aware that there were objections to such a policy, and aware also that there were personal objections to some of the controllers elect, but their recommendation of this arrangement rested upon three assumptions. In the first place, the trade would feel greater confidence in someone who had spent his life as a colleague rather than in a complete stranger whose policy, and indeed whose whole attitude, might unwittingly run counter to the accepted traditions; secondly, a senior civil servant would in any case always be at the controller's right hand; and thirdly, the Ministry itself would exercise a dominating influence upon the controls in all matters of importance. In other words, one of the strongest basic assumptions upon which all this rested was that the controls would be executive arms and little more; policy would be made elsewhere. The first of the assumptions, namely that the trade wanted someone from amongst them at the control, had very strong support, but there is evidence that some members of the trade viewed with anxiety the translation of one of their competitors to such a position of power; the second of these assumptions, the appointment of a senior civil servant at the control, was not fulfilled at all. The third, that there would be a powerful directing body at the centre, is a very large question to which our final chapter is devoted. But this much can be said at once: imperceptibly but unmistakably the war-time controls became vastly different in form and content from the machinery envisaged in time of peace.

In one important respect, however, the controls did follow the lines laid down in the pre-war drafts, namely the employment wherever possible of the existing trade organisations to provide the nucleus machinery for control. In the case of steel, non-ferrous metals and aluminium, for example, a highly developed trade association or a company was at hand, and it was a simple move to create out of it, with slight modifications, the instrument of control. It knew all the ramifications of the trade, it was usually acceptable to the heads of individual firms and, if its writ did not in peace run right through the industry, it was fairly easy to reach a gentlemen's agreement to ensure a unification of policy. Only occasionally, as is instanced by the iron and steel scrap merchants, was the process of *gleichschaltung* resisted with any continuity and vigour. Where highly developed trade associations did not exist, the difficulties of establishing the machinery of control were in the early stages somewhat greater; but the smooth working of the Timber Control, which drew its personnel in the main from the trade as a whole rather than from the trade association, indicates that alternative methods were practicable.

Apart from these considerations, the general policy throughout the war of 'using where possible the existing channels of trade' made this approach the most acceptable one. Clearly it would have been impossible to establish a large and highly technical body of control officers from men who had hitherto had no experience of the trade, but the issue once again turns on the extent to which the controls were able to emancipate themselves from the supreme authority of the Ministry.

It implies no lack of appreciation for the work done by the Iron and Steel Control (wrote the Select Committee on National Expenditure)<sup>1</sup> the value of whose achievement in keeping up supplies under difficult conditions your Committee consider worthy of high praise, to point out that it represents essentially the personnel of the Iron and Steel Federation in government uniform.

This laconic observation was echoed elsewhere, sometimes in a more critical sense, about the other raw material controls; and it is convenient therefore at this stage to investigate the consequences of drawing control personnel from the trade they controlled. It so happens that in June 1940 the newly appointed Minister of Supply (Mr. Herbert Morrison) invited a High Court Judge, Sir Wilfrid Greene,<sup>2</sup> to examine and report on the impartiality of the raw material controls within the Ministry. Sir Wilfrid Greene devoted some two months to examining on an informal basis the character and membership of many of the Ministry of Supply raw material controls and, amongst other things, reported on this very question: whether a control derived from the trade itself could resist those various pressures from within and without which could limit its impartiality. He had 'throughout devoted special consideration to this problem', he told the Minister, 'and have formed a definite view upon it'. He had not 'regarded it as falling within my functions to call for detailed complaints about the working of individual controls'. These would have involved lengthy enquiries, which could best be dealt with by the Ministry, but he had 'paid particular attention to those aspects of the system of controls where the presence of the trade element in their organisation is most likely to give rise to friction or to involve a divergence between trade interests and the national interest'.

First he commented on the adoption of existing trading machinery within the framework of the raw material controls. 'If the existing structure of a trade had been disregarded and a different organisation substituted much dislocation and loss of efficiency would undoubtedly have resulted'. The controls could not have operated effectively

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<sup>1</sup> *Fourteenth Report from the Select Committee on National Expenditure, Session 1942-43*, para. 180, 4th November 1943.

<sup>2</sup> Master of the Rolls and subsequently Lord Greene.

without a knowledge of the techniques, and 'as a matter of primary urgency, a knowledge and appreciation of the personalities of those concerned in the trade.' Nor could this knowledge be acquired in a few months, 'or indeed, in many cases, in a few years'. He very much doubted whether a civil service organisation could have been built up before the war to take over the functions of control. 'I am satisfied that at this stage in the war it is quite impossible to do so.'

He had also considered how far a joint control, consisting of a business man drawn from the trade and a civil servant, could be expected to carry out its tasks. Again the conclusion was categorical. 'I am satisfied that a form of dyarchy of this character would be most unsatisfactory.' Decisions at the control would have to be taken on the basis of the best technical knowledge available. The civil servant would thus be dependent on the business man, and would merely provide a 'fifth wheel to the coach'. In the process he was bound to slow up the work, particularly as he would obviously differ from the business man in training and outlook. If, however, it was for questions of policy that the civil servant was wanted, then policy should be made at the Ministry and not at a series of scattered controls. In other words, providing that the controllers received their instructions on policy from headquarters, a headquarters working in close and friendly liaison with the controls, as now appeared to be the case, then the civil servant was not wanted at the controls but at headquarters.

Lastly, Sir Wilfrid Greene had asked himself two questions. How far were controllers sacrificing the national interest either to the interests of their trades or of their friends? In answer to the first, he reported that there was evidence that consumption in less essential trades had not been cut as drastically as it might have been had the future been foreseen, and there was also a certain reluctance to divert trade from its normal channels. But for this, he argued, the blame could not be laid at the doors of the executive controls but of the high policy makers in London. Indeed, he had been impressed 'by the way in which they (the controls) have been able to sink sectional and trade interests'. Secondly, as far as 'favouritism' was concerned, he found that the charge could be dismissed as without foundation: the welfare of the 'small man' was safe in the hands of the control. He had looked at a number of files of complaints, but had formed the impression that they arose largely from incomplete possession of the facts. His final remarks on the subject carried the same emphasis as his earlier comments:

I strongly recommend that no attempt should be made to introduce any drastic changes in the present system under which individual raw materials controls are operated through controllers recruited from the trade working in liaison with the headquarters staff of the Raw Materials Department.

This, in brief, was the opinion of an eminent judge about the dangers of partiality in the raw material controls, now coming to the end of their first year of existence. From time to time, before and after this examination of controls, the question of impartiality and related matters had been ventilated. The Government's 'Adviser on Economic Co-ordination' (Lord Stamp) had, within two months of the outbreak of war, received various complaints:

I have been told, for example, that in shipping all those in authority in the control are drawn from one class in the industry, and that certain classes of small owners are being ground or squeezed out; in *wool* that the territorial partiality is most marked, and London is to be obliterated as a raw material market; in *non-ferrous metals* that everything will now go through one firm and so on.

At a meeting soon afterwards he observed that 'complaints were being received regarding the alleged lack of impartiality on the part of controllers', and urged that the allegations should be investigated. 'If they were ill founded, the public should be reassured; if they were well founded, severe action should be taken'. With reference to this, the Permanent Secretary of the Ministry of Supply pointed out at the same meeting that war had inevitably caused dislocation and losses in some trades, particularly amongst importers whose trades had been brought under control. But in cases where dislocation or loss seemed inevitable, a control 'normally took important decisions only after consultation with trade associations' and the effect of this 'was often to provide a satisfactory answer to criticisms'. Lord Stamp had meanwhile thought it necessary to draw attention 'to the fact that whenever a control plan expressed a principle of action that principle appeared to be a maintenance of the relative *status quo ante* of parts of the industry, and that this might sometimes not coincide with the national interest'. But this was a familiar feature of the first stages of control, as we have seen elsewhere in this narrative, and marched in step with the contemporary doctrine of causing the minimum dislocation of trade.

The Committee of Public Accounts was more immediately concerned with what it called the problem of 'dual capacity', the appointment to control offices of men who retained their business posts. The committee advised that this practice should wherever possible be avoided. Where in rare cases a special argument could be submitted for a dual appointment, 'the arrangements as to the conduct of their official duties must be such as the Minister could defend to the House of Commons, the Public Accounts Committee and the public generally'.<sup>1</sup> In fact, this type of appointment was extremely rare at the raw material controls. But the committee also drew attention to the fact that the staff of the Iron and Steel Control was paid not

<sup>1</sup> Report from the Committee of Public Accounts, No. 105, 30th July 1941, item 3.



by the Government but by individual firms or by a trade organisation, the British Iron and Steel Federation; and the staff of the Non-Ferrous Metals Control was paid by the British Metal Corporation, which received a fee from the Government.<sup>1</sup> This arrangement was modified early in 1942, and the officials of these controls received appointments as temporary civil servants.

Granted the principle that the raw materials controls could best be staffed, in the interests of the war effort, by officers drawn from the trades under control, the organisations were bound to display the many advantages, as well as the potential disadvantages, which this approach entailed. It is none the less significant that, amongst the records of the Ministry of Supply, little evidence has been found to show that these conditions evoked from either civil servants or members of the public any volume of criticism. Much of the criticism, as the Select Committee on National Expenditure observed in considering the Chemical Controls in 1944,<sup>2</sup>

has been of the vague kind which is content to imply that, because the staff of the controls have been recruited from the trades and industries they now control, they must be influenced in their actions by their business connections. In view of the foregoing account of the narrowly defined responsibilities of the [chemical] controls and of the conditions of appointment of their staffs, very little weight can attach to such broad generalisations. It can safely be said that much of this criticism arises from ignorance of the true position of the controls within the governmental organisation—a state of mind which is perhaps encouraged by the title controller with its suggestion of dictatorial powers.

Here and there one finds criticisms of individuals. One officer of a raw material control said, early in 1942, that the member of his staff charged with the task of increasing output ‘continued to assert in effect that nothing more could be done’, and it became increasingly obvious that, while he remained in his post, ‘nothing would in fact be done’. The explanation for this lay in

the simple reason that he did not want any steps to be taken except such as would strengthen his own position or that of his own companies; further, the other companies were clearly reluctant to disclose their position and plans in any comprehensive way to [him.]

In another case allegations were made against an official of one of the Chemical Controls, but an examination conducted by an independent investigator found the allegations unjustified.<sup>3</sup>

<sup>1</sup> In this connection see also *Ministry of Supply Appropriation Account, 1939, No. 39*, 28th January 1941, pp. 4 and 5.

<sup>2</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1943-44*, para 8, 2nd November 1944.

<sup>3</sup> *Ibid.*, para. 1; *Eighth Report from the Select Committee on National Expenditure, Session 1944-45*, Appendix 3, p. 10, 7th June 1945.

Larger issues were raised in the investigation of the Chemical Controls by the Select Committee on National Expenditure in 1944, to which the Ministry of Supply replied in March 1945. The general and vague criticisms of these controls were quickly dismissed by the Select Committee in the passage we have already cited. It now turned to certain specific criticisms, namely:

- (i) that existing capacity has not been fully used;
- (ii) that new capacity has not been distributed to the greatest advantage;
- (iii) that technical skill and facilities for research and development have not been sufficiently widely drawn upon;
- (iv) that attempts to concentrate the paint industry have not been properly carried out.<sup>1</sup>

The first charge, that the available capacity was not being fully used, that some firms were getting orders and others not, which implied favouritism, the committee showed could easily be met by the evidence: shortages of certain raw materials, or of shipping from time to time, had obliged the controls to turn to those firms which used certain processes and certain materials, and to withhold orders from other firms which did not. Yet, while accepting this evidence, the committee felt that the fullest explanations, within the limits laid down by security, should be given to firms. It commented that the fact that

the firms in question appeared not to be aware of these explanations and continue to harbour a grievance against the controls suggests that more account should be taken of the point of view of the manufacturer who feels that his desire to help the war effort has been frustrated.<sup>2</sup>

The Ministry of Supply claimed that its object always had been to give the fullest information possible to the firms with which it dealt.<sup>3</sup> On the second point, the committee found that in the manufacture of a certain product (Perspex) the contract was given to one firm with considerable experience and capacity for the purpose, but no other firm was brought in to make its contribution:<sup>4</sup> in reply to this the Ministry of Supply argued that 'for meeting war-time demands production must be the first consideration' and stressed the advantages

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<sup>1</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1943-44*, para. 9, 2nd November 1944.

<sup>2</sup> *Ibid.*, para. 11.

<sup>3</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1944-45*, Appendix 3, pp. 10-11, 7th June 1945.

<sup>4</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1943-44*, paras. 13-14.

of making full use of firms of 'known and tested capacity and efficiency'.<sup>1</sup>

Under the third head, the committee referred to the failure to grant a single research contract to 'one of the largest firms in the industry and a leader in one field of organic chemistry'; but this was attributed by the Ministry to 'the suspicious attitude of this firm' and their unwillingness to allow Ministry representatives 'free access to their works'.<sup>2</sup> Lastly, the committee drew attention to the two abortive concentration schemes for the paint industry, drawn up by the Board of Trade in consultation with the Ministry of Supply, which would have borne very heavily upon the smaller firms as compared with the larger firms, and which produced therefore strong resistance from the smaller firms. When this led to the abandonment of the scheme it was alleged that many of these smaller firms 'were discriminated against in regard both to the protection of their labour and to their obtaining of government orders'.<sup>3</sup> Against this the Ministry of Supply, while contesting some of the details, pointed out that, in selecting nucleus firms for the concentration scheme, 'the criterion was the ability to produce efficiently paints of proved performance in adequate quantities for the country's war effort. The size of the firm was in no case taken directly into account; in fact a substantial number of the recommended firms employed less than ten workpeople'.<sup>4</sup>

The committee mentioned also 'a large volume of complaint from one firm in particular', whose allegations could best be dealt with by 'a properly qualified tribunal with power to hear parties by counsel';<sup>5</sup> but the Ministry of Supply, on approaching the firm in question, was informed that it 'did not desire to make any allegation or complaint against the Ministry of Supply or any department or officer of it'.<sup>6</sup> And there the matter had to rest.

Finally, we must consider two general observations made by the committee about the work and future of the Chemical Controls. About their work it said:

On the whole, the operation of the Chemical Controls has tended to strengthen rather than diminish the preponderance of the strongest

<sup>1</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1944-45*, Appendix 3, p. 12.

<sup>2</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1943-44*, paras. 15-17, 2nd November 1944; *Eighth Report, Session 1944-45*, Appendix 3, p. 11.

<sup>3</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1943-44*, para. 22, 2nd November 1944.

<sup>4</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1944-45*, Appendix 3, p. 9, 7th June 1945.

<sup>5</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1943-44*, para. 25, 2nd November 1944.

<sup>6</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1944-45*, Appendix 3, p. 10, 7th June 1945.

interests in the chemical industry. This tendency is to some extent inevitable in time of war. Though it is undeniable that the vast resources of the interests in question have been of the greatest service in the national effort, there is a danger that too much reliance may be placed on the strength of a single concern.<sup>1</sup>

In reply, the Ministry of Supply, as we have already seen, explained that production policy must in war-time rest upon the best productive resources, to which all other issues must take a subordinate place.<sup>2</sup> Secondly, the committee recommended that consideration be given to the absorption of the Chemical Controls into the Raw Materials Department of the Ministry of Supply;<sup>3</sup> but the Ministry replied that, while controls would be relaxed as soon as possible, the work of the Chemical Controls was still too vast, complex and commercial in character to be efficiently absorbed into R.M.D.<sup>4</sup>

One important aspect of controls, which had come up for discussion in the controversy over the Chemical Controls and was also of much wider significance, was the use of advisory committees. In essence the question was how far could a raw material control, endowed with the fullest authority of defence regulations and a government department, contrive none the less to keep its finger on the pulse of the most insignificant trading concern at the farthest distance from the centre of control. In part this was met by the structure and personnel of the controls themselves, to which we have referred more than once in this narrative. The controllers and their staff came from industry and trade and could be expected to sense quickly, thanks to their long years of experience in their trades, the reactions of their former colleagues; though contact was perhaps less intimate where, as happened particularly in the larger controls, the leading figures were drawn from the captains of industry rather than from non-commissioned officers and other ranks. In part also the need could be met by devolution. A number of controls established area offices at key centres of production or consumption. In addition there were the advisory committees or panels.

These advisory committees varied so much in power and performance that it is impossible adequately to cover them by any generic term. Some had to play an important part, particularly where the material was not controlled, or where only voluntary controls were in operation. But to establish an effective advisory committee, or group

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<sup>1</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1943-44*, para. 26, 2nd November 1944.

<sup>2</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1944-45*, Appendix 3, p. 12, 7th June 1945.

<sup>3</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1943-44*, para. 7, 2nd November 1944.

<sup>4</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1944-45*, Appendix 3 pp. 8-9, 7th June 1945.

of committees, was not always easy. For example, at the beginning of the war cork was uncontrolled. The main consumers of cork fell into about six separate divisions with little contact with one another, while the existing trade associations for each of these sections were neither strong nor fully representative of the whole of their trade. After two years of war the supply position of cork was critical and stocks in this country were low. A voluntary control was accordingly established through the machinery of the Cork Federation Ltd., consisting of directors of various cork firms. An improvement in the situation was soon noticeable in that for the first time detailed statistics from the whole consuming industry started to come in, and R.M.D. began therefore to obtain a framework within which it could calculate national requirements. But these efforts proved a prelude, though an important one, to the erection of a full statutory control which had become essential by February 1942. On the other hand, the Platinum Control seems to have rested securely on the close consultation of an informal advisory committee throughout the war, and the control remained a voluntary one for the whole period of its existence.

When we turn to a highly critical group of materials, the light alloys, we see some of the disadvantages of voluntary control. In the early months of the war there were in fact four controllers operating on a voluntary basis over the four main divisions of the industry: sheet and strip, extrusions, castings and forgings. These controls had no central office from which to operate, but each was established in the office of the individual controller's works and was largely staffed by his employees. Each controller evolved much of his own policy and practice: one favoured as little intervention as possible in industry, another wanted, so far as practicable, to allocate all orders. Meanwhile the supply position of light alloys deteriorated, and in January 1940 the Society of British Aircraft Constructors adopted the resolution that:

The Society view with the greatest alarm the present organisation for dealing with the control of light alloys and would ask for immediate steps to be taken to reorganise and strengthen the control so that the most effective distribution is made of the present supplies of light alloys.

In May 1940 the voluntary controllers were succeeded by a statutory control under a single controller. Thus, when a material was critically scarce, no voluntary control and no advisory committee could be adequate to meet the situation. Nothing short of a statutory control would do.

The Iron and Steel Control displayed probably the greatest success in the utilisation of advisory committees, which the Select Committee

hoped 'might be capable of wider adoption'.<sup>1</sup> Part of the British Iron and Steel Federation had migrated to the Control, but a nucleus federation had survived and could be consulted; while each directorate within the Control also called freely upon the services of advisory committees drawn from the trade. The Cotton Control drew heavily upon its advisory committees, and, in addition, there was the Cotton Control Board which, apart from its tasks of stimulating exports in the earlier part of the war, kept the Control in touch with changing conditions and opinions in the industry. Not only were advisory committees needed in the evolution and transmission of production and consumption policy: they were needed for technical advice as well. Most controls sought contacts either with committees or with other organisations where matters of pure technique arose. The Rubber Control, for example, maintained a close relationship with the Technical Advisory Committee of the British rubber trade associations. The Timber Control worked with the Forest Product Research Association, and so on. Within R.M.D., as we have seen, there was a special technical division, and for the Ministry of Supply as a whole there was a Department of Scientific Research (including a Controller of Chemical Research, advisory services on various materials and a superintendent of technical application of metals).

The difficulties which faced a controlling organisation, which was unable to secure staff with the technical knowledge or to obtain adequate technical advice, were indicated in the early history of home flax production. What was virtually a new industry had to be built up with untried methods of production; and in this connection the Select Committee on National Expenditure observed:<sup>2</sup>

Both before and after the setting up [in April 1941] of the Directorate [of Home Flax Production] there does not seem to have been anyone at headquarters who had any previous knowledge of flax production. . . . Technical decisions had, therefore, often to be taken by men with no technical knowledge and no regular means of receiving technical advice.

It went on:

Your Committee are convinced that, if the fullest success is to be obtained, there must be a reorganisation of the Home Flax Production Department. Although those concerned have worked with great energy, nevertheless it is clear that they have failed to obtain the confidence of many in the industry.

But there were limits to the use of advisory committees. Such committees were established, said the Ministry of Supply, when speaking of chemicals,

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<sup>1</sup> *Eighth Report, Session 1941-42*, para. 27, 26th March 1942.

<sup>2</sup> *Fifth Report, Session 1942-43*, paras. 22 and 24, 25th March 1943.

to advise the controls and were not intended to act as a channel for the dissemination of information throughout the industry. Their members are not delegates; they serve in a personal capacity and much of the information imparted to them is confidential.

Close contact should be maintained with individual manufacturers and representative trade associations since 'it is in this way, rather than through the advisory committee procedure, that the industries' confidence in the administration of the controls has been maintained'.<sup>1</sup>

So by staffing the controls from the trades under control, and by maintaining personal contacts with the trade and with advisory committees, the Government built its raw material control system squarely into the existing economic fabric of the country.

Broadly speaking, (observed an historian of the First World War),<sup>2</sup> it is a safe generalisation that things went most smoothly when the trade ran itself, and when control was exercised by an expert in the trade who was known and respected; and least smoothly when ruthless economy was aimed at, to the neglect of usual trade channels and established expectations of a reasonable livelihood.

This lesson from the First World War the planners of the Second World War clearly learned. The comparative smoothness of the transition from peace to war, and the general good humour with which the controls were able to perform their thankless tasks, paid tribute to the efficacy of the doctrine upon which the control structure was built. But some of the advantages which flowed from so practical an approach could not entirely cancel some of the disadvantages which tended to accompany them.

Upon all controllers the burdens of their war-time tasks imposed enormous strains, not simply upon their normal feelings of loyalty to their colleagues in the trade, but upon their whole training and outlook. 'I am compelled to do the opposite to what I have been doing all my life', observed one controller to the present writer. 'In the past my tasks were to persuade people to consume the maximum quantities of my material; now I must compel them either to consume the minimum or do without it altogether.' In like vein another controller remarked that, thanks to his official duties, he had now become the most unpopular man in the trade. The tendency in some controls, particularly in the early part of the war, to base releases of material on a percentage of pre-war consumption rather than solely on the basis of war-time requirements, was perhaps an understandable

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<sup>1</sup> *Eighth Report from the Select Committee on National Expenditure, Session 1944-45*, Appendix 3, p. 11, 7th June 1945. On one occasion the Flax Controller claimed the right to divulge certain information to his advisory committee, since if he was not allowed to, the committee lost its real validity as an advisory organ.

<sup>2</sup> E. M. H. Lloyd, *Experiments in State Control* (1924), p. 367.

means of coming to terms with the trade. 'Whenever a control plan expressed a principle of action', observed Lord Stamp in the passage already cited,<sup>1</sup> 'that principle appeared to be a maintenance of the relative *status quo ante*'. 'This', he added, 'might sometimes not coincide with the national interest.' So far as the present writer is aware, there is no evidence that any controller consciously sacrificed the national interest to the maintenance of the pre-war structure of his industry or to the welfare of individual firms. But the whole system of recruitment, and the whole organisation of the control machinery, were inherent in the existing architecture of the trade under control. It would, indeed, have been illegitimate for any controller to have used his enormous powers to try to destroy the framework of a trade which had nurtured him and taught him his craft. The whole system inevitably rested on the industrial *status quo* and, it was hoped, this would also make the transition from war to peace relatively smooth. To consider what might have happened had controllers *not* been drawn from the trade and *not* been conditioned to maintain, where practicable, the raw material trades in their pre-war pattern, would be to enter into the field of speculation. What is an historical fact and of historical significance is that the Second World War was fought on the basis of employing to the maximum the ordinary channels of trade.

Whatever controversies may rage in the future about the use of trading elements in raw material controls, one central question is relevant to all such controversies. 'The primary defect of the present system which I have noticed', wrote Sir Wilfrid Greene in August 1940, 'is the absence of a focusing point in the Raw Materials Department itself for consideration of the interrelated or comparable problems of the various controls.' 'The controls', reported the Select Committee on National Expenditure in November 1944, 'are the hands, eyes and ears of the Raw Materials Department, and the controllers do everything except control.'<sup>2</sup> If this epigram enshrines a truth, and if the controls were in fact only the hands, eyes, and ears of a government department, then at this stage we must ask: where was the brain behind the hands, eyes and ears? Who controlled the controllers? This question has been reserved for the final chapter.

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<sup>1</sup> See above, p. 395.

<sup>2</sup> *Eighth Report, Session 1943-44*, para 3, 2nd November 1944. The report dealt with the chemical controls, but the definition could be extended over a much wider range.



## CHAPTER XXV

# THE MACHINERY OF CONTROL

**T**HE enormous and increasing powers which the controllers exercised over the acquisition and use of raw materials attributed to them the illusory characteristics of enlightened despots. In fact, as the Select Committee on National Expenditure pointed out,<sup>1</sup> the very term controller savoured, in the public mind, of dictatorship. This notion lay far from the design and practice of the Government. The controllers were cogs in a great and complicated machine, and the functions of direction and control were exercised in a variety of ways by a variety of organisations. Of course, the controllers were extremely important. But so were the Raw Materials Department, the Materials Committee, the Ministry of Production and the Combined Raw Materials Board, to mention but the principal authorities amongst which the powers of control were shared. If we first survey briefly how the controlling authorities were organised, we shall then be in a position finally to consider to what extent they were themselves co-ordinated into the economic policies of the war.

The controllers organised their offices as their commodities and the times determined. But for most materials we can see the same broad divisions into which the control fell: that charged with the *acquisition* of materials, which might be further sub-divided into a production and a purchasing branch; that charged with distribution, or as it was normally called, the *licensing* section; a *statistical* division; and, in the larger controls, an *establishment* division. Again there might be further sub-divisions. The production section of the Iron and Steel Control comprised a series of directorates running parallel with the main branches of the industry: home ore, imported ore, pig iron, tinplate, and so on. In the case of timber the organisation responsible for home production, after a very chequered existence, emerged as a fully fledged directorate, virtually independent of the Timber Control. In the larger controls the various sub-divisions were under deputy controllers, assistant controllers, directors and other senior officials, and displayed all the characteristics of a government department in miniature, or of a highly developed trading concern. The smaller controls went about their business with greater informality. For the

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<sup>1</sup> See above, p. 396.

most part the controls had their headquarters in the provinces, with London and area offices where necessary.<sup>1</sup>

So much for the present about the executive arms of the Ministry of Supply. The will which operated these executive arms was, according to the blueprints, in London. We have spoken throughout this volume of the Ministry of Supply, a phrase which has normally been used elliptically to cover only that part of the Ministry of Supply which was responsible for raw materials, in other words the Raw Materials Department. It lived cheek by jowl with the production division of the Ministry of Supply, but to all intents and purposes they were separate ministries which happened to have the same ministerial head. They also had the same official head in the Permanent Secretary of the Ministry of Supply; but below him R.M.D., under a second secretary, lived an autonomous existence and its officers had only limited official contacts with their colleagues in the production division. The establishment branch of the Ministry served both divisions, but for statistics they went their separate ways.

Under the second secretary (R.M.) there was an under-secretary and a number of principal assistant secretaries, each responsible for a group of commodities (R.M.1, R.M.2, R.M.3, R.M.4); in the autumn of 1941 a further division, R.M.5, was created to deal with 'general policy' matters and problems which were common to several or all of the commodity divisions. At first a separate branch (R.M.F.) dealt with financial matters throughout the Raw Materials Department. But at the beginning of 1942, to avoid both duplication and the division of powers, its work was absorbed by the assistant secretaries of the commodity branches, while a director and deputy director of finance remained responsible for policy and co-ordination in this field.

Below the principal assistant secretaries there was the usual complement of assistant secretaries, principals, assistant principals and officers in the executive and clerical grades. This was the organisation designed to transmit ministerial policy to the controls and to carry back to the Minister the information and advice proffered by them. But in addition to this R.M.D. was itself the 'controller' of some commodities. Where the measure of control over supply and distribution was limited in scope and only a modest amount of executive action was required, it was obviously not worth the effort and expense to erect a control office with all the apparatus that that involved. So R.M.D. itself acted as 'controller' until such time as the amount of executive work had increased sufficiently to make a full control essential. For a period R.M.D. acted as the 'controller' of rubber, industrial diamonds and many less important commodities; and for a number

<sup>1</sup> For a valuable discussion of various types of control see *Lessons of the British War Economy* (ed. D. N. Chester) (1951).

of materials, such as glue and lactic casein, it remained 'controller' throughout the war. Within R.M.D. the Directorate of Sundry Materials, established in September 1941, assumed many of the functions of control over a number of the less important materials for which no controlling organisation or specific branch of R.M.D. existed.

When we come to the Materials Committee we leave, in theory, the internal organisation of the Ministry of Supply. But for the first two years of its existence this inter-departmental committee relied upon the administrative services of the Ministry of Supply, whose Parliamentary Secretary was its first chairman. Its functions were essentially advisory, the decision in fact resting with the chairman; but it was possible to appeal against his decision to the higher authority of the committee of ministers, to which he made his report. This started life as the Ministerial Priority Committee; it gave place to the Production Council in May 1940, and in December 1940 its membership was reduced and its authority stiffened, when it took shape as the Production Executive. In March 1942 its powers were taken over by the Minister of Production, and the Materials Committee finally parted company with the Ministry of Supply. The functions of the Materials Committee were, as we have seen,<sup>1</sup> to allocate commodities which were scarce, or in danger of becoming scarce, and to supervise the various economy sub-committees which existed under its ægis.

Meanwhile Anglo-American supply relations, which had been of growing importance before Pearl Harbour, grew much closer as the effects of that event became manifest. The opportunity and the need now existed for the pooling of the fighting resources of the Allies and for the close co-ordination of their production programmes. In February 1942 the Combined Raw Materials Board was accordingly set up in Washington. This was one of the celebrated 'two-men boards', in this case the British Minister of Production and the American chairman of the War Production Board, both of them acting through deputies. C.R.M.B. was made responsible for allocating between the nations of the non-Axis world the available supplies of critical raw materials and for enlarging, as might be necessary and possible, the amounts or the areas under production.<sup>2</sup> Not every critical material, however, was brought under the close surveillance of the C.R.M.B.<sup>3</sup> In June 1942 the Combined Production and Resources Board, again under the same ministerial heads, was established to co-ordinate the production activities of the two countries. These bodies proliferated a

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<sup>1</sup> Above, pp. 90-91 and p. 363.

<sup>2</sup> Cmd. 6332, January 1942.

<sup>3</sup> See above, page 296 *et seq.*

series of sub-committees in Washington and London, from which there flowed a constant stream of information and decisions in both directions across the Atlantic.

On the basis of this very brief sketch of some of the instruments of control we may enquire into the co-ordinating and directing policy to which they were subjected. The Board of Trade Supply Organisation which chose the controllers-elect naturally endeavoured, as we have seen, to obtain the men enjoying the greatest authority within the trade for ability, strength and integrity. Usually the controllers were themselves senior members of firms, while in the case of Sir Andrew Duncan, who became Controller of Iron and Steel, they chose one who knew the industry well but who, at the same time, had no vested interest in it and had already worked closely with both the industry and the Government as independent chairman of the British Iron and Steel Federation. He became at once Controller of Iron and Steel and chairman of the controllers, and shortly afterwards, in succession, President of the Board of Trade and Minister of Supply. The Controller of Non-Ferrous Metals, Mr. Oliver Lyttelton, admittedly did not occupy a similar position of independence in the non-ferrous metals industry, but his reputation made him acceptable both to the industry and the government department concerned and destined him in due course for high office in the Coalition Government. A number of the other controllers enjoyed a prestige within their own spheres only less in importance to the Controllers of Iron and Steel and Non-Ferrous Metals. They were all men of considerable stature and wide experience and well used to the exercise of authority in time of peace. But what was to ensure that men of such distinction and enjoying such wide powers in time of war would invariably derive their policies from the government department of which they were servants? Two things, said the pre-war planners: a liaison officer at the controls and the fullest exercise of policy-making powers by the Ministry rather than the control.

The liaison officer was obviously a pivotal person who was intended to help the controller as his counsellor and friend, not simply through the intricacies of departmental routine, but in cases where major policies were at issue. Civil servants were indeed attached to each of the controls, but, in the event, were selected from the rank of staff officer or senior staff officer, a division within the government service noted for the sound and efficient supervision of clerical staff but not normally expected by either training, rank, temperament or appetite to provide mentors to men of such seniority as Sir Andrew Duncan or Mr. Oliver Lyttelton. The staff officers concerned were of enormous help in ensuring that the offices were properly supplied with their needs and that the system of correspondence was brought into line with departmental procedure but, as Sir Andrew Duncan

himself observed, 'full effect had not been given to the original intention that a civil servant of standing should be associated directly with each controller'. For the kind of assistance which such a civil servant might have rendered, the controller had to look beyond his control to the responsible officer of the Raw Materials Department.

In theory each controller received his instructions from the Minister of Supply, who transmitted them to him through the medium of the administrative officials of the Raw Materials Department. The official concerned might be anyone in the hierarchy from the permanent secretary to the assistant principal at that moment dealing with the material under consideration. Often the controller would for matters of major policy deal with the permanent secretary (as the Minister's principal official adviser) or the Minister himself, while other officers of the control dealt with civil servants of lower rank. In practice, however, the bulk of the day-to-day work and a good deal of the planning devolved upon an assistant secretary or principal, and all officers of the control would tend to deal with them. But by the very nature of established policy these administrative officers, whether temporary or permanent, were not experts in the trade under control: indeed they might the preceding week have been dealing with an entirely different material, or might shortly thereafter be transferred to another branch in which no raw materials at all were involved. The control officials therefore looked for guidance and direction to administrators whom they felt they were at the same time instructing in the elementary economic and technical principles of their industries. They were obliged nevertheless to go to them, particularly where financial issues were involved, since contact with the Treasury was only possible through R.M.D. None the less the controls tended to assume as time wore on a far greater measure of independence, especially as the gathering momentum of war in any case determined that they should enjoy much greater powers. To these tendencies the events of June 1940 gave an added stimulus.

In that month the French surrendered to the victorious German armies and Britain alone stood between the Nazis and final victory. Under the double threat of invasion and aerial bombardment the evacuation of government departments began in earnest. The Raw Materials Department migrated to the quiet county town of Warwick, and within its ancient castle (and the adjacent hotels) the department prepared to make its last stand. But the duality of control, with powers unevenly and indefinitely distributed between R.M.D. and the controls, now became more manifest. While the bulk of R.M.D., from principal assistant secretaries downwards, went to Warwick, the under-secretary (R.M.), the second secretary (R.M.), the permanent secretary, the whole of the production section of the Ministry

and the Minister himself remained in London.<sup>1</sup> So that, although as the crow flies the officers in Warwick were now much nearer to their controls, to the Iron and Steel Control at Ashorne Hill,<sup>2</sup> the Non-Ferrous Metals Control at Rugby, the Timber Control at Bristol and all the controls situated in the north, in effect the contact became more remote. This was the period when it was necessary to get supplies and get them quickly; to take decisions at once at the control rather than prepare elaborate memoranda for Warwick Castle. If consultation was necessary, then a telephone call to London might achieve quicker results than one to Warwick, particularly as the fountain of all authority was still in the capital. Some ministers, whatever their department and especially those recently recruited to politics from other spheres, were no admirers of the time-honoured machinery of the British Civil Service, and felt bound to take decisions with the speed which the hour required. It was perhaps inevitable that ministers, the times being what they were, should settle issues without their being invariably submitted all the way up and down the Jacob's ladder of their ministry. This was the time when the measure of a man's stature was taken by whether he 'got things done' not by the decorum with which he did them. The controllers were, moreover, now a year older and more experienced: they 'knew the ropes'; and, with one or two extremely interesting exceptions, they were able to do their work without infringing the letter of old-established routine. Even where they were guilty of administrative peccadilloes there was always the reasonable hope of absolution from higher authority. After June 1940 then, the controls gained in power and independence. The year 1941 marked the high tide of their strength, achieved perhaps at the expense of co-ordination. The Raw Materials Department continued to be responsible for their general supervision, but the major controls tended to treat it more as a benevolent neutral or loyal ally than as a supreme overlord. The implicit question—who shall control the controllers?—was still without any answer.

It is instructive in this connection briefly to compare the structure of controls in the Ministry of Food with those considered in this narrative. As in the case of the Ministry of Supply, the Ministry of Food was obliged to lean heavily upon the trades under control to ensure the smooth execution of its policy. It was inevitable also that the trade should supply a large part of the personnel of the individual food control organisations; but in each case, as far as that Ministry

<sup>1</sup> Some branches, notably those dealing with timber and rubber, returned to London soon after.

<sup>2</sup> Indeed, Ashorne Hill had been selected before the war for the Iron and Steel Control (and the property had been purchased by the British Iron and Steel Federation) because of its proximity to Warwick where R.M.D. was to establish itself in the event of evacuation.

is concerned, it was maintained that the controls were ultimately answerable to a civil servant (an assistant secretary) both in matters of policy and of finance.<sup>1</sup> In accepting this assurance the Select Committee on National Expenditure stressed, however, that:

It does not necessarily follow that, in the long run, the ordinary business outlook will in all cases provide the best guidance for achieving the public purposes of the Ministry. It appears to us that the essential point is that there should be a clear distinction of functions. Policy and general plans for achieving it should be clearly settled by the Minister and his civil service staff.<sup>2</sup>

In its reply to these recommendations the Ministry of Food once again stressed that there existed a 'clear distinction of functions between trade directors and administrative staff', and emphasised that the directors were the executive officers carrying out the policy of the Ministry.<sup>3</sup>

While the powers of the controls were increasing, the office of Chairman of Controllers, established at the beginning of the war, had lapsed since January 1940 with the departure of Sir Andrew Duncan to the Board of Trade. The office was revived in April 1942 in a somewhat different form as the Directorate-General of Controls; but it was not clear what functions the Director-General was supposed to perform. The post lapsed in June 1945. For the rest the task of co-ordination devolved upon the under-Secretary (R.M.) and the second secretary (R.M.), and under them upon a special branch of the Ministry (R.M.5). But R.M.5 was collateral with the commodity branches (R.M.1-R.M.4), not superior to them in a manner to be able to enforce co-ordination. Their brothers in the department regarded them as equal in rank but less than equal in *expertise*: proposals tendered upon the basis of general principles sometimes foundered upon the rocks of impracticability as applied to individual commodities. Some measure of co-ordination was however achieved in that R.M.5 was concerned with import programmes, relations with the United States and other matters which had to be linked with some wider scheme; but these very problems often diverted the planning energies of the officers concerned from general principles to the details of executive action. There remained then within the Raw Materials Department two senior officers, the under-secretary and the second secretary, to direct the department, co-ordinate the con-

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<sup>1</sup> *Fourth Report from the Select Committee on National Expenditure, Session 1939-40*, para. 51, 7th May 1940.

<sup>2</sup> *Ibid.*, para 52.

<sup>3</sup> *Eleventh Report from the Select Committee on National Expenditure, Session 1939-40*, Appendix 4, Item 3, 8th August 1940. A full discussion of this question will appear in R. J. Hammond's forthcoming volume on food administration.

trols, and advise the Minister on both general and special issues. But at no time was it evident that they were provided with adequate planning or administrative staff, engaged in preparing material upon which they could reach their decisions on the broader problems which had arisen or which could be anticipated. The statistical branch of the Raw Materials Department was its Cinderella, and at no stage of the war was it adequately supplied with suitably equipped staff in the upper levels. It was accordingly neither used nor properly provisioned by other branches.

A different approach to co-ordination was made in the autumn of 1941. Under the Director-General of Programmes for the whole Ministry there were appointed three directors: a Director of Intelligence, to survey the world supply situation with special reference to Ministry of Supply requirements; a Director of Planning, to be generally responsible for supervising future programmes of capacity, machine tools, labour and raw materials; and a Director of Statistics. The Directorate of Intelligence was still-born. The Directorate of Planning was, early in 1942, shorn of its responsibilities for machine tools and raw materials and changed its title to the more innocuous one of Directorate of Statistical Enquiries. The Directorate of Statistics was concerned only with production statistics: those for raw materials came under a branch of the Raw Materials Department. R.M.D. appears thus to have emerged from this experience intact.

The difficulties of fully co-ordinating and directing so diverse and powerful a group of controls proved insuperable. Some of the controls were inevitably so powerful and so intimately conversant with the industries they controlled as to render impracticable, and sometimes undesirable, close control from London. With the lesser controls the pattern was different and R.M.D. seems to have had much more authority over both policy and practice. Throughout the field of raw materials the important functions of allocation, procurement with government money and price control could not have been achieved without R.M.D. using its power and opportunities to ground policy on national, rather than sectional, interests. Sir Wilfrid Greene's report, to which extensive reference has been made in the last chapter, paid tribute to the harmonious and profitable relationship between the controls and R.M.D., while drawing attention, as we have seen, to 'the absence of a focusing point in the Raw Materials Department itself' for linking up related problems. But he was strongly against any notion of what he called a 'super-controller of all controls'. What was needed was a 'central section' in R.M.D. Such a central section (R.M.5) did in fact come into being and it handled the task of co-ordination, particularly in inter-departmental and Anglo-American matters, with tact and skill. But co-ordination and *direction* are two different things; and it is not clear that at any stage



in the war the writ of the Ministry ran unchallenged throughout the whole field of its controls.

We must now examine the question of co-ordination from a different viewpoint: inter-departmental control. As supplies of scarce materials declined, it was inevitable that departments should compete with greater vigour. This threw into high relief the critical issue: where was the final authority to determine which demands must be satisfied and which not. Originally this authority appears to have resided in the controls, which, with the help of the Raw Materials Department, gave through their licensing system final judgement as to essential needs. Yet these in fact were voluntary or involuntary acts of supererogation. The executive arm of the Government had not originally been intended to be its directing will. If we look at the raw materials situation during the critical spring of 1940 we are struck by a certain disharmony within the controlling machinery. Each controller was, according to his lights, cutting the consumption of raw materials, particularly in the civilian sector; but much depended on the personality of the controller, as well as on the quantity of material at his disposal. Two methods of releasing materials existed side by side: release upon the basis of end use, i.e. the present war-time purposes, and release upon the basis of quantities consumed by purchasers in the pre-war period. Where certain controls, such as the Paper Control, originally based release on the latter method but tried to graft upon it control by end use, this sometimes led to a fluctuating policy, as is witnessed in the case of paper handkerchiefs. The original system of distributing fertilisers on the basis of the pre-war consumption of each purchaser threatened to make nonsense of the Government's ploughing-up policy. No less important, while in theory R.M.D. retained the power to determine consumption, in practice this power was dispersed amongst the raw materials controls. A friendly critic of the existing system of control observed in October 1940:

The proper way to plan the economic side of the war effort is to estimate the amount of productive forces necessary to maintain the basic civil consumption (including the exports necessary to provide the basic imports) and then to take steps to bring about the transfer of all other productive powers to providing for war production. Can it be argued that this question has been sufficiently examined? The procedure rather has always been to wait for the appearance of particular bottlenecks.

The attitude to requirements is reflected in the licensing system which was adopted during the period. It fell into three more or less distinct phases. In the first phase all consumers of a scarce material had to apply for a separate licence; in the second, government

demands, usually designated 'essential' demands, were made exempt from licence, while all non-governmental consumers, however essential their needs, had to continue with their separate applications; in the third phase, when the allocation system was being extended over a wider range of materials, all demands for these materials, whether for government departments or not, were submitted to the Materials Committee and, if they were proved essential to the war effort, received a proportion of the total fund of raw materials. The first and second phases were sometimes telescoped together but the third marked a very important change. Licences remained in use, in the case of some of the allocated materials, but they were a subordinate piece of machinery; demands had to be submitted to the controls by each consumer, but the controls themselves normally took no part in determining how far a given demand was essential. It was the sponsoring department and the Materials Committee which settled that. Controls, however, necessarily continued to advise about methods of economy, including substitution. The allocation system was established on either a departmental or an 'end use' basis. Steel, cotton and timber, for example, were allocated upon a departmental basis; rubber, paper and jute, on the other hand, were governed by general periodic decisions about the quantities of products to be made, these decisions being laid down by the Materials Committee, with the advice of departments, and applied by the controls. The end-use method, and, even more so, the departmental method, in many cases lessened or eliminated the power of the controls to judge issues which were logically outside their scope, that is, whether certain articles were or were not essential to the war effort. It prevented them also from diverting consumption from their own materials to materials even more scarce. This change marked a step forward to the rationalising of the distribution of raw materials under a central authority, at a time when, as we have already seen, the other powers of the individual controls were being increased. But a number of materials were never brought within the jurisdiction of the Materials Committee, apart from the vague title it had to 'supervise' them. That the light metals were not allocated is not surprising. In 1940 ninety-five per cent. of the available supply was going to aircraft and the Minister of Aircraft Production was, therefore, the best judge of how it should be distributed.<sup>1</sup> The distribution of chrome ore and magnesite was left to the Chrome Ore, Magnesite and Wolfram Control while that of wolfram was the responsibility of the Iron and Steel Control. All these materials were used almost exclusively, either directly or indirectly, in the production of other controlled commodities, e.g.

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<sup>1</sup> From the autumn of 1939, until the end of 1941, the Joint Services Distribution Committee was doing very useful work in directing the flow of semi-fabricated aluminium for aircraft, fuse bodies and other essential needs.

magnesite in the manufacture of magnesium metal, and chrome ore in the manufacture of refractories for the steel industry. Consumption of sulphuric acid was controlled by licence and as non-essential uses were strictly controlled there was no need for allocation. But, for a number of other materials, where the Committee intervened, it was comparatively late in the day. Until then, the control determined the ultimate uses. To leave to the controls decisions as to consumption imposed upon them responsibilities and burdens which were alien to their function.

The initial attitude to controls was revealed also in the limited number of materials allocated in the first place. Table 58 gives the dates of the establishment of the major controls and the dates also when the commodity was first allocated by the Materials Committee.

*Table 58. Dates at which the control and allocation of the main raw materials<sup>1</sup> began*

	Date of establishment of the Control	Date of first allocation by Materials Committee
Steel . . . . .	September 1939	31st October 1939
Copper . . . . .	September 1939	7th December 1939
Lead . . . . .	September 1939	6th June 1940
Zinc . . . . .	September 1939	6th June 1940
Aluminium . . . . .	September 1939	No allocation
Tin . . . . .	December 1941	13th March 1942
Wolfram, chrome ore and magnesite . . . . .	April 1940	No allocation
Hardwoods . . . . .	September 1939	23rd May 1940
Softwoods . . . . .	September 1939	13th November 1939
Plywood . . . . .	September 1939	23rd May 1940
Cotton . . . . .	November 1939	21st March 1941
Wool . . . . .	September 1939	24th January 1940
Silk . . . . .	September 1939	15th December 1941
Flax . . . . .	September 1939	20th October 1939
Jute . . . . .	September 1939	21st March 1941
Hemp . . . . .	September 1939	28th November 1940
Coir . . . . .	June 1942	No allocation
Molasses and industrial alcohol . . . . .	September 1939	No allocation
Pyrites and sulphuric acid . . . . .	September 1939	No allocation
Paper and paper board . . . . .	September 1939	24th April 1940
Leather . . . . .	September 1939	9th May 1941
Rubber . . . . .	April 1941	29th January 1942
Industrial ammonia . . . . .	September 1939	No allocation

<sup>1</sup> For detailed notes on the individual commodities see Appendix 37.

Undoubtedly the control over requirements was extended as the war situation deteriorated, but the extension was forced upon the Government by the supply position and was not the result of any pre-conceived long-term policy. This gradualistic approach was reflected also in the attempt to economise in consumption by substitution. The

constant tendency was to shift demand from the controlled to the uncontrolled material, from the scarce to the less scarce one. The substitute material in its turn became scarce, partly because it was being used by inessential consumers, who naturally sought uncontrolled materials; these materials, later in the day, had therefore to be controlled. 'The existing methods of promoting economy', remarked Sir Wilfrid Greene, 'are very limited in scope and have come into existence in a haphazard way'. The alternative would have been a raw material plan to cover all materials from steel to sawdust. That is almost what happened in the end.

This was the situation as it existed in the summer of 1940. Both the Ministry of Supply and the controls were tightening their supervision of demands presented to them, but their efforts were now being reinforced by the increasing operations of the Materials Committee over a much wider field. The committee worked along three lines, all three intersecting in the continuous surveillance maintained by its staff: there was first the informal 'screening' of demands by R.M.D., the controls and the Materials Committee secretariat, who were familiar with the latest estimates of the supply position as well as the requirements of departments. In this initial process the more ambitious requirements programmes could be reduced to reasonable proportions. There were, secondly, the full meetings of the committee itself, when outstanding issues could be thrashed out in the presence of departmental representatives and a final recommendation of allocations sent to the inter-departmental committee at ministerial level, replaced after March 1942 by the Ministry of Production. In only very rare cases were the recommendations modified. There were, thirdly, the economy sub-committees for dealing with special products or materials, such as the Timber Economy Committee established in November 1939, the Paper Economy Committee set up in 1940 and the Containers Sub-Committee established in the same year, originally to deal with tinplate and by 1942 extended to all containers. In the eighteen months after Dunkirk, as is shown in Table 58, the Materials Committee extended its influence over an increasing number of materials; in April 1940 it allocated six of the principal materials, in January 1942 sixteen.

The establishment of the Materials Committee at the beginning of the war had been a significant step towards averting some of the acute conflicts over priority which had marred the efforts of the planners in the First World War. This central committee set out from the start to look ahead, even if only for three months ahead, and view certain materials within the broad framework of an allocation system. It was to be concerned not with the manufacture of priority certificates, which might indeed become necessary at crucial phases of the war, but with surveying and supporting *all* the essential needs for the

material in question. The consequences which followed from the application of this principle we have considered elsewhere,<sup>1</sup> but here we must examine the character of the organisation which came into being.

The Materials Committee was not an executive body. Its functions were to advise the chairman, usually a junior minister, who made the allocation of the material, subject always to confirmation by the committee of ministers (or later, the Minister of Production) to whom he was answerable. It was truly inter-departmental. All consuming departments were represented, in addition to R.M.D. and the control responsible for the material under debate. The chairman tried to express the *sense* of the meeting without a vote being taken; but he had at his disposal a small body of civil servants, armed not only with the most up-to-date information about supplies and prospective supplies, but becoming also increasingly intimate with the requirements of the consumers. It is no exaggeration to say that much of the real debate took place, not at the meetings of the Materials Committee, but in informal discussions and over the telephone with officials of the Materials Committee and R.M.D. It may be that, because many of the records of these discussions were either ephemeral or never existed at all, the thankless tasks of restriction by persuasion were less highly rated than they might have been.

But advisory bodies using the methods of persuasion tended to labour under difficulties as the pressure of war intensified. 'I am impressed by the argument', wrote the Chancellor of the Exchequer as he looked back over the war from its closing stages, 'that no amount of inter-departmental co-operation can be as effective as responsibility to a single minister in securing co-ordination between user and producer.' The Select Committee on National Expenditure, considering the position towards the end of the first year of war, put the criticism in greater detail. It pointed out that control ceased 'after the allocations of materials and capacity have been made', and that such control as existed was 'limited to those materials actually in short supply'. It added that it was not satisfied:

that any adequate means exist for compelling the consuming departments to modify their specifications or their quantitative requirements in the manner that is necessary if a prospective shortage is to be averted.<sup>2</sup>

The committee recommended:

That an independent department comprising the priority organisation and the raw material controls should be established, and that this department must have overriding powers in the priority field.<sup>3</sup>

<sup>1</sup> Chapter V, page 86 *et seq.*

<sup>2</sup> *Tenth Report, Session 1939-40*, para 18, 8th August 1940.

<sup>3</sup> *Ibid.*, para. 44.

The suggestion appears to have led to a modification in the Ministry of Supply: no separate ministry was established, but an additional parliamentary secretary was appointed in September 1940, 'to assist the Minister of Supply on the supply and distribution of raw materials'.

The Select Committee had had also another criticism to make. It pointed out that though the priority organisation, which included the Materials Committee, was 'in essence inter-departmental, it is in fact a part of a ministry [the Ministry of Supply] primarily concerned with the supply of only one of the three Services'. This was a special reason for placing the work under a separate ministry or a parliamentary secretary to the Minister of Defence:

This new and compact department would not itself be a user of any of the materials handled, and would be in a position, without any suggestion of lack of impartiality, to allocate them to the best possible use; it would at the same time be an executive department in that the controllers of materials would be under its direction.<sup>1</sup>

The conception that the Materials Committee, as it then existed, was part of a supply ministry was held also in other quarters. Over a year later it was said, on behalf of the Minister of Supply, that:

the functions of the Materials Committee were purely advisory, that the committee, which had formerly been a committee of the Ministry of Supply, was responsible for advising him and that final decisions regarding raw materials must rest with him as Minister of Supply.

#### His ministerial colleagues

were unable to accept the Minister of Supply's interpretation of the functions and responsibility of the Materials Committee nor his view regarding the responsibility for allocating supplies of materials.

Yet this interpretation of the Minister's functions drew further attention to the possibility of an internal conflict between his work as a supply minister for the Army and his work in the field of inter-departmental allocations. This danger indirectly strengthened the case for the establishment of a separate ministry, a question which had been before the public since the summer of 1940, if not earlier. Speed, authority and centralisation, it was held by some, could only come from a single ministerial head. Committees of officials and committees of ministers had much to recommend them: their decisions were usually the result of agreement after discussion and made full use of the democratic procedure. But the procedure might also be very slow and sometimes the decisions were ill-informed and unacceptable. As Sir Wilfrid Greene, writing in another connection, described the procedure in the summer of 1940, the requirements:

<sup>1</sup> *Ibid.*, para. 28.

are cut down in a rough and ready manner by means of suggestions round the table, many of them impromptu and not necessarily derived from any technical knowledge. It results that departments are often dissatisfied and either require the matter to be referred to the Production Council or in practice exceed their allocations.

In 1941 the case for a Ministry, or at least a Minister, of Production grew in strength, but what finally settled the issue was the entry of America into the war. From now onwards it would be impossible to negotiate with the highly centralised American government organisations through British councils of ministers: discussions would have to be conducted and decisions reached by one minister and one ministry. In February 1942 a Minister of Production was appointed, and the Materials Committee and other inter-departmental organisations passed under his sway. In July 1942 the 'Office of the Minister of Production' became the Ministry of Production.<sup>1</sup>

But the portents which attended its birth were not auspicious. The first Minister held his post for a fortnight; his successor became involved in a complicated discussion about the division of functions between himself and the Minister of Supply. The Minister of Production originally proposed that his Ministry should take over the raw materials and machine tool sections of the Ministry of Supply, a proposal which that Ministry strenuously resisted. The Minister of Production accordingly countered with the suggestion that raw materials, machine tools and common services should be placed under a separate ministry with a junior minister responsible to the Ministry of Production, a scheme which harked back to the Ministry of Material Resources, conceived in the early days of pre-war planning and buried during the inter-departmental struggle of the later years. This plan was no less vigorously rejected. After much heartburning a compromise was reached, under which commodity sections were established in the Ministry of Production and certain senior officers and the Machine Tool Controller joined the Ministry, while the rest of the relevant branches remained within the Ministry of Supply. The British Raw Materials Mission in the United States also moved over from Supply to Production. The process of decapitation savoured of inter-departmental bargaining and *quid pro quo* rather than of a solution designed to unify production policy. The decision also that the Ministry of Production should be responsible for long-term planning and high policy, while the Ministry of Supply should be concerned with day-to-day matters, looked on paper convincing, but many administrators in the Ministry of Supply claimed that it proved unworkable; that it was impossible to draw a line between

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<sup>1</sup> For a fuller discussion of the Ministry of Production and related problems see the forthcoming volume in this series on the Administration of War Production, by J. D. Scott and Richard Hughes.

long-term planning and short-term action, or indeed between high policy and its execution; that it led often not to simplification but to duplication. After referring to the original conception that the Ministry of Production should be a supra-departmental authority to 'concert and supervise' the supply departments, the Select Committee on National Expenditure observed:<sup>1</sup>

In practice, however, this has not been achieved. As a consequence the duty of the Ministry both at the centre and in the regions has become in effect limited to one of co-ordination.

It was *co-ordination* rather than *direction* which had marked the whole history of raw material control hitherto. The British organisation of supply developed, as we have seen, from the trial of practical expedients. Just as the railway system and the steel industry of nineteenth-century Britain brought with them all the rewards and all the penalties which are bestowed upon pioneers, so our planning organisation of the war displayed all the features of a system built not upon doctrinaire theories of administration but upon the lessons of experience. The committees and councils displayed the flexibility, tolerance and strength of government by consent.

There is no more formidable and effective organisation of power (said the Prime Minister in the House of Commons at the beginning of 1941) than a unit of four or five consenting minds, each of which has at its disposal full and necessary powers for the discharge of the business entrusted to them.<sup>2</sup>

But until the Ministry of Production really got into operation two and a half years after the outbreak of war, there was not yet what *The Economist* described as a 'single and central command over the process of war production',<sup>3</sup> nor was there what the Select Committee called 'a supra-departmental authority to plan the programme'.<sup>4</sup> Until then the whole production effort had:

carried with it too much of the stamp and character of improvisation which was the natural and inevitable characteristic of the period immediately following the collapse of France and the loss of equipment at Dunkirk.

Now what was needed was 'more prescient and purposive planning'.<sup>5</sup>

But after two and a half years of war the main constituents of the government machine were in their place and, though some adminis-

<sup>1</sup> *Seventh Report, Session 1943-44*, para. 3, 28th July 1944.

<sup>2</sup> H. of C. Deb., Vol. 368, Col. 263, 22nd January 1941.

<sup>3</sup> *The Economist*, Vol. CXLV, p. 486, 9th October 1943.

<sup>4</sup> *Eighth Report, Session 1941-42*, para. 11, 26th March 1942.

<sup>5</sup> *Ibid.*, para 4.



trators changed their posts and some organisations changed their names, it was argued that the new ministry came too late to change the form and direction of government planning. As a result there remained, as one memorandum put it, 'the anomalous division of responsibilities' between the Ministry of Production and the Ministry of Supply. R.M.D. stayed in the Ministry of Supply, the Materials Committee went to the Ministry of Production, but it was not always clear who had gained the shadow and who the substance. What was clear, however, was that the control over consumption was more unified, and that the Materials Committee's authority was strengthened by the powers of a Minister of Production, who was also a member of the War Cabinet. At the same time Britain could speak to her American ally with a firmer and clearer voice.

Thus the outbreak of the Pacific war strengthened still further the machinery for the control of raw materials. It did so in two important ways. It hastened the establishment of the Ministry of Production and it hastened equally the formation of inter-Allied control. Even before she was fighting as a full and equal ally, America had been taking an increasing share in providing the munitions for the Allied war effort and claiming therefore to have a voice in determining which requirements should be satisfied. For this purpose the lend-lease apparatus had been erected. The machinery was admittedly sometimes complicated, vexatious and cumbersome; it aimed at releasing materials, but also at eliminating lend-lease materials from the British export trade and reducing the consumption of scarce materials in both civil and munitions uses. But it was important not solely in what it achieved, but in the added strength it brought to the Materials Committee, the controls and R.M.D. in their efforts to restrict demand.

This process had been developing before Pearl Harbour, but now America assumed a prominent role in planning the war effort. Thus there were created the whole series of combined boards of which the Combined Raw Materials Board is for our purposes the most interesting. The Combined Production and Resources Board, set up in June 1942, was charged with ensuring the most efficient use of the *total* resources of North America and the United Kingdom; this included a general responsibility for raw materials, but its intervention in this field was rare and not always happy. To investigate the requirements of Commonwealth countries, with the exception of Canada, and to present them in a co-ordinated fashion to Washington, the Empire Clearing House was created in London in April 1942, and in the following November became the Raw Materials Committee of the Commonwealth Supply Council. Behind these committees there were secretariats drawn from the various missions of the belligerents; and it was their task to submit each application for materials to the

most careful analysis. Their efforts were reinforced by the Anglo-American Conservation Committee and similar bodies.

No descriptive narrative can do justice, however, to the remarkable achievements of these inter-allied organisations, though a good deal has been said about them in earlier chapters.<sup>1</sup> Again, like their British counterparts, they were often 'units of four or five consenting minds', sometimes more, sometimes less. They worked by persuasion and agreement, and succeeded in apportioning the supplies of the free world amongst the participants in the war. Sometimes the lend-lease organisation and the combined committees nearly broke the hearts of the British negotiators. But where persuasion was not enough there were the powerful two-men boards at the top whose word was law. In its later stages, though its influence was neither uniform nor complete,<sup>2</sup> combined planning became a practical method of waging war and earned the generous praise of the President of the United States, in that it had

set a model for economic co-operation between the United Nations in overcoming excessive nationalism and in gaining co-operation between former rivals both on the national and the international plane.<sup>3</sup>

By these various agencies the control over raw materials became more intensive as well as more extensive. But the principal agency throughout was scarcity. It is not surprising therefore that in the years 1942-43 control had become most thorough and most efficient. It is not possible to establish any date or period when the machinery had assumed its final shape and the process was complete, if it ever was; but from the evidence examined in previous chapters it is clear that by 1943 the British producer and consumer were closely geared to a planned war effort. Certainly after the summer of 1942 no fundamental change was made in the organs of control. In the United States the Government not only built upon the body of experience provided by this country, but also brought to it a characteristic flair for establishing organisations to reach into all the minutiae of production and distribution. The British organising machine, again characteristically, rested more securely on its practice than on its theory. Slowly and pragmatically the British instruments of control were modelled and adapted. With a greater zeal for general planning they might perhaps have come sooner; but when they achieved their final form they reached into every field of human endeavour.

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<sup>1</sup> Chapters XI and XVIII.

<sup>2</sup> For example, the anticipated complexities of steel allocation guarded it against the intervention of C.R.M.B., though the material came later under a combined C.R.M.B.-C.P.R.B. steel committee. Timber, also, never came under 'formal review' by C.R.M.B. (See *Third Annual Report on the Work of the C.R.M.B. to January 1945*, H.M.S.O., 1945.)

<sup>3</sup> *The Times*, 20th January 1945.



# Appendices

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## APPENDIX I

### Some Lessons of the First World War

The economic plans for waging war in democratic states have not usually been based upon an orderly series of requirements but upon a collection of hypotheses. The planners were obliged to ask themselves, or their superiors, certain fundamental questions about the nature of the future war in which they might be involved. But the strategists, and indeed the Government itself, were themselves in search of these answers and they were compelled in the end to furnish a purely theoretical framework within which the economic, political and military plans must be fitted. Those responsible for the purely economic aspects of the work tended to pose what were, for the strategists, unanswerable questions.

To answer certain of these questions would have required prophetic qualities to which the C.I.D. did not aspire, but even its more general statements on strategic conditions and the sizes of the armed forces were the subject of the most acute fluctuations. In order to impart some coherence and reality to these hypotheses the planners therefore sought additional guidance from the official records of the last war. They thus drew their information from two separate sources: the principles currently laid down by the C.I.D. for the requirements of a future war and the practices described in the History of the Ministry of Munitions and elsewhere. These two sources naturally did not always speak with the same voice and some of the lessons of the last war, though understood, could not be applied. The early chapters of this volume have dealt with the hypotheses for a future war: here we are concerned mainly with the lessons which the First World War had to teach, notably in connection with raw materials.<sup>1</sup>

If the so-called lessons of history have sometimes been ambiguous and equivocal, there was one lesson which the First World War had to teach which was incontrovertible. It made clear that this country, dependent as it is upon overseas supplies for virtually all its raw materials, with the exception of coal and half our iron ore (in metallic content), experienced a serious, and sometimes critical, scarcity in nearly all its raw material supplies. It was essential, therefore, sooner or later to bring the supply and distribution of most materials under some form of government control. Not only did these powers become necessary, but they tended to become more extensive in character. Thus, because T.N.T. was short the War Office had to take steps in the first days of the war to restrict the exports of its constituent raw materials, such as benzol, coal-tar toluol, phenol and nitro-toluene. But the control of exports in time proved inadequate: the Government had to restrict consumption through licensing to ensure that supplies were directed to essential users. Once, however, the Government assumed powers to direct supplies it had, in its own interests, to

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<sup>1</sup> For a study of economic control during the First World War see S. J. Hurwitz, *State Intervention in Great Britain* (Columbia U.P., 1949).

*maintain* supplies and entered the controlling field by another route, that of provision. Because it did not wish to compete either overseas or at home with its own or Allied nationals, it had to develop centralised purchasing for total needs of certain materials, as happened in the case of acetone in April 1915.

The establishment of the Ministry of Munitions in June 1915 had, in effect, given a great impetus to the expansion and co-ordination of control, reinforced as these needs were by the deterioration in the supply situation. By the autumn of that year the Ministry had, for example, extended its interests to large-scale purchases of non-ferrous metals in the United States. By 1916 the Ministry was being driven not only to control an increasing number of materials but to widen the functions of control. Thus it found that if it controlled a material or store it had sooner or later to control the substitutes to which consumers naturally turned. Similarly, if it began by controlling boots for soldiers it found that it also had to control boots for civilians and it had in time to control the hide out of which the boots were made. By the end of the war the Government, working through a number of ministries and departments, had assumed in varying degrees a large number of powers over certain commodities, including the control of stocks, purchases overseas and at home, domestic production, exports, imports and prices. This extensive control was on the other hand balanced by the control of distribution, with the object of directing consumption into channels essential to the war effort.

This, then, was the policy forced upon the Government by the exigencies of war. The principles governing its conduct of affairs stand out clearly a generation after they were applied, but to contemporaries each measure represented a specific panacea for an individual problem, not closely related to the general problem of supply and distribution. There was, indeed, a steadfast resistance either by interested or uninformed sections of the community to every new measure of control demanded by the military and supply situation. Nor was the Government, itself the inheritor and exponent of the traditional free trade principles of this country, easily converted to the new concepts of national trade or always amenable to the advice proffered it.<sup>1</sup> This inherent resistance to the reluctant intrusion of the State into the arena of domestic and foreign trade was reflected in the controlling machinery which was established. It was created piecemeal because policy was enunciated piecemeal. Controlling powers over raw materials were vested not in one department

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<sup>1</sup> *The Economist* (CXLVII, p. 764, 9th December 1944) considered that there are four stages in the struggle between a government and its critics: 'In the first stage, the outside critic points out a difficulty that will inevitably arise and suggests a remedy. The Government replies that the need may never arise and that, in any case, any fool can see that the suggested remedy is politically impossible and administratively unworkable. In stage two, the emergency arrives and the remedy is pressed with more insistence. The Government now says that surprises are inevitable in war, but that there is now no time to deal with the matter thoroughly, and an appeal for the voluntary and unorganised co-operation of the public will have to be made. Some matters never get beyond this second stage, but for those that do, the third stage is the belated acceptance by the Government, under further pressure, of the remedy suggested in the first place. Some time later there follows stage four, in which a White Paper is issued to illustrate the magnificent results achieved by the energy and forethought of His Majesty's Government'.

but many, including the War Office, the Ministry of Munitions, the Admiralty and the Board of Trade. The Government, where it was articulate at all, did not speak with one voice but with many.

The result was [according to an official historian] a maze of control orders issued sometimes by this and sometimes by that department, according to the historical accident which determined control in the first place.

The priority organisation which the Government created provided therefore a happy hunting ground for interdepartmental wrangles, both at a high and low level, and manufacturers were not reluctant to contribute their share to the prevailing confusion. Because of these conditions no central requirements or supply plan was either sought or created, with resulting chaos and shortages, of which the shell crisis of 1917 was the most outstanding example. The nation won the supply war as it won the military war—by masterly improvisations: but the price of such improvisations it was never possible to assess either in time, lives or treasure.

#### PREPARATIONS FOR A LONG WAR

It is reasonable to assume that the lessons which have been shortly summarised in the preceding paragraphs were known to the politicians and officials charged with preparing against a future war. But they were faced not simply with the task of learning and applying these lessons, but with the much more complicated problem of seeing how far they were applicable to the changed and changing conditions of peace and war. Yet, amidst all these doubts, not even the conclusion that a war between great powers evenly matched would probably be a long war was firmly accepted. This supposition was admittedly recognised by the British Government in the first few days of the Second World War in laying down that departments must act on the assumption that the war would last at least three years. Yet if this was the basis of its plans after the outbreak of hostilities, it is not easy to see that it formed also the basis for the pre-war preparations. A long war called for adequate stocks, the expansion of domestic supplies, the utilisation of substitutes and salvage. It presupposed also considerable restrictions upon civil consumption, though it might be argued against the early enforcement of such measures that restriction could not move faster than the expansion of essential consumption, without severe dislocation and unemployment. Even if this viewpoint was accepted, all the other measures for preparing for a long war were still necessary. Yet in these matters only the most limited precautions were instituted. With very few exceptions, such as magnesium, bromine, sodium and sulphuric acid, no adequate preparation was made to exploit indigenous supplies, to discover substitutes or to salvage raw materials, while the stock policy officially proclaimed by the Government in the last year of peace was to accumulate sufficient materials to tide over the supply dislocations inevitable *during the first three months* of a major war. This apparent reluctance to embody the experiences of one world war into the preparations for another had, however, a rational basis. The attitude of the Government was, in fact, predetermined by one of its own hypotheses. The conclusion of the official advisers of the C.I.D. was that



no serious shipping scarcity was to be anticipated. If that were so, it was clearly unnecessary to accumulate vast stores of materials or to alter specifications to make use of expensive and unsatisfactory substitute materials in place of cheap and easily accessible supplies from the usual sources. This process was even less necessary in preparing for a war of limited liability. The opposition to these difficult and costly operations was further reinforced by the belief of service departments that they could not alter their specifications without direct consequences for the operational efficiency of their equipment.

Here, then, was a conflict between what the last war had to teach and what the conditions of a new war appeared to require. Where members of the trade, however, were admitted to the strategic secrets, they were inclined to be sceptical about the validity of some of the more optimistic assumptions. The Chairman of the British Iron and Steel Federation (Sir Andrew Duncan) urged upon the Government in 1938 the accumulation of a pig-iron reserve to ensure the full use of existing steel capacity in time of war. But the current estimates of service needs, based upon the strategic assumption of 'limited liability', put the total requirements of steel for essential consumption at  $4\frac{1}{2}$  million tons while existing production was in the neighbourhood of 12 million tons. Clearly, in such circumstances no reserves were necessary. It may well be that the P.S.O. Committee shared the anxiety of Sir Andrew Duncan, particularly as one official report frankly recorded that in the last war:

. . . though steel works and blast furnace extensions were begun on an enormous scale, supply never kept pace with demand, and the steel problem was the governing factor of all munitions programmes during the later years of the war.

By June 1939, when it was too late to accumulate reserves, the Supply Organisation accepted that the only valid basis of steel requirements upon which it should work was the maximum output of existing capacity.<sup>1</sup> But by then the planners had fallen between two stools, the principles which the last war established and the requirements which the existing hypotheses demanded. In the case of steel, at least, the over-all strategic planning proved an impediment to the appreciation of the lessons of the last war.

Overshadowed by these limitations, it was possible nevertheless to make some of the more detailed preparations for supply and distribution. The P.S.O. Committee saw, for example, the importance of controlling overseas purchases to economise in both shipping and currency, and a licensing system was ready in embryo when war came. Also, it was anxious to avoid the repetition of the conditions of the last war when ministries 'had the responsibility for averting a shortage without the power of preventing it'. Negotiations were therefore begun with the Australian and New Zealand Governments for the centralised purchase of all their wool surplus; by September 1939 the agreements were ready for signature. Apart from these special cases, rough plans were made for other large-scale purchases abroad. The desire to eliminate inter-Allied competition was presumably present in the minds of the British and French Govern-

<sup>1</sup> See Chapter II, page 45.

ments but the economic contacts built up before the war were very limited in character. The price of this absence of adequate preparation was paid in the extremely unsatisfactory Allied supply arrangements which marked the early months of the war. Control of supply at home was also recognised as equal in importance to control of imports, and the preliminary orders drawn up before the war often included requisitioning or directing powers over domestically produced commodities and stocks. It did not prove possible, however, to make any full statistical survey of the existing situation.

Parallel with these supply measures, distributing arrangements were also being outlined. It was appreciated that one of the chief methods of ensuring that essential industry was adequately fed was by rationing or eliminating civilian consumption. Hence licences to acquire and consume were instituted as a preliminary stage; while to give to each item of service and civil consumption its proper place in the sphere of production a priority system was superimposed upon the licensing arrangements. It was in this respect that the conditions of the last war began to repeat themselves. To a limited extent an effort was made to establish a single inter-departmental body, the Materials Committee, to plan total consumption of scarce materials; but its original functions were mainly to prepare an annual balance sheet, while the issue of priority certificates and licences governed the day-to-day allocation of materials. The result was that, in the case of steel, most consumers who obtained licences obtained an A.1 priority certificate, while service consumption was made exempt from the licensing system altogether; in the case of timber, the Control itself assumed the interdepartmental functions of determining which uses were essential and, by an act of supererogation, nearly brought the whole building programme, service and civilian, to a standstill. By the spring of 1940 the priority system had begun to give way to an effective allocations programme under the Materials Committee, and the suspension of this programme in favour of a priority policy for some items, mainly drop forgings and alloy steel, was only a temporary measure rather than any reversion to the more primitive priority methods.

These growing pains of the allocation system were a reflection of the original decision not to create one central ministry for directing and co-ordinating materials policy as a whole. That the advantages of such a ministry were appreciated is clear from the original recommendation made by the P.S.O. Committee in 1926, and approved by the C.I.D. in 1928, that, if the supply position deteriorated in time of war, a central Ministry of Material Resources should be established. It explicitly recommended against a combined ministry to deal with the production requirements of service departments and raw materials.<sup>1</sup> These proposals subsequently reappeared in 1936 in a slightly modified form, namely, that there should be one ministry controlling:

certain categories of supply common to all the service ministries such as labour and materials, including those which are in one sense raw materials and in another sense finished or partly finished materials.<sup>2</sup>

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<sup>1</sup> See Chapter IV, pp. 72-73.

<sup>2</sup> *Ibid.*, pp. 74-75.

These new plans were submerged however in the controversy first, over the right of the service departments to retain control of their own design and development branches and secondly, whether a Ministry of Supply should be set up in time of peace or only after the outbreak of war. The Ministry which finally emerged from the wealth of counsel was a compromise body: it was charged with providing all the Army needs but not those of the Navy and Air Force and by way of 'compensation' was given the function of providing raw materials for all three services.<sup>1</sup> The result was that although the Raw Materials Department developed many of the characteristics of an independent department, its physical contacts with the production branches of the Army under the same Minister hindered it from performing the interdepartmental functions in the manner envisaged soon after the last war. Thus the priority department was housed in the Ministry of Supply although responsible to the Ministerial Priority Committee, which became in due course the Production Executive. It was not until the establishment of the Ministry of Production in 1942 that the original proposals of 1928, based upon a realistic appreciation of the lessons of the last war, were introduced. But since this new Ministry was given supervisory and distributing, but not executive, powers the Raw Materials Department remained in the Ministry of Supply with most of its functions unchanged. In view of the notorious difficulties of distinguishing between executive and directing responsibilities in individual cases, the dangers of overlapping were in some respects increased by this process.

These changes of policy in planning the machinery of control were also, for other reasons, experienced in selecting the personnel for the work. The close contacts which had grown up between the Government and the trade in the First World War had in many ways eased the tasks of control and made it more palatable for the industries brought under official direction. In the process many members of the trade had accepted executive posts in the various ministries and performed their tasks extremely well. But an official report recorded that this arrangement:

was not without its disadvantages. It made the Ministry more efficient, but firms who were not represented on the advisory committees, or who had been trade rivals of Ministry officials, naturally viewed with suspicion activities which conflicted with their private interests, and in particular were hostile to examination of books by trade competitors.

On the whole, however, the report spoke with some uncertainty on this matter, indicating both the advantages and disadvantages of the 'traders turned officials'. But the P.S.O. Committee, when it reopened the question in 1927, concluded that, although trade associations should be used wherever possible in a future war, 'the main functions even of those sufficiently developed and organised would be advisory'.<sup>2</sup> In the decade which followed, the relations between the Government and the trade associations grew closer, particularly after the establishment of the Import Duties Advisory Committee in 1932, and representatives of the trade were

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<sup>1</sup> *Ibid.*, p. 76.

<sup>2</sup> See Chapter IV, p. 67.

called in to assist the Government in its preparations for war. Thus by 1938 the original attitude had been abandoned and it was considered that<sup>1</sup>:

the control of a particular material could best be worked through the trade association or other body particularly concerned with it, that body becoming, in effect, a sub-department of the Ministry of Supply.

Now it was not simply a question of individuals drawn from the trade, as in the last war, but of associations as a whole. The new plans therefore re-established something of the machinery of the last war, except that it was much more uniformly and systematically applied.

The lessons learned from the last war may thus be divided broadly into three categories. There were first, those which were learnt and largely applied, such as the need to control exports, imports and civilian consumption from the beginning of war, although it remained true that control was far from complete before Dunkirk and for some materials, such as rubber, it was not until they became seriously short that effective controlling measures were applied. There were, secondly, those lessons which do not appear to have been absorbed into the planning, namely the dangers of severe shipping losses, the expansion of service demands, and the defects of priority certificates. There were, lastly, the lessons which may or may not have been appreciated but which could not in any case be applied without incurring expenditure and inconvenience unacceptable to the peace-time outlook of this country. This applies, for example, to the accumulation of large strategic stocks and the development of capacity for the production of substitute materials, such as synthetic rubber.

But it is important, also, in estimating how far the lessons could be applied to remember that a great deal of the initial planning was highly theoretical in character. It was not until 1935 that these preparations acquired an urgency sufficient to endow them with some reality, but even then the officers of the various ministries deputed to do this work remained largely on a part-time basis and their normal peace-time occupations generally had first priority. At the same time, the change from these academic pursuits to the more immediate and urgent plans tended to deprive the planners of a more general approach to their work, to be replaced now by the *ad hoc* treatment of the most important issues. After 1935, in essence, there seemed to emerge less of a general raw materials plan, and much more of a detailed study of individual material problems. Because of the limitations of time and staff, it is reasonable to assume that while the planners were probably familiar with the various publications which recorded, or attempted to record, the developments of the last war, their opportunities for studying and applying these lessons were restricted. In some cases, also, while general accounts existed, essential detailed records had disappeared. Thus, during the Second World War, the Iron and Steel Control was obliged to explore anew reputed sources of native ores which had been carefully examined during the last war. Moreover, there is little evidence that the planners were familiar with the important developments and plans of their contemporaries abroad, notably in

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<sup>1</sup> *Ibid.*, p. 68.

Germany, Russia and America. Some of the intelligence reports were provided as appendices to official documents, but it is not easy to see from internal evidence that the information contained therein was either fully digested or exercised any important influence on the work being done in this country. In any case, the plans made in preparation for the Second World War were inevitably an unstable compromise between the experience gained from the last war and the notions concerning the conditions of a future war.

## APPENDIX 2 (a)

# The Principal Supply Officers Committee : Origin and Functions

(Extracts from a memorandum drawn up in December 1933)

### I. ORIGIN

#### *Post-War*

In 1920 it was decided that the whole of the supply duties of the Ministry of Munitions should be handed back to the appropriate service departments (which, with the formation of the Air Ministry, now comprised three departments) accompanied with the formation of a Contracts Co-ordinating Committee to regulate and co-ordinate contracting activities. This decision was again reviewed two years later, when the Cabinet set up a committee known as the Weir Committee. This committee recorded the recommendation that—

No steps should be taken to bring about either the complete or partial amalgamation of the supply branches of the three fighting Services, or any section of those branches . . .

This recommendation was approved by the Cabinet.

### II. FUNCTIONS

#### *Terms of reference*

In order to co-ordinate the war supply arrangements of the three Defence Services, to avoid the competition and delays that occurred in 1914, and to ensure that the most advantageous use should be made of British industry in an emergency, an advisory interdepartmental organisation, known as the Principal Supply Officers Committee, was instituted in 1924. The members were originally the senior Supply Officers of the three Defence Services. This committee was reconstituted in 1927 under the chairmanship of the President of the Board of Trade, representatives of the Home Office, Board of Trade and the Department of Scientific and Industrial Research being added. The peace-time functions of this Committee may be summarised as follows:

(a) ascertaining those raw materials, a shortage of which might be expected, and arranging for their control and the conservation of supplies;

(b) initiating plans for the increase of supplies in an emergency;

(c) maintaining a list of contractors, additional to those employed by the Services in peace, who could be called upon, or whose machinery could be diverted, in an emergency to produce munitions; and instituting the preparation of plans, when necessary, for the erection of national factories.

In war-time the committee would also settle questions of priority for manufactured stores so far as practicable.

(The question of manpower is the responsibility of another sub-committee, with which the Principal Supply Officers' Organisation is in close touch.)

It is to be noted that the functions of this committee are advisory and co-ordinative only and that executive action, such as investigations and preparations of plans, remains in the hands of departments.

The present organisation was accordingly set up to ensure that the officers of the three Defence Services were brought together in peace-time in order to discuss problems and prepare plans to secure adequate supplies of the types of articles that would be required in an emergency. It is expected that with such peace-time planning and co-ordination this organisation would with little expansion be adequate not merely during the critical period of transition from peace to war but throughout the emergency, unless on account of the magnitude of the war the formation of a Ministry of Supply should become necessary as a last resort. . . .

### III. DESCRIPTION OF ORGANISATION AND WORKING

*The Principal Supply Officers Committee* deals with major questions of policy. It meets once a year to consider the annual reports of subordinate bodies, and at other times when required.

*The Board of Trade Supply Organisation*, which is responsible for raw materials, has prepared memoranda on the situation regarding supplies of the more important commodities, together with plans for their conservation or increase in an emergency.

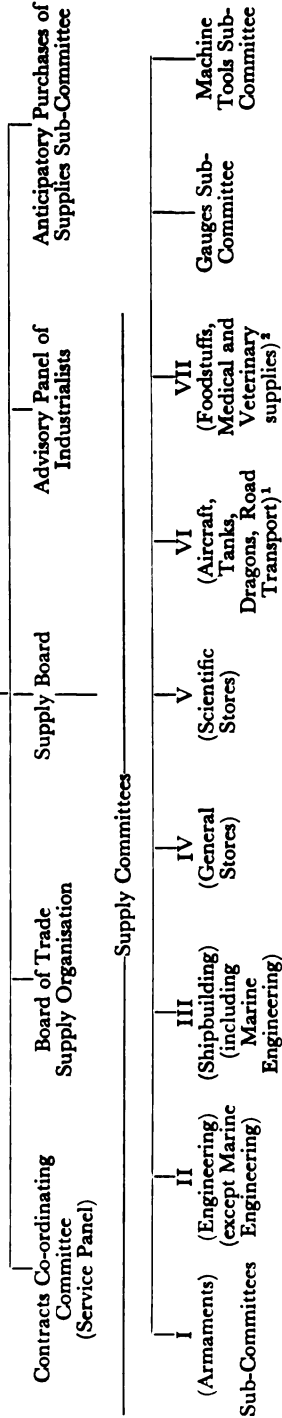
*The Supply Board*, through its ancillary committees, initiates and co-ordinates investigations into the various branches of supply work. A general estimate of requirements of those stores likely to prove difficult to procure has been made and the various Supply Committees are now investigating the manufacturing capacity of the country to meet this demand and the power of firms to turn over from normal peace production to munition work.

*Anticipatory Purchases Sub-Committee*. This is a special sub-committee charged with the duty of settling the arrangements for making initial purchases of stocks at home and abroad of certain vital raw materials in the event of an emergency.

APPENDIX 2 (b)  
 Organisation set up on the recommendation of the Committee of Imperial  
 Defence for the co-ordination of plans for war supply  
 (as at 31st January 1936)

COMMITTEE OF IMPERIAL DEFENCE

Principal Supply Officers Committee



<sup>1</sup> In February 1939, Supply Committee VIA was set up to deal specifically with airframes and aero-engines.

<sup>2</sup> In July 1938, Supply Committee VIII was set up to deal specifically with medical stores.



## APPENDIX 3

### Estimated requirements for the first year of war

(As at 31st May 1939)

NOTE.—It is emphasised that the figures of requirements throughout this Appendix do not take account of the expansion of the Field Force recently announced, nor, in some instances, of possible demands in connection with Civil Defence.

#### (i) *Iron and steel and ferro-alloys*

Material	Estimated requirements in first year <sup>1</sup>
Iron and steel:	Tons
Pig iron (other than for steel-making) . . .	2,500,000
Steel ingots . . .	12,000,000
Iron ores . . .	21,000,000
Ferro manganese . . .	104,000
Spiegeleisen . . .	16,000
Manganese ore . . .	180,000
Ferro-silicon . . .	40,000
Tungsten and ferro- tungsten . . .	3,170 <sup>2</sup>
Tungsten ore . . .	6,600 <sup>3</sup>
Ferro-chrome . . .	10,000
Molybdenum and ferro- molybdenum . . .	1,000 <sup>2</sup>
Molybdenum ore . . .	3,000
Vanadium and ferro- vanadium . . .	760 <sup>2</sup>
Titanium . . .	..

<sup>1</sup> It is impracticable in the case of iron and steel and ferro-alloys to split requirements as between 'Service' requirements and 'Civil' requirements.

<sup>2</sup> Metal content of ferro-alloy.

<sup>3</sup> Concentrates.

## Estimated requirements for the first year of war

(As at 31st May 1939)

(ii) *Non-ferrous metals*

Material	Estimated requirements in first year		
	Service	Civil	Total
	Tons	Tons	Tons
Aluminium . . . . .	113,300 <sup>1</sup>	10,000	123,300
Bauxite . . . . .	..	..	280,000 <sup>2</sup>
Cryolite . . . . .	..	..	2,500
Antimony—			
99·6% 'Starred' quality	720 <sup>3</sup>	{ 200 }	4,720
Other qualities . . . . .			
Antimony ore . . . . .			12,000 <sup>4</sup>
Cobalt . . . . .	35	550 <sup>5</sup>	585
Copper—			
Electrolytic . . . . .	70,000	80,000	200,000
Special fire-refined . . . . .	50,000		
Ordinary fire-refined . . . . .	120,000		
Lead . . . . .	43,000	175,000	218,000
Lead ore . . . . .	..	..	45,000
Magnesium . . . . .	16,000	1,000	17,000
Nickel . . . . .	16,800	10,000	26,800
	Oz. Troy	Oz. Troy	Oz. Troy
Platinum . . . . .	4,000–	100,000	110,000
	10,000		
Iridium . . . . .	1,000–	..	..
	3,000		
Tin . . . . .	Tons	Tons	Tons
	6,000 <sup>6</sup>	21,000	27,000
Zinc—			
Electrolytic (or equivalent) . . . . .	70,000	34,000	104,000
Ordinary . . . . .	20,000	66,000	86,000
Zinc concentrates . . . . .	..	..	120,000

<sup>1</sup> Expected to increase to 150,000 tons in the second year.<sup>2</sup> Of which 80,000 tons are for purposes other than production of aluminium.<sup>3</sup> Mainly 99·6 per cent. quality.<sup>4</sup> Approximate: dependent upon metal content.<sup>5</sup> Rough estimate: mainly for cutting tools.<sup>6</sup> In addition, there are large indirect requirements for tinplate for food canning.

## Estimated requirements for the first year of war

(As at 31st May 1939)

(iii) *Textiles*

Material	Estimated requirements in first year		
	Service	Civil	Total
Wool . . . . .	Mill. lb.	Mill. lb.	Mill. lb.
Cotton—	..	..	480 <sup>1</sup>
Raw . . . . .	200 <sup>2</sup>	1,400 <sup>2</sup>	1,600 <sup>2</sup>
Waste . . . . .	80	200	280
Silk—	Th. lb.	Th. lb.	Th. lb.
Raw . . . . .	951 <sup>3</sup>	4	951
Waste . . . . .	436	4	436
Artificial silk . . . . .	Mill. lb.	Mill. lb.	Mill. lb.
	1 <sup>5</sup>	150	151
Asbestos . . . . .	Tons	Tons	Tons
	6,000	40,000	46,000
Coir—			
Fibre . . . . .	800	8,300	9,100
Yarn . . . . .	600	8,300	8,900
Matting . . . . .	—	16,000	16,000
Flax . . . . .	30,000 <sup>6</sup>	62,000 <sup>7</sup>	92,000
Hemp—			
Manila . . . . .	..	..	16,000
Sisal and other hard hems . . . . .	2,000	55,000	57,000
Sunn hemp . . . . .	1,400	11,000	12,400
True hemp . . . . .	3,275	11,000	14,275
Jute . . . . .	200,000 <sup>8</sup>	235,000 <sup>9</sup>	435,000
Kapok . . . . .	110 <sup>10</sup>	1,600 <sup>11</sup>	1,710

<sup>1</sup> On clean scoured basis.<sup>2</sup> Includes rough allowances of 110 mill. lb. for substituting flax, silk, etc. The estimate of service requirements is a very rough one and may prove to be too low.<sup>3</sup> Includes requirements for parachutes.<sup>4</sup> Normally used for luxury articles, most of which can be dispensed with in war.<sup>5</sup> Acetate: required for parachutes, if proved successful and supplies of natural silk fail.<sup>6</sup> Without allowing for possible substitution of cotton for flax.<sup>7</sup> Including 30,000 tons for the export trade.<sup>8</sup> Including sandbags for A.R.P. (approx. 160,000 tons) not in authorised reserve.<sup>9</sup> Including export trade.<sup>10</sup> 300 tons may be required as absorbent in acetylene cylinders, but unlikely. 105 tons of quantity shown must be from Java.<sup>11</sup> 12 tons must be from Java.

**Estimated requirements for the first year of war**  
**(As at 31st May 1939)**  
*(iv) Timber, rubber, paper, leather*

Material	Estimated requirements in first year		
	Service	Civil	Total
Timber—	Standards	Standards	Standards
Softwoods(excluding pitwood)	..	..	2,000,000 <sup>1</sup>
	Tons	Tons	Tons
Pitwood (including pitprops)	..	..	3,500,000
Rubber	60,000	60,000	120,000
Paper—			
Newsprint . . . . .	—	1,000,000	1,000,000
Wood pulp . . . . .	—	1,200,000 <sup>2</sup>	1,200,000 <sup>2</sup>
Leather—	Bends		
Sole bends (10–12 irons)	470,000	(available balance)	..
	Sq. ft.		
Upper leather . . . . .	12,000,000	(available balance)	..
Tanning materials—	Tons	Tons	Tons
Wattle (tannin content)	..	..	18,000
Quebracho (tannin content)	..	..	13,000
Myrobalans (tannin content)	..	..	12,000
Chestnut (tannin content)	..	..	7,000

<sup>1</sup> Approximate consumption of softwoods in 1938. Essential requirements in first year not estimated, but supplies not likely to reach 2,000,000 standards.

<sup>2</sup> Estimated at roughly half normal consumption.

## Estimated requirements for the first year of war

(As at 31st May 1939)

## (v) Chemicals

Material	Estimated requirements in first year		
	Service	Civil	Total
	Tons	Tons	Tons
Sulphuric acid . . . . .	120,000	1,150,000	1,270,000
(Sulphur content) . . . . .	40,000	385,000	425,000
Pyrites . . . . .	..	..	..
Sulphur . . . . .	..	..	..
Anhydrite . . . . .	..	..	..
Spent oxide . . . . .	..	..	..
Zinc concentrates <sup>1</sup> . . . . .	..	..	..
Fertilisers—			
Ammonium sulphate . . . . .	—	400,000 <sup>2</sup>	400,000 <sup>2</sup>
Basic slag (ground . . . . .	—	(all available supplies)	
Phosphate rock (mainly for superphosphates)	—	500,000	500,000
Superphosphates . . . . .	—	550,000	550,000
Potash . . . . .	—	250,000	250,000
Calcium carbide . . . . .	3,000 <sup>3</sup>	65,000	68,000
Industrial alcohol (68 o.p.) . . . . .	16½–17½ Mill. gal.	18 Mill. gal.	34½–35½ Mill. gal.
Molasses . . . . .	Tons	Tons	Tons
Arsenic . . . . .	..	..	1,000,000
Bismuth . . . . .	2,000 <sup>4</sup>	4,000	6,000
Bromine . . . . .	..	..	240 <sup>5</sup>
Bromine . . . . .	1,740	500	2,240
Glycerine (in terms of distilled)	9,000	6,000 <sup>6</sup>	15,000
Iodine . . . . .	100–300 <sup>7</sup>	200	300–500 <sup>7</sup>
Mercury <sup>9</sup> . . . . .	..	..	Bottles <sup>8</sup>
Sodium . . . . .	1,900	1,300	13,000 Tons
			3,200

<sup>1</sup> See also Section (ii)—'Non-Ferrous Metals'.<sup>2</sup> Including the equivalent of sodium nitrate and other nitrogenous compounds.<sup>3</sup> War Office may require 15,000 tons chemical carbide in addition.<sup>4</sup> Subject to alteration.<sup>5</sup> Provisional figure.<sup>6</sup> Including 3,000 tons for export to South Africa (for explosives).<sup>7</sup> The larger figure if bromine not available.<sup>8</sup> Of 76 lb.<sup>9</sup> Exclusive of requirements for chlorine plant and fulminate, covered by I.C.I. reserves.

## Estimated requirements for the first year of war (As at 31st May 1939)

### (vi) Miscellaneous

Material	Estimated requirements in first year		
	Service	Civil	Total
Refractory materials—	Tons	Tons	Tons
Magnesite <sup>1</sup> . . . . .	.. <sup>2</sup>	.. <sup>2</sup>	.. <sup>2</sup>
Chromite <sup>1</sup> . . . . .	..	..	10,000
Carbon blacks—			
Gas carbon black . . . . .	} ..	} ..	} 25,000 <sup>3</sup>
Lamp black . . . . .			
Acetylene black . . . . .			
Cork . . . . .	2,500	37,500	40,000
French chalk . . . . .	..	..	20-25,000
Graphite . . . . .	..	..	15,000
Mica (block)—			
Ruby—	lb.	lb.	lb.
Best clear . . . . .	20,160	14,500	34,660
Other good qualities . . . . .	17,920	128,000	145,920
Amber—			
For aero spark plugs . . . . .	213,000 <sup>4</sup>	35,000	248,000
Other . . . . .	801,000 <sup>5</sup>	38,000	839,000

<sup>1</sup> Not including ores for production of magnesium metal and ferro-chrome.

<sup>2</sup> Substitution by other materials (e.g. dolomite) is being investigated; results not yet available.

<sup>3</sup> These carbon blacks are to a certain extent interchangeable, but 20,000 tons should be gas carbon black, if possible.

<sup>4</sup> The development of the ceramic spark plug will probably reduce or cancel this requirement.

<sup>5</sup> Includes 269,000 lb. for micanite. This requirement might be largely met from varieties other than amber splittings, etc., not shown in the table, but of which large stocks exist in this country.

## APPENDIX 4

The stock position of the main materials on the outbreak of war, and consumption during the first year of war<sup>1</sup>

Material	Stocks on the outbreak of war <sup>2</sup>	Total estimated requirements for first year of war <sup>3</sup>	Actual consumption during first year of war <sup>4</sup>
	Tons	Tons	Tons
Iron ore . . . . .	3,124,000 <sup>5</sup>	21,000,000	22,532,400 <sup>6</sup>
Manganese ore . . . . .	127,000 <sup>7</sup>	180,000	264,400
Bauxite . . . . .	300,900 <sup>8</sup>	280,000	195,500
Cryolite . . . . .	2,950 <sup>8</sup>	2,500	1,050
Copper . . . . .	57,000 <sup>9</sup>	360,000	426,400
Zinc . . . . .	85,000 <sup>9</sup>	190,000	260,400
Zinc concentrates	86,800 <sup>10</sup>	130,000	155,240
Lead . . . . .	72,400 <sup>11</sup>	218,000	304,400
Tin . . . . .	. . . <sup>12</sup>	27,000	32,740
Phosphate rock . . . . .	208,900 <sup>13</sup>	500,000	466,420 <sup>14</sup>
Superphosphates . . . . .	74,700 <sup>15</sup>	550,000	561,600
Molasses . . . . .	370,400 <sup>16</sup>	1,000,000	838,000

<sup>1</sup> Certain important materials, such as steel, timber and leather, have had to be omitted because of lack of information for making a satisfactory comparison between pre-war estimates and war-time consumption.

<sup>2</sup> The stock position is given as at 31st August 1939, unless otherwise stated.

<sup>3</sup> These figures are based on the requirements as estimated at 31st May 1939, but do not take account of the expansion of the Field Force recently announced nor, in some instances, of possible demands in connection with Civil Defence.

<sup>4</sup> The first year of war is taken to cover the period from 1st September 1939–31st August 1940.

<sup>5</sup> At the end of September 1939. For home ore the figure covers stocks at mines and works; for imported ore, at works.

<sup>6</sup> As the September 1939 figures of consumption of home ore are not available, that part of the total which covers home ore is therefore for the eleven months ending 31st August plus one-eleventh.

<sup>7</sup> At works.

<sup>8</sup> Total stocks in the country.

<sup>9</sup> At the end of October 1939, the earliest available figure. It covers stocks held by the Non-Ferrous Metals Control and by consumers.

<sup>10</sup> Stocks at acid works.

<sup>11</sup> The same date and coverage as footnote <sup>9</sup>, but includes lead in process of refining.

<sup>12</sup> No complete figure available until end of 1939.

<sup>13</sup> This total comprises the Government stock figure which is for the end of August 1939, and the trade stock figure which is for the end of September 1939.

<sup>14</sup> No figures are available for the industrial consumption of phosphate rock for September 1939, and that part of the total which covers the industrial consumption is therefore for the eleven months ending 31st August 1940 plus one-eleventh.

<sup>15</sup> At works at the end of September 1939, the earliest available figure.

<sup>16</sup> At the end of September 1939, the earliest available figure. Excluding distillers' stocks.

Material	Stocks on the outbreak of war	Total estimated requirements for first year of war	Actual consumption during first year of war
Industrial alcohol	1·84 mill. bulk gal. <sup>1</sup>	34·5—35·5 mill. bulk gal.	29·83 mill. bulk gal.
Raw cotton	975 thous. bales <sup>2</sup>	3,199 thous. bales <sup>3</sup>	2,759 thous. bales
Wool	341 mill. lb. <sup>4</sup>	480 mill. lb.	556 mill. lb.
Jute	252 thous. bales <sup>5</sup>	2,436 thous. bales <sup>6</sup>	947·5 thous. bales
Flax	34,160 <sup>7</sup>	92,000	55,800
Soft hemp <sup>8</sup>	7,980 <sup>9</sup>	26,675	25,280 <sup>10</sup>
Hard hemp <sup>11</sup>	19,710 <sup>12</sup>	73,000	97,060 <sup>10</sup>
Wood pulp <sup>13</sup>	464,810 <sup>14</sup>	1,200,000	1,280,150 <sup>15</sup>
Newsprint	208,700 <sup>16</sup>	1,000,000	574,100
Rubber	66,200 <sup>17</sup>	120,000	143,400

<sup>1</sup> At the end of September 1939. Stocks held on behalf of the Government and by producers.

<sup>2</sup> The figures are those of commercial stocks for the end of the season, 31st July 1939.

<sup>3</sup> The pre-war estimates were made in pounds. They have been translated into bales on the basis of 4·48 bales per ton.

<sup>4</sup> In the hands of the Control, spinners, manufacturers and merchants, but excluding stocks in the hands of farmers not yet taken over by the Control.

<sup>5</sup> At the end of September 1939. In the hands of the Control and of consumers.

<sup>6</sup> The pre-war estimate was made in tons. It has been translated into bales on the basis of 5·6 bales per ton.

<sup>7</sup> In the hands of the Control, consumers and merchants, and including Italian hemp in the hands of flax spinners.

<sup>8</sup> Italian, Central European, Indian and Chilean hems.

<sup>9</sup> At the end of November 1939, the earliest available figure. Including dressed line and tow, but excluding quantities afloat and in transit in this country. Not including the Government reserve.

<sup>10</sup> No consumption figures are available for September and October 1939, and the figure given here is therefore for the ten months ending August 1940 plus one-fifth.

<sup>11</sup> Manila, sisal and phormium tenax.

<sup>12</sup> Excluding Government reserves. At the end of November 1939, the earliest available figure.

<sup>13</sup> Sulphite, sulphate, mechanical and industrial wood pulps.

<sup>14</sup> In the hands of consumers. The industrial wood pulp figure included in this total is for the end of September 1939, the earliest available figure.

<sup>15</sup> No figures are available for the consumption of sulphite, sulphate and mechanical pulps for October 1939, and that part of the total which covers this consumption is therefore based on the total for the other eleven months plus one-eleventh.

<sup>16</sup> In the hands of mills, publishers and agents.

<sup>17</sup> In the hands of manufacturers and public warehouses.



## APPENDIX 5

### List of articles export of which is to be prohibited in order to conserve supplies

(As at 31st May 1939)

*Proposals for Prohibition of Export, approved by  
the Committee of Imperial Defence*

1. Antimony and antimony ores (including liquidated sulphide and alloys containing antimony).
2. Bauxite, cryolite, alumina, aluminium, aluminium alloys and aluminium manufactures.
3. Magnesium and magnesium alloys.
4. Calcium carbide.
5. Monazite sands, thorium and cerium compounds.
6. Ferro-tungsten, tungsten and tungsten ores, ferro-vanadium, vanadium and vanadium ores, molybdenum, ferro-molybdenum and molybdenum ores and compounds, ferro-chrome and ferro-silicon.
7. Flax, hemp, flax tow and hemp yarns, flax seed and linen manufactures.
8. Potash salts.
9. Graphite and graphite crucibles.
10. Abrasives: natural abrasives (emery, corundum and garnet), artificial abrasives (silicon carbide and aluminium oxide) and grinding wheels of the above substances.
11. Cork, cork waste and cork manufactures.
12. Copper.
13. Asbestos.
14. Acetone.
15. Boron minerals, borax and boric acid.
16. Kapok.
17. Silica sand.
18. Mica and micanite.
19. Candelilla wax.
20. Glycerine.
21. Sulphur, pyrites, spent oxide and sulphuric acid.
22. Rubber, gutta-percha and balata, reclaimed and waste rubber.
23. Paper-making materials (rags, sacks, esparto grass, wood pulp and waste paper).
24. Merchant ships under construction or built for foreign account in respect of which no certificate of foreign registry has been obtained by the owners.
25. Cobalt, cobalt alloys and cobalt oxide and salts.
26. Mercury.

27. Rock crystal (quartz).
28. Hides, skins and leather.
29. Raw silk, including waste and noils, and manufactures thereof.
30. Nickel, nickel ore and matte and nickel alloys in their various forms (including nickel oxide).
31. Manganese ore, manganiferous iron ore, silico-manganese, silico-spiegel, spiegeleisen and ferro-manganese.
32. Lead ores, pig lead and scrap, lead manufactures and lead compounds.
33. Zinc ores, ashes and dross, crude zinc, zinc manufactures and zinc pigments.
34. Tanning materials, tanning extracts and bichromates of sodium and potassium.
35. Raw jute, jute piece-goods, sacking and sacks (whether new or second-hand).
36. Mineral phosphates, superphosphates, basic slag, phosphorus and phosphorus compounds.
37. Iodine and iodides.
38. Bismuth metal and salts and alloys containing bismuth.
39. Beeswax, refined and unrefined.
40. Tin ores and concentrates, and unwrought tin.
41. Radium, radium ores and concentrates, and radium compounds.
42. Iridium, osmiridium, iridosmine and concentrates containing iridium.
43. Crude and refined platinum, platinum alloys and compounds.
44. Wood and timber not further prepared than hewn, sawn, planed or dressed, including tongued and grooved and V-jointed; builders' woodwork; plywood, including laminboard, blockboard and battenboard; canes and rattans; and bamboo.
45. Bromine and bromides.
46. Gums and resins, including rosin and shellac.
47. Charcoal, including activated and decolorising carbons, lamp black, carbon black, acetylene black, gas retort carbon, pitch coke and creosote oils.
48. Coir fibre, coir yarn, and manufactures of coir.
49. Wool and animal hair, raw, wool waste and rags, wool tops and noils, and manufactures of wool.
50. Coal tar and coal tar distillates generally; organic intermediate products or mixtures thereof, whether used as dyestuffs or in the manufacture of dyestuffs; synthetic organic dyestuffs (including pigment dyestuffs), whether soluble or insoluble, and compounds, preparations and articles suitable for use in dyeing, manufactured from such dyestuffs.
51. Petroleum and petroleum products, shale oil and shale oil products.
52. Benzol or benzene.
53. Toluol or toluene.

## APPENDIX 6

### Ministers of Supply, 1939-45

	<i>Month and year appointment was taken up</i>
Rt. Hon. Edward L. Burgin, M.P. . . . .	June 1939
Rt. Hon. Herbert Morrison, M.P. . . . .	May 1940
Rt. Hon. Sir Andrew Rae Duncan, M.P. . . . .	October 1940
Rt. Hon. Lord Beaverbrook . . . . .	June 1941
Rt. Hon. Sir Andrew Rae Duncan, M.P. . . . .	February 1942
Rt. Hon. John Wilmot, M.P. . . . .	July 1945

## APPENDIX 7

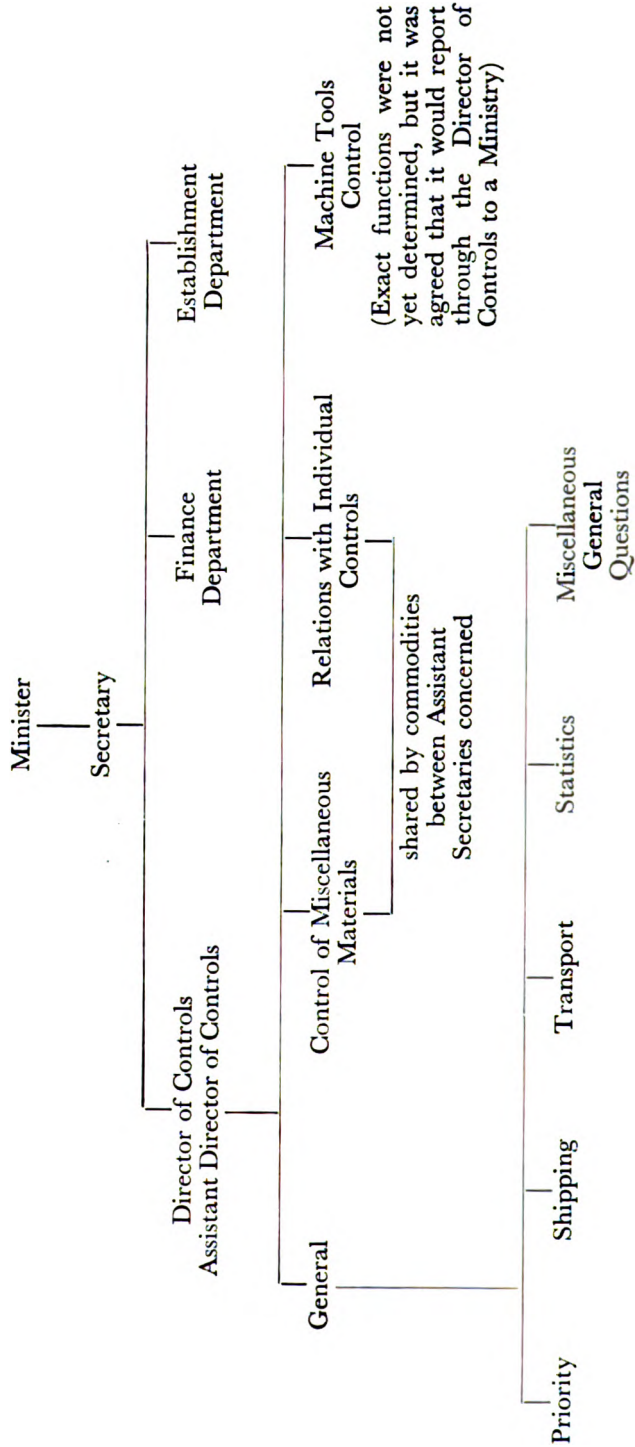
### Controllers appointed by the Minister of Supply (As at November 1939)

Control	Name	Previous interests
Iron and steel	Sir Andrew Duncan, G.B.E.	Chairman of the Executive Committee of the British Iron and Steel Federation. Director of the Bank of England and of Imperial Chemical Industries.
Non-ferrous metals	Captain Oliver Lyttelton, D.S.O., M.C.	Managing Director of the British Metal Corporation Ltd. Director of the Imperial Smelting Corporation Ltd.
Aluminium	The Hon. G. Cunliffe	Deputy Managing Director of the British Aluminium Co. Ltd.
Timber	Major A. I. Harris	Partner, Louis Bamberger (timber importers).
Paper	Mr A. Ralph Reed	Chairman, Albert E. Reed & Co. Ltd. (paper makers).
Wool	Sir Harry Shackleton	Director of Taylor, Shackleton & Co. Ltd., Shipley (woollen manufacturers).
Hemp	Mr A. M. Landauer	Partner, Landauer & Son Ltd. (hemp merchants).
Silk and rayon	Mr H. O. Hambleton	Managing Director of T. H. Hambleton, Ltd. (silk manufacturers).
Jute	Mr G. Malcolm, C.B.E.	Director of Ralli Bros. Ltd. (merchants).
Sulphate of ammonia	Mr F. C. O. Speyer	Secretary, Sulphate of Ammonia Federation. Delegate Director, Imperial Chemical Industries (Fertilisers and Synthetic Products) Ltd. Director, Scottish Agricultural Industries Ltd. Director, the International Nitrogen Association.
Other fertilisers	Mr Howard Cunningham	Managing Director of Scottish Agricultural Industries Ltd.
Industrial alcohol and molasses	Mr A. V. Board, D.S.O.	Director of the Distillers Company, Ltd.
Flax	Sir Harry Lindsay, K.C.I.E., C.B.E.	Director of the Imperial Institute.
Leather	Dr E. C. Snow	Whole-time Official of the United Tanners Federation.
Sulphuric acid	Mr N. Garrod Thomas	Whole-time Official of the National Sulphuric Acid Manufacturers Association.
Machine tools	Mr A. A. Rowse	Director of Flettons, Ltd. Director of Webley and Scott Ltd. Director of Metal Castings Ltd. Director of Langley Alloys, Ltd.

APPENDIX 8

Organisation of a Material Resources Department

(as proposed in April 1939)



## APPENDIX 9

### Deliveries of finished steel by authorising department

Thousand tons

Symbol	Department	1940 <sup>1</sup>	1941	1942	1943	1944
H.O. and A.R.P. } A.R. } A.D. } A.D.M. } W.O. } M.S. and M.S.(T) } A.M. } M.A.P. }	Home Office and Ministry of Home Security . . . . . Raid Damage . . . . . Admiralty . . . . . Admiralty (Mercantile) . . . . . War Office . . . . . Ministry of Supply . . . . . Air Ministry . . . . . Ministry of Aircraft Production . . . . .	174·8 1,088·0 768·8 569·2 2,234·0	{ 279·9 72·3 1,209·0 740·8 294·3 3,962·4	{ 71·9 26·2 1,289·0 820·5 345·9 5,208·6	{ 22·3 7·3 1,576·4 810·0 168·3 5,028·6	{ 7·7 4·8 1,322·9 627·2 158·7 4,656·8
S.D. B.T.1 B.T.2 B.T.4 B.T.5	Scottish Departments . . . . . Ministry of Fuel and Power (Gas Division) . . . . . Board of Trade . . . . . Board of Trade (Indirect Export) . . . . . Board of Trade (Direct Export) . . . . .	9·2 34·4 637·6 266·0 646·4 <sup>2</sup>	7·5 — 370·0 202·1 194·7	7·7 — 183·9 79·6 92·4	8·9 — 179·8 64·7 55·1	15·7 — 224·6 89·1 122·4
M.H. A.F. M.T. M.F. O.W. and O.W.(C)	Ministry of Health . . . . . Ministry of Agriculture and Fisheries . . . . . Ministry of War Transport . . . . . Ministry of Food . . . . . Ministry of Works . . . . .	22·8 56·0 428·4 242·8 190·8	24·0 85·0 566·9 299·8 256·3	18·4 104·1 568·8 290·4 261·1	8·4 108·1 570·8 250·3 233·0	9·0 118·9 589·8 283·7 238·0
P.O. M.D. P.D.	General Post Office . . . . . Ministry of Fuel and Power (Gas Division) . . . . . Ministry of Fuel and Power (Coal Division) . . . . . Ministry of Fuel and Power (Petroleum Division) . . . . .	14·8 431·6 — 149·2	23·8 47·3 396·6 214·8	26·4 47·2 470·2 170·3	24·8 42·9 498·1 80·6	27·1 46·5 550·7 110·8
E.C. N.I.	Electricity Commissioners . . . . . Northern Ireland . . . . . Unallocated . . . . .	114·4 5·6 1,154·0	123·8 16·3 —	93·8 26·1 —	65·2 23·3 —	44·3 19·8 —
	TOTAL . . . . .	10,555·2	10,497·4	11,385·9	11,005·7	10,270·2

Source: (1941-44) B.I.S.F. *Statistics of the Iron and Steel Industry of the U.K. (1939-44)*, Table 38

<sup>1</sup> Based on quarterly average for April-Dec.

<sup>2</sup> This includes India.

## APPENDIX 10

### Aluminium releases for munitions, civil and export purposes (virgin, secondary and scrap)

Tons

	Munitions	Civil	Exports	Total
1940 . .	135,939	6,087	1,173	143,199
1941 . .	172,766	3,508	652	176,926
1942 . .	268,831	3,852	258	272,941
1943 . .	316,976	3,454	193	320,623
1944 . .	253,770	7,087	585	261,442

## APPENDIX I I

### Consumption of timber: divided into munitions and non-munitions uses

*Table 1. Softwoods: certificates to purchase issued*

	Standards				
	1941 <sup>1</sup>	1942	1943	1944	1945 <sup>2</sup>
Admiralty . . . . .	45,756	55,311	65,458	61,588	59,380
Ministry of Supply (including War Office) . . . . .	90,838	197,795	96,097	331,058	279,343
Ministry of Aircraft Production and Air Ministry . . . . .	45,648	51,462	194,526	75,687	61,138
Other munitions requirements . . . . .	321,760	219,379	174,027	196,502	172,379
Total munitions requirements . . . . .	504,002	523,947	530,108	664,835	572,240
Non-munitions requirements . . . . .	256,586	206,049	196,944	241,714	359,252
TOTAL . . . . .	760,588	729,996	727,052	906,549	931,492

<sup>1</sup> Second half of 1941 calculated on annual basis.

<sup>2</sup> First half of 1945 calculated on annual basis.

*Table 2. Hardwoods: certificates to purchase issued*

	Cubic feet				
	1941 <sup>1</sup>	1942	1943	1944	1945 <sup>2</sup>
Admiralty . . . . .	3,275,862	4,555,058	4,840,523	3,344,006	3,282,720
Ministry of Supply (including War Office) . . . . .	6,703,240	10,080,692	11,668,066	12,953,217	9,637,068
Ministry of Aircraft Production and Air Ministry . . . . .	2,962,834	3,787,744	2,043,113	1,403,085	1,313,448
Other munitions requirements . . . . .	6,641,256	7,799,016	9,630,690	9,110,260	9,258,588
Total munitions requirements . . . . .	19,583,192	26,222,510	28,182,392	26,810,568	23,491,824
Non-munitions requirements . . . . .	18,693,346	19,086,089	24,398,924	23,127,886	28,557,318
TOTAL . . . . .	38,276,538	45,308,599	52,581,316	49,938,454	52,049,142

<sup>1</sup> Second half of 1941 calculated on annual basis.

<sup>2</sup> First half of 1945 calculated on annual basis.



## APPENDICES

Table 3. Plywood: certificates to purchase issued

Square feet

	1942 April-Dec.	1943	1944	1945 <sup>1</sup>
Admiralty . . . . .	6,406,389	11,681,431	24,922,793	34,695,870
Ministry of Supply (including War Office) . . . . .	21,916,112	33,070,445	138,672,011	154,330,354
Ministry of Aircraft Production and Air Ministry . . . . .	12,100,556	31,588,311	53,811,332	47,481,050
Other munitions requirements	16,046,298	19,557,230	37,498,002	29,086,932
Total munitions requirements	56,469,355	95,897,417	254,904,138	265,594,206
Non-munitions requirements .	35,998,753	39,264,891	89,193,341	176,194,018
<b>TOTAL . . . . .</b>	<b>92,468,108</b>	<b>135,162,308</b>	<b>344,097,479</b>	<b>441,788,224</b>

<sup>1</sup> First half of 1945 calculated on annual basis.

## APPENDIX 12

### Consumption of flax: divided into munitions, home civilian and export requirements<sup>1</sup>

Tons

Period	Total licences issued (Line, M/c tow and L/g tow)	Licences issued for service, civilian and export requirements		
		Service and other munitions requirements	Home civilian requirements	Export requirements
3rd Sept. 1939- 30th Apr. 1940 <sup>2</sup>	41,393	29,049	2,054	10,290
1st July 1940- 31st Dec. 1940	16,614	9,814	1,776	5,024
1941	33,618	17,208	2,552	13,858
1942	30,020	23,774	2,975	3,271
1943	37,140	29,964	3,834	3,342
1944	45,650	35,972	4,987	4,691
1945	33,983	17,531	5,584	10,868

<sup>1</sup> Based on figures of licences to spin issued during the war.

<sup>2</sup> The months of May and June 1940 have been omitted from the table as no figures can be obtained for Northern Ireland for this period.

## APPENDIX 13

### Cotton: service, civilian and essential home and export allocations

Thousand tons

	Service	Civilian and essential home	Export
1941 Oct.-Dec.	35·22	47·62	20·86
1942 1st Qtr.	32·59	49·34	15·80
2nd Qtr.	32·44	48·96	14·25
3rd Qtr.	35·11	43·73	15·89
4th Qtr.	33·10	42·09	16·93
Total 1942	133·24	184·12	62·87
1943 1st Qtr.	33·41	41·36	17·50
2nd Qtr.	32·98	40·81	19·31
3rd Qtr.	32·87	39·85	19·27
4th Qtr.	31·39	39·83	18·78
Total 1943	130·65	161·85	74·86
1944 1st Qtr.	30·75	38·85	18·75
2nd Qtr.	29·13	39·13	19·63
3rd Qtr.	29·40	37·67	18·74
4th Qtr.	28·49	38·41	18·72
Total 1944	117·77	154·06	75·84
1945 1st Qtr.	28·15	37·68	18·70
2nd Qtr.	26·06	34·60	14·97
3rd Qtr.	23·12	36·90	14·98
4th Qtr.	20·21	41·39	19·40
Total 1945	97·54	150·57	68·05

## APPENDIX 14

### Exports of certain raw materials 1938-45

*Table 1. Exports of iron and steel (monthly averages)*

Thousand tons

Iron and steel							
	Bars and rods	Uncoated plates and sheets	Angles, shapes and sections	Tinned plates	Wrought tubes	Railway construction material	Wire and wire manufactures
1938	10.6	17.4	5.6	27.5	18.3	13.2	7.1
1939	6.7	16.4	4.6	27.9	15.4	7.8	5.8
1940	5.5	6.0	1.6	32.8	10.9	2.6	2.1
1941	0.8	2.9	0.4	19.1	2.7	0.8	1.2
1942	1.7	3.6	0.6	4.1	1.4	1.3	1.4
1943	0.8	1.2	0.4	1.4	0.9	0.9	0.6
1944	0.9	3.3	0.7	1.6	4.1	2.1	0.5
Jan.-Sept. 1945	3.7	5.8	2.5	2.2	4.8	5.3	1.2

Source: *Monthly Digest of Statistics, No. 8, August 1946, Table 102*

*Table 2. Exports of non-ferrous metals (monthly averages)*

Thousand tons

Non-ferrous metals				
	Aluminium and aluminium manufactures	Brass and brass manufactures	Copper and copper manufactures	Tin blocks, etc.
1938	0.53	1.80	2.70	1.02
1939	0.50	1.68	2.35	1.54
1940	0.17	1.08	1.70	1.14
1941	0.03	0.77	1.74	0.55
1942	0.02	0.70	0.81	0.85
1943	0.02	0.50	0.47	1.02
1944	0.08	0.48	0.43	0.26
Jan.-Sept. 1945	0.39	0.76	1.19	0.86

Source: *Monthly Digest of Statistics, No. 8, August 1946, Table 102*

Table 3. Exports of textiles (monthly averages)

Thousand tons

	Cotton	Wool			Rayon
	Yarns	Sheep's wool and lambs' wool	Tops	Yarns	Singles yarn
1938	4.57	1.58	1.21	1.29	0.28
1939	4.23	1.26	1.26	1.19	0.24
1940	2.48	0.57	1.05	0.66	0.54
1941	1.07	0.79	0.60	0.49	0.73
1942	0.70	0.20	0.44	0.39	0.59
1943	0.71	0.03	0.31	0.33	0.50
1944	0.73	0.04	0.19	0.32	0.56
Jan.-Sept. 1945	0.61	0.63	0.55	0.33	0.55

Source: *Monthly Digest of Statistics, No. 8, August 1946, Table 105*

Table 4. Miscellaneous exports (monthly averages)

Thousand tons

	Paper and board	Ammonium sulphate	Sodium compounds	Paints and colours
1938	14.7	26.0	29.7	6.30
1939	13.0	24.0	37.5	6.16
1940	12.4	14.0	39.9	5.90
1941	6.0	1.0	36.8	5.93
1942	3.1	3.0	39.2	3.38
1943	2.3	1.0	34.5	2.80
1944	2.2	11.0	28.8	2.71
Jan.-Sept. 1945	2.8	17.0	36.1	3.59

Source: *Monthly Digest of Statistics, No. 8, August 1946, Table 106*

## APPENDIX 15

# War-time consumption of certain items in the U.K., U.S. and Canada

*Table 1. Men's and boys' civilian clothing<sup>1</sup>*  
*Annual per capita consumer purchases*  
(valued at pre-war prices)

	United Kingdom (at 1938 U.K. prices)	United States (at 1939 U.S. prices)	Canada (at 1939 Canadian prices)
Pre-war (U.K. 1938; U.S. and Canada 1939)	£6.00	\$39.80	\$24.84
1941	£3.74	\$46.16	\$29.21
1943	£3.19	\$48.74 P	\$30.60
1944	£3.88	\$49.00 P	\$31.49
Change from pre-war to 1941	-38%	+16%	+18%
Change from 1941 to 1944	+4%	+6% P	+8%
Change from pre-war to 1944	-35%	+23% P	+27%

P = Preliminary

<sup>1</sup> The population base used in computing *per capita* figures for men's and boys' clothing purchases in the United Kingdom is the male civilian population aged four and over plus male officers stationed in the country; for Canada the base is the male civilian population aged four and over, for the United States it is the male civilian population aged five and over.

*Table 2. Women's and children's civilian clothing<sup>1</sup>*  
*Annual per capita consumer purchases*  
(valued at pre-war prices)

	United Kingdom (at 1938 U.K. prices)	United States (at 1939 U.S. prices)	Canada (at 1939 Canadian prices)
Pre-war (U.K. 1938; U.S. and Canada 1939)	£9.44	\$48.76	\$38.79
1941	£5.61	\$53.12	\$46.48
1943	£5.24	\$61.05 P	\$47.29
1944	£5.80	\$61.00 P	\$47.10
Change from pre-war to 1941	-41%	+9%	+20%
Change from 1941 to 1944	+3%	+15% P	+1%
Change from pre-war to 1944	-39%	+25% P	+21%

P = Preliminary

<sup>1</sup> The population base used in computing *per capita* figures for women's and children's clothing in the United Kingdom and Canada is the total female civilian population plus males aged 0-3 inclusive, for the United States it is the total female civilian population plus males aged 0-4 inclusive.

*Table 3. Household goods  
Annual per capita consumer purchases*  
(adjusted to approximately a pre-war price basis)

	United Kingdom (at 1938 U.K. prices)	United States (at 1939 U.S. prices)	Canada <sup>1</sup> (at 1939 Canadian prices)
Pre-war (U.K. 1938; U.S. and Canada 1939) . . . .	£6·44	\$41·32	\$20·83
1941 . . . . .	£4·05	\$53·92	\$23·63
1943 . . . . .	£2·74	\$47·29 P	\$22·42
1944 . . . . .	£2·66	.. .	\$23·54
Change from pre-war to 1941	-37%	+30% P	+13%
Change from 1941 to 1943 .	-32%	-12% P	-5%
Change from pre-war to 1943	-57%	+14% P	+8%

P = Preliminary

<sup>1</sup> The Canadian data exclude the category described as 'less durable goods'. The inclusion of these items would raise the 1939 total by roughly twenty-five per cent., but would not materially affect the movements for the group as a whole.

<sup>2</sup> While no figure was then available for 1944, incomplete sales data indicated that the level probably was slightly below 1943.

Source: *The Impact of the War on Civilian Consumption in the U.K., the U.S. and Canada* (London, H.M.S.O. 1945), Part III, Chapter 3, Tables 21, 22, and Chapter 6, Table 31

## APPENDIX 16

### Personal expenditure on consumer goods and services, 1938–45, revalued at 1938 prices

£ million

	1938	1939	1940	1941	1942	1943	1944	1945
Durable household goods . . . . .	234	219	164	115	81	67	60	82
Other household goods . . . . .	54	55	52	48	42	40	40	40
Clothing . . . . .	446	444	372	275	273	247	275	279
Books, newspapers and magazines . . . . .	64	63	59	61	63	67	73	77

*Source: National Income and Expenditure of the United Kingdom, Cmd. 7099, April 1947, Table 14*



## APPENDIX 17

### Imports of main raw materials

for the months of November 1939, February 1940 and May 1940 showing those covered by import licences and state purchase

(See also Table 24, Chapter 10)

\* indicates state-purchased materials.

† indicates materials covered by import licence.

Thousand tons

Material	Nov. 1939	Feb. 1940	May 1940
Iron ore <sup>1</sup> . . . . .	395·4*	443·0*†	605·0*†
Pig iron . . . . .	74·0*	28·9*†	34·5*†
Scrap . . . . .	50·7*	30·4*†	105·4*†
Crude steel <sup>2</sup> . . . . .	129·6*	113·0*†	95·8*†
Ferro-alloys . . . . .	6·8*	4·9*†	4·0*†
Bauxite . . . . .	23·2*	10·6*	10·6*
Aluminium . . . . .	9·3*	6·1*†	5·6*†
Copper ore . . . . .	3·4*	1·8*	11·3*
Copper . . . . .	24·1*	33·6*	41·8*†
Tin ore and tin . . . . .	9·5	6·2	8·4
Zinc ore and concentrates . . . . .	31·3*	6·7*	23·3*
Zinc . . . . .	10·6*	13·2*	21·6*†
Lead . . . . .	19·8*	34·4*	27·1*†
Manganese ore . . . . .	11·9*	5·8*†	20·6*†
Antimony ore and metal . . . . .	0·3	0·9	1·6
Nickel . . . . .	0·2	0·3	0·2
Pyrites . . . . .	22·2	36·4*†	52·8*†
Sulphur . . . . .	20·7	14·9*	18·4*†
Asbestos . . . . .	6·3	4·2	12·2
Asphalt . . . . .	3·4	4·8	1·0†
Softwoods . . . . .	213·1*†	106·3*†	207·5*†
Pitprops and pitwood <sup>3</sup> . . . . .	33·3*†	68·5*†	58·8*†
Hard and other woods and plywood . . . . .	77·2*†	84·0*†	79·0*†
Raw cotton . . . . .	103·7	104·7	60·4† <sup>4</sup>
Cotton linters and cotton waste . . . . .	7·4	6·0	8·3† <sup>4</sup>
Cotton yarns . . . . .	0·1	0·2	0·6† <sup>4</sup>
Sheep and lambs' wool <sup>5</sup> . . . . .	10·7*	60·8*	53·6*
Jute . . . . .	21·2	20·8	23·8
Flax . . . . .	3·6*†	4·0*†	3·9*†
Hemp . . . . .	12·6*	9·5*	9·5*
Coir . . . . .	..	1·8	0·7
Kapok . . . . .	..	0·1	0·2
Silk, raw and waste <sup>7</sup> . . . . .	0·3†	0·4†	0·3†
Mica . . . . .	0·3	0·3	0·3
Graphite . . . . .	1·4	2·5	2·2
Copal . . . . .	1·1	1·2	1·2
Woodpulp and esparto . . . . .	154·6*†	129·9*†	32·5*†
Paper, cardboard, etc. . . . .	71·4	64·4	40·9†
Hides, skins and leather . . . . .	13·6†	15·8†	17·2†
Rubber . . . . .	15·4	9·0	10·8
Calcium carbide . . . . .	7·0	5·7	3·2
Tanning materials . . . . .	12·9	11·1	21·0† <sup>4</sup>
Turpentine . . . . .	1·0	2·2	1·8
Rosin . . . . .	9·0	8·8	7·6† <sup>4</sup>
TOTAL . . . . .	1,623·6	1,518·1	1,746·5

Total of licensed materials . . .	337·5	1,077·4	1,473·7
Total of state-purchased materials	1,295·2	1,246·7	1,522·6
Total of state-purchased and licensed materials . . .	1,309·1	1,262·9	1,582·0
Total of 'uncontrolled' materials .	314·5	255·2	164·5

<sup>1</sup> Other than manganiferous ore.

<sup>2</sup> Ingots, blooms, billets and slabs, sheet bars and wire rods in terms of ingot tons.

<sup>3</sup> A small proportion of pitprops, and also of one or two other specialised timbers only needed in very small quantities, continued to be bought on private account.

<sup>4</sup> Cotton, cotton linters and waste, cotton yarn, rosin and certain tanning materials became subject to import licence during the latter part of May but have been omitted from the total of licensed goods for that month.

<sup>5</sup> Quantities bought privately from sources such as South America and Kenya were negligible.

<sup>6</sup> Since flax, woodpulp and esparto were not brought under licence until 20th November they must be omitted from the licensed materials for that month.

<sup>7</sup> Silk noils were bulk purchased but formed so small a part of total silk imports that this fact has been ignored for the purposes of the table.

## APPENDIX 18

### World distribution of raw materials in 1938 (percentages of world production)<sup>1</sup>

Raw material	Europe	Africa, Asia and the Antipodes	The American continent	Largest producers
Antimony ore	16·9	27·5	54·8	China 22·2, Mexico 22·2, Bolivia 25·8, Yugoslavia 10·1
Chrome ore (metal content)	9·3	83·5	6·4	S. Rhodesia 17·5, U.S.S.R., 17·3, Turkey 20·6, S. Africa 15·3
Bauxite (crude ore)	52·8	36·7	8·0	France 16·5, Hungary 13·1, British Guiana 13·8
Copper ore (metal content)	6·1	31·8	60·2	U.S.A. 24·9, Chile 17·3, Canada 12·7, N. Rhodesia 12·6
Iron ore (metal content)	32·6	33·4	23·5	U.S.S.R. 19·5, U.S.A. 19·5, France 13·5
Lead ore (metal content)	10·5	30·1	52·0	U.S.A. 18·7, Mexico 15·7, Australia 15·6
Magnesite <sup>2</sup> (crude)	19·2	19·9	19·3	U.S.A. 16·1, Greece 14·0, Manchukuo 14·5
Manganese (metal content)	1·8	83·2	6·7	U.S.S.R. 41·3, India 17·6
Mercury	74·2	6·5	17·5	Italy 44·4, Spain 27·9
Molybdenum ore <sup>3</sup> (metal content)	2·8	1·2	96·0	U.S.A. 92·4
Nickel ore <sup>4</sup> (metal content)	2·0	10·1	87·5	Canada 87·0
Tin ore (metal content)	0·7	79·9	17·0	British Malaya 26·7, N.E.I. 16·9, Bolivia 15·8
Tungsten ore <sup>5</sup> (metal content)	8·6	70·6	19·2	China 37·7, Burma 16·5
Vanadium ore (metal content)	—	34·8	65·2	Peru 31·2, U.S.A. 27·3, S.W. Africa 20·8
Zinc ore (metal content)	16·0	22·2	49·3	U.S.A. 25·1, Australia 11·9
Phosphates (natural)	0·8	58·7	27·5	U.S.A. 26·8, U.S.S.R. 15·8, Tunis 14·0
Potash <sup>6</sup>	23·0	5·2	9·6	France 19·4, U.S.A. 9·6
Pyrites	59·0	26·3	5·8	Spain 22·2, Japan 16·7

<sup>1</sup> The European percentages do not include United Kingdom or German and Austrian production. No figures are given for timber as complete figures for world felling are not available. As far as softwoods are concerned the principal producing countries were Canada, Finland, the U.S.S.R., Sweden, the United States, Austria, Poland and Rumania, whereas special woods came largely from tropical areas.

Percentages of world production can only be regarded as approximate, and in some cases where figures of total production are not available percentages are based on the total of countries for which information is available. Wherever possible figures refer to 1938 production, but where this is not available to the nearest period for which information is obtainable. The U.S.S.R. is included under Asia.

<sup>2</sup> Total excludes U.S.S.R. production—482,000 metric tons in 1934.

<sup>3</sup> Total excludes U.S.S.R. production.

<sup>4</sup> Total excludes German production.

<sup>5</sup> Total excludes U.S.S.R. production.

<sup>6</sup> Total excludes Spanish production.

Raw material	Europe	Africa, Asia and the Antipodes	The American continent	Largest producers
Sulphur	13·2	7·0	79·2	U.S.A. 78·5, Italy 12·8
Cotton (ginned)	0·4	46·8	52·6	U.S.A. 41·7, India 14·7, U.S.S.R. 13·5
Flax	25·2	69·5	—	U.S.S.R. 68·0, Belgium 4·4
Hemp <sup>7</sup>	57·8	36·3	—	U.S.S.R. 29·3, Italy 28·5, Jugo- slavia 13·5
Jute <sup>8</sup>	—	99·7	—	India 98·9
Rubber <sup>9</sup> (shipments)	—	96·4	2·1	British Malaya 41·5, N.E.I. 33·3
Silk <sup>10</sup> , raw	5·1	94·8	0·1	Japan 78·5
Wool	9·9	58·4	27·4	Australia 24·7, U.S.A. 11·5

Source: Based on *World Production of Raw Materials* (R.I.I.A. Paper 18B) (1941)

<sup>7</sup> Total excludes Turkish and Manchukuo production, and 'manila hemp'. Annual production of manila hemp was equal to about forty per cent. of the world production of hemp proper (i.e. excluding sisal).

<sup>8</sup> Total excludes Nepal production.

<sup>9</sup> Does not include reclaimed or synthetic rubber.

<sup>10</sup> Figures for Asiatic countries partly based on exports only.

## APPENDIX 19

### Raw material imports from U.S. (excluding steel)

on government procurement 1939-45<sup>1</sup> divided between cash  
and lend-lease

	Cash	Percentage of total	Lend-lease	Percentage of total
	Tons		Tons	
1939	1,229,456	100·0	—	—
1940	1,846,696	100·0	—	—
1941	1,037,371	60·0	692,236	40·0
1942	985	0·1	1,735,096	99·9
1943	2,336	0·1	1,701,009	99·9
1944	57,356	4·5	1,203,374	95·5
1945	562,423	55·7	446,683	44·3

<sup>1</sup> Cash figures for 1939-41 have been confined as far as possible to the same range of raw materials as were government procured (cash or lend-lease) during the later years of the war. In addition to government cash purchases, a small amount of commercial cash procurement of raw materials continued even during the lend-lease period; but for this cash element there are no accurate figures available.

APPENDIX 20

Main raw material imports in £ sterling from  
Canada for periods II (July 1940–March 1941)  
and III (April–December 1941)

given in percentages of period I (September 1939–June 1940)

(*Period I (September 1939–June 1940) is 100*)

Material	Period II July 1940– March 1941	Period III April– December 1941
Iron ore and scrap . . . . .	—	—
Iron and steel . . . . .	216	2,512
Non-ferrous metalliferous ores and scrap . . . . .	53	70
Non-ferrous metals . . . . .	123	113
Wood and timber . . . . .	208	162
Wood and timber manufactures .	99	70
Raw cotton and cotton waste .	—	—
Industrial pulp and other textiles	140	211
Hides and skins . . . . .	14	73
Leather . . . . .	6	11
Paper-making materials . . . . .	343	366
Paper, cardboard, etc. . . . .	179	85
Cotton yarn and manufactures .	—	—
Chemicals . . . . .	118	174
<b>TOTAL . . . . .</b>	<b>145</b>	<b>235</b>

Source: Based on *Trade and Navigation Accounts*

## APPENDIX 21

### 1942 import programmes<sup>1</sup>

Thousand tons

Materials	16.5 m. ton <sup>2</sup>	14 m. ton <sup>3</sup>	12.2 m. ton <sup>4</sup>	10.5 m. ton <sup>5</sup>	12.2 m. ton (amended) <sup>6</sup>
<b>I. Iron and Steel</b>					
Iron ore . . . . .	2,520	2,515	2,220	1,932	2,050
Manganese ore . . . . .	360	360	360	360	360
Pig iron, steel and scrap (in- cluding ferro-alloys) . . . . .	5,620	4,200	2,920	2,310	2,990
Magnesite . . . . .	26	26	26	26	49
Chrome ore . . . . .	105	80	74	50	74
Wolfram . . . . .	12	12	12	11	12
Molybdenite . . . . .	5	5	5	5	5
Vanadium ore . . . . .	4	4	4	4	4
Cobalt . . . . .	2	2	2	2	2
<b>TOTAL . . . . .</b>	<b>8,654</b>	<b>7,204</b>	<b>5,623</b>	<b>4,700</b>	<b>5,546</b>
<b>II. Non-ferrous metals</b>					
Antimony ore . . . . .	14	14	14	14	14
Brass . . . . .	6	6	6	6	6
Bismuth and cadmium . . . . .	1	1	1	1	1
Copper . . . . .	543	522	567	473	540
Lead . . . . .	264	252	252	188	252
Nickel . . . . .	39	39	39	39	39
Platinum matte . . . . .	1	1	1	1	1
Tin ore . . . . .	75	75	75	75	75
Zinc . . . . .	232	233	444	171	229
Zinc concentrates . . . . .	220	222		86	215
M.A.P. requirements . . . . .	306	306	306	306	299
<b>TOTAL . . . . .</b>	<b>1,701</b>	<b>1,671</b>	<b>1,705</b>	<b>1,360</b>	<b>1,671</b>
<b>III. Textiles</b>					
Cotton, raw . . . . .	476	436	423	379	380
Cotton, linters and waste . . . . .	50	50		44	60
Wool . . . . .	191	152	101	100	102
Woollen rags . . . . .	1	1	1	1	1
Jute and gunnies . . . . .	280	204	185	165	185
Silk . . . . .	3	3	3	3	3
Hemp . . . . .	130	108	90	86	112
Flax . . . . .	30	18	36	18	18
Ramie . . . . .	3	3		3	—
Kapok . . . . .	3	3		3	3
Coir fibre and yarn . . . . .	11	11	11	11	11
<b>TOTAL . . . . .</b>	<b>1,178</b>	<b>989</b>	<b>839</b>	<b>813</b>	<b>875</b>

<sup>1</sup> The figures given here differ slightly in some cases from those given in the summary on page 211 as they were taken from later papers.

<sup>2</sup> September 1941.

<sup>3</sup> December 1941.

<sup>4</sup> February 1942.

<sup>5</sup> March 1942.

<sup>6</sup> August 1942.

Materials	16·5 m. ton	14 m. ton	12·2 m. ton	10·5 m. ton	12·2 m. ton (amended)
<b>IV. Timber</b>					
Softwoods <sup>7</sup> . . . . .	700	640	767	662	750
Hardwoods . . . . .	350	249	252	234	254
Peeler logs . . . . .	52	52	274	52	58
Spruce . . . . .	40	40		37	45
Plywoods . . . . .	40	40		85	123
Boxboards . . . . .	60	60		30	30
Miscellaneous . . . . .	78	78	— <sup>8</sup>	— <sup>8</sup>	— <sup>8</sup>
<b>TOTAL</b> . . . . .	<b>1,320</b>	<b>1,159</b>	<b>1,293</b>	<b>1,100</b>	<b>1,260</b>
<b>V. Hides, skins, etc.</b>					
Hides, skins and leather . . . . .	121	121	121	114	146
Tanning materials . . . . .	102	102	96	96	96
<b>TOTAL</b> . . . . .	<b>223</b>	<b>223</b>	<b>217</b>	<b>210</b>	<b>242</b>
<b>VI. Paper, etc.</b>					
Pulpwood, woodpulp . . . . .	514	460	480	470	475
Esparto, rags, etc. . . . .	19	19	15	15	19
Newsprint . . . . .	95	95	45	45	55
Other paper and board . . . . .	106	106	106	100	100
<b>TOTAL</b> . . . . .	<b>734</b>	<b>680</b>	<b>646</b>	<b>630</b>	<b>649</b>
<b>VII. Fertilisers, etc.</b>					
Triple superphosphates . . . . .	150	150	150	100	100
Organic fertilisers . . . . .	50	50		40	50
Phosphate rock . . . . .	650	502	520	380	500
Pyrites . . . . .	240	80	110	140	140
Sulphur . . . . .	300	278	196	149	196
Chile nitrate . . . . .	150	110	66	40	66
Potash . . . . .	150	100	100	120	120
<b>TOTAL</b> . . . . .	<b>1,690</b>	<b>1,270</b>	<b>1,142</b>	<b>969</b>	<b>1,172</b>
<b>VIII. Miscellaneous</b>					
Rubber and latex . . . . .	230	70	70	70	70
Asbestos . . . . .	70	70	44	44	50
Paraffin wax . . . . .	60	60	60	60	60
Other waxes, gums, etc. . . . .	105	105	105	105	621
Other materials . . . . .	525	525	485	471	
<b>TOTAL</b> . . . . .	<b>990</b>	<b>830</b>	<b>764</b>	<b>750</b>	<b>801</b>
<b>GRAND TOTAL</b> . . . . .	<b>16,490</b>	<b>14,026</b>	<b>12,229</b>	<b>10,532</b>	<b>12,216</b>

<sup>7</sup> Including sleepers, crossings and mining timber.

<sup>8</sup> Included under hardwoods.



## APPENDIX 22

### Summary of raw material stocks, 1939-45

Thousand tons

	1939			1940			1941		
	Import <sup>1</sup>	Other <sup>2</sup>	Total	Import	Other	Total	Import	Other	Total
Jan.				10,089	1,420	11,509	12,397	1,824	14,221
Feb.				9,768	1,440	11,208	12,250	1,721	13,971
Mar.				9,648	1,382	11,030	12,237	1,637	13,874
April				9,804	1,334	11,138	12,158	1,546	13,704
May				9,792	1,336	11,128	12,150	1,522	13,672
June				10,054	1,416	11,470	12,255	1,511	13,766
July				10,324	1,530	11,854	12,356	1,524	13,880
Aug.	11,833	1,311	13,144	11,081	1,646	12,727	12,482	1,550	14,032
Sept.	11,838	1,398	13,236	11,479	1,766	13,245	12,755	1,613	14,368
Oct.	11,576	1,450	13,026	12,046	1,865	13,911	13,056	1,671	14,727
Nov.	11,052	1,519	12,571	12,212	1,901	14,113	12,907	1,749	14,656
Dec.	10,676	1,505	12,181	12,536	1,910	14,446	12,886	1,779	14,665

	1942			1943			1944		
	Import	Other	Total	Import	Other	Total	Import	Other	Total
Jan.	12,641	1,758	14,399	10,923	1,800	12,723	11,736	1,990	13,726
Feb.	12,336	1,728	14,064	10,564	1,742	12,306	11,672	1,976	13,648
Mar.	12,022	1,641	13,663	10,360	1,654	12,014	11,452	1,928	13,380
April	11,830	1,552	13,382	10,274	1,566	11,860	11,333	1,860	13,193
May	11,796	1,539	13,335	10,162	1,623	11,785	11,199	1,828	13,027
June	11,800	1,601	13,401	10,600	1,709	12,309	10,967	1,872	12,839
July	11,789	1,731	13,520	10,951	1,812	12,763	10,730	1,946	12,676
Aug.	12,045	1,811	13,856	11,414	1,877	13,291	10,596	1,924	12,520
Sept.	12,177	1,863	14,040	11,694	1,932	13,626	10,418	1,893	12,311
Oct.	12,178	1,873	14,051	11,731	1,959	13,690	10,346	1,886	12,232
Nov.	11,683	1,873	13,556	11,734	1,960	13,694	10,357	1,857	12,214
Dec.	11,213	1,815	13,028	11,828	1,978	13,806	10,282	1,860	12,142

	1945		
	Import	Other	Total
Jan.	10,151	1,821	11,972
Feb.	9,870	1,729	11,599
Mar.	9,653	1,625	11,278
April	9,369	1,556	10,925
May	9,251	1,603	10,854
June	9,264	1,702	10,966
July	9,423	1,767	11,190
Aug.	9,864	1,775	11,639
Sept.	9,842	1,806	11,648

Source: Central Statistical Office

<sup>1</sup> i.e. materials on the import programme. Except in the case of iron ore, where stocks of home-produced and imported ore are separated, materials which were both imported and home produced are included under this heading. Consumers' stocks of steel are excluded.

<sup>2</sup> i.e. the remaining home-produced materials, including home-produced iron ore.

APPENDIX 23  
Consumption of the main imported raw materials in 1942—  
estimated and actual<sup>1</sup>

Materials	Thousand tons				
	January estimate (12.2 m. ton import programme)	October estimate (revised 12.2 m. ton programme) <sup>2</sup>	Actual consumption Jan./June	Actual consumption July/Dec.	Actual consumption Year 1942
Imported iron ore . . .	2,200	2,093	1,051	1,009	2,060
Manganese ore . . .	360	393	196	211	407
Pig iron . . .	17,000	7,958	4,050	3,881	7,931
Scrap <sup>3</sup> . . .	12,000	..	..	..	..
Steel . . .	74	11,392	5,592	5,725	11,317
Chrome ore . . .	567	69	34	37	71
Copper . . .	264	492	240	249	489
Lead . . .	300	236	128	104	232
Zinc . . .	222	260	126	133	259
Zinc concentrates . . .	420	195	88	90	178
Raw cotton . . .	240	411	211	208	419
Raw wool . . .	115	266	136	124	260
Raw jute . . .	2,100	100	52	50	102
Softwoods . . .	880	2,036	1,001	919	1,920
Hardwoods . . .	..	1,025	583	655	1,238
Mining timber . . .	480	2,011	1,057	987	2,044
Woodpulp . . .	270	406	212	194	406
Newsprint . . .	626	247	121	121	246
Phosphate rock . . .	288	637	326	299	625
Sulphur . . .	264	242	119	114	233
Pyrites . . .	..	293	146	139	285

<sup>1</sup> Figures in this table represent *total* not *net* consumption (see p. 215).

<sup>2</sup> These estimates allowed for the economies proposed by the Lord President's Committee and, in several cases, had been revised in the light of current consumption.

<sup>3</sup> After December 1941 scrap did not appear in the raw materials import programme and consumption estimates were therefore not included.

APPENDIX 24  
Stocks of the main imported raw materials at the end of 1942—  
estimated and actual

Material	Stocks at end 1941		January estimate (12.2 million ton programme)		March estimate (10.5 million ton programme)		October estimate <sup>1</sup> (Revised 12.2 million ton programme)		Actual	
	'000 tons	Wks. consumpt.	'000 tons	Wks. consumpt.	'000 tons	Wks. consumpt.	'000 tons	Wks. consumpt.	'000 tons	Wks. consumpt.
Imported iron ore	922	22	922	22	785	20	805	21	752	23
Manganese ore	112	16	112	16	112	16	121	16	94	14
Pig iron	2,330	7	1,830	5½	..	..	1,440	9	1,473	10
Scrap	2,500	av. of 8½	1,500	av. of 5	1,000	av. of 3½	2,437	..	..	..
Steel: Steelworks <sup>1</sup> and M.O.S.	2,950	..	2,200	..	..	..	2,631	av. of 9	2,193	9
Consumers <sup>1</sup>	..	..	..	..	..	..	..	..	2,800	13
Chrome ore	44	31	44	31	21	15	76	49	75	52
Copper	160	15	160	15	93	9	148	14	121	13
Lead	95	19	95	19	43	10	106	23	86	22
Zinc	103	18	103	18	75	13	124	21	132	26
Zinc concentrates	182	45	182	45	53	12	110	26	172	50
Cotton, raw	180	22	85	11	99	11	336	43	291	36
Wool	250	54	102	22	..	..	238	49	239	50
Jute	43	19	24	11	..	..	51	28	46	24
Softwoods	1,155	29	623	15	554	15	723	18	843	24
Hardwoods	355	21	257	15	363	20	421	20	377	15
Woodpulp	92	10	74	8	70	8	121	17	180	24
Newsprint	181	34	132	25	113	24	125	30	134	29
Phosphate rock	342	28	236	20	100	8½	57	5	36	3
Sulphur: acid	126	30	62	15	..	..	..	..	..	..
regular	42	30	12	8½	40	7	79	17	86	20
Pyrites	310	61	166	33	165	30	203	36	212	40

<sup>1</sup> In this estimate the 'working minimum' level of stocks for some materials, e.g. steel and lead, had been revised upwards; and the fact that imports had in some cases been running considerably above the programme level had been taken into account. Allowance was also made for revised estimates of consumption.

APPENDIX 25  
Consumption of the main imported raw materials in 1943—  
estimated and actual

	Thousand tons			
	Estimated net consumption January-June 1943 (January estimate)	Actual net consumption January-June 1943	Estimated net consumption July-December 1943 (August estimate)	Actual net <sup>1</sup> consumption July-December 1943
Imported iron ore				
Manganese ore				
Pig iron				
Steel				
Chrome ore				
Copper				
Lead				
Zinc				
Zinc concentrates				
Raw cotton				
Raw wool				
Raw jute				
Softwoods				
Hardwoods				
Mining timber				
Woodpulp				
Newsprint				
Phosphate rock				
Sulphur				
Pyrites				
	900	818	850	1,039
	208	157	150	162
	200	391	300	221
	1,340 (actual)	1,446 (actual)	1,300 (actual)	784 (actual)
	40	36	44	35
	200	248	230	215
	102	105	106	98
	96	91	83	65
	80	87	88	83
	200	202	210	198
	110	102	100	67
	50	41	50	44
	580	401	550	494
	155	74	70	109
	94	..	20	..
	186	192	175	173
	63	58	58	71
	190	274	335	330
	109	111	109	112
	70	117	113	96

<sup>1</sup> Unrevised figures dated 31st December 1943.

APPENDIX 26  
Stocks of the main imported raw materials in June and December 1943—  
estimated and actual

	January forecast of end June stocks		Actual stocks end June		April forecast of end December stocks		August forecast of end December stocks		Actual stocks <sup>1</sup> end December 1943	
	'000 tons	Wks. consumpt.	'000 tons	Wks. consumpt.	'000 tons	Wks. consumpt.	'000 tons	Wks. consumpt.	'000 tons	Wks. consumpt.
Iron ore . . . . .	702	20	819	17	552	17	784	24	805	21
Manganese ore . . . . .	184	23	163	25	194	25	237	41	210	33
Pig iron . . . . .	1,410	9	1,300	9	1,425	9	1,162	8	1,224	8
Steel: Steelworks <sup>1</sup> and M.O.S. Consumers <sup>1</sup> . . . . .	2,700	av. of 11	1,870	av. of 8	2,514	av. of 8	2,147	8	5,162	23
Chrome ore . . . . .	2,430	11	2,600	10	2,348	10	2,600	12	5,162	23
Copper . . . . .	54	35	46	28	47	28	45	26	47	29
Lead . . . . .	128	13	131	16	147	16	153	18	186	21
Zinc . . . . .	94	24	68	25	102	25	90	21	107	27
Zinc concentrates . . . . .	103	20	130	28	138	28	128	28	163	37
Raw cotton . . . . .	104	29	131	39	157	39	153	41	103	32
Raw wool . . . . .	170	22	207	34	271	34	249	29	329	40
Raw jute . . . . .	150	33	171	37	179	37	167	35	190	45
Softwoods . . . . .	46	24	51	29	56	29	55	29	56	30
Hardwoods . . . . .	855	25	860	25	873	25	1,384	38	1,205	33
Mining timber . . . . .	370	18	406	22	477	22	518	23	467	20
Woodpulp . . . . .	638	23	905	20	687	20	928	28	944	29
Newsprint . . . . .	149	21	134	30	214	30	190	28	234	32
Phosphate rock . . . . .	88	18	87	25	120	25	118	26	105	21
Sulphur . . . . .	18	1	139	9	120	9	107	8	227	18
Pyrites . . . . .	113	24	114	29	128	29	116	27	128	27
	190	30	141	26	132	26	142	30	154	32

<sup>1</sup> Unrevised figures dated 31st December 1943.

## APPENDIX 27

# Home production and imports of iron ore and timber, 1939-45

Thousand tons

Period	Sept. 1939-June 1940			July 1940-Dec. 1941		
	Home production	Imports	Home production as % of total	Home production	Imports	Home production as % of total
Iron ore .	13,882	4,636	75	28,045	3,734	88
Softwoods .	203	1,885	10	983	2,464	29
Hardwoods .	333	599 <sup>1</sup>	36	923	740	56
Pitprops .	804	583	60	2,428	943	72
<b>TOTAL .</b>	<b>15,282</b>	<b>7,703</b>	<b>66</b>	<b>32,379</b>	<b>7,881</b>	<b>80</b>
	1942			1943		
Iron ore .	19,906	1,900	91	18,494	1,900	91
Softwoods .	745	781	49	720	1,349	35
Hardwoods .	920	271	77	1,129	275	80
Pitprops .	1,592	28	98	1,801	71	96
<b>TOTAL .</b>	<b>23,163</b>	<b>2,980</b>	<b>89</b>	<b>22,144</b>	<b>3,595</b>	<b>86</b>
	1944			1945		
Iron ore .	15,472	2,200	88	14,175	4,100	78
Softwoods .	490	1,137	30	325	1,891	15
Hardwoods .	1,044	360	74	915	360	72
Pitprops .	1,506	186	89	1,260	484	72
<b>TOTAL .</b>	<b>18,512</b>	<b>3,883</b>	<b>83</b>	<b>16,675</b>	<b>6,835</b>	<b>71</b>

<sup>1</sup> The import figures of hardwood for the period Sept.-Dec. 1939 include some plywood and other woods.

APPENDIX 28

U.K. raw material requirements from France  
and the French Empire during the  
first year of war

Table 1. (Actual imports for six months to 29th February 1940;  
estimated imports (as at May 1940) for six months to 31st August 1940)

Commodity	6 months to 29th Feb. 1940		6 months to 31st Aug. 1940	
	Tons	£	Tons	£
Iron ore . . . . .	1,219,000	1,002,000	2,013,000	1,697,000
Pig iron . . . . .	11,600	49,000	13,000	61,000
Steel . . . . .	191,300	1,411,000	59,700	489,000
Alloy steel . . . . .	68	5,100	—	—
Ferro-chrome . . . . .	200	8,000	2,100	117,000
Ferro-manganese and silico- manganese . . . . .	700	19,250	3,000	100,750
Abrasives . . . . .	2,000	70,000	2,500	90,000
Antimony ore . . . . .	390	9,350	400	12,000
Bauxite . . . . .	76,404	57,500	110,000	82,500
Aluminium scrap . . . . .	500	15,500	—	—
Silicon . . . . .	300	15,000	500	27,500
Calcium carbide . . . . .	1,427	12,000	3,600	40,000
Caustic potash . . . . .	2,810	59,000	3,000	72,000
Carbonate of potash . . . . .	939	25,400	1,500	50,000
Arsenic . . . . .	—	—	600	9,000
Mica . . . . .	80	15,000	220	75,000
Sand . . . . .	7,300	6,000	28,100	22,300
Graphite . . . . .	2,460	32,100	5,340	95,900
French chalk . . . . .	5,630	24,360	6,370	29,650
Resin . . . . .	7,500	130,000	1,100	20,000
Beeswax . . . . .	250	26,000	250	29,000
Cork . . . . .	140	1,400	1,200	12,000
Cement . . . . .	7,243	12,400	9,000	14,000
Rubber . . . . .	509	44,600	600	54,000
Calf skins . . . . .	..	205,000	..	95,000
Fur skins . . . . .	..	24,000	—	—
Leather . . . . .	..	215,000	..	367,000
Chestnut extract . . . . .	2,000	50,000	2,000	50,000
Esparto grass . . . . .	81,000	285,000	79,000	315,000
Cotton and linen rags . . . . .	500	10,000	1,500	30,000
Paper, cardboard, etc. . . . .	..	128,000	..	108,000
Timber—				
Hewn hard (cu. ft.) . . . . .	398,113	62,640	475,000	90,000
Sawn hard (cu. ft.) . . . . .	18,775	4,750		
Pitprops (cu. fathoms) . . . . .	44,494	282,120	50,000	375,000
Sleepers (standards) . . . . .	4,917	74,450	2,500	36,000
Veneers (cwt.) . . . . .	46,089	90,480	30,730	64,300
Plywood (cu. ft.) . . . . .	352,339	160,390	317,700	209,610
Other . . . . .	..	75,960	..	100,000
Phosphate rock . . . . .	50,000	50,000	400,000	400,000
Potash . . . . .	72,630	423,000	107,370	567,000
Potassium nitrate . . . . .	970	18,400	1,000	30,000
Chemicals, miscellaneous . . . . .	..	127,000	..	120,000
		£5,342,150		£6,156,510

## APPENDIX 28 (continued)

## U.K. raw material exports to France and the French Empire during the first year of war

Table 2. (Actual exports for six months to 29th February 1940; estimated exports (as at May 1940) for six months to 31st August 1940)

Commodity	6 months to 29th Feb. 1940		6 months to 31st Aug. 1940	
	Tons	£	Tons	£
Pig iron . . . . .	970	6,600	4,030	28,400
Steel . . . . .	2,460	20,500	246,540	2,047,500
Wolfram . . . . .	300	52,500	1,200	210,000
Abrasives . . . . .	120	27,000	120	27,000
Brass and brass scrap . . . . .	1,607	57,830	7,000	500,000
Copper . . . . .	1,435	81,060	—	—
Nickel and nickel alloys . . . . .	1,778	341,830	1,770	341,750
Tin . . . . .	1,464	369,250	2,700	675,000
Cotton, raw and waste . . . . .	678	38,730	680	39,000
Cotton yarn . . . . .	174	46,000	180	48,000
Cement . . . . .	4,328	7,750	4,000	7,200
Rubber and rubber waste . . . . .	4,145	321,270	1,700	94,000
Hides and skins . . . . .	..	63,700	..	300,000
Leather . . . . .	..	81,700	..	600,000
Paper, cardboard, etc. . . . .	..	24,000	..	36,000
Paper-making materials . . . . .	..	26,000	..	32,000
Tanning materials . . . . .	—	—	..	20,000
Wool . . . . .	40,932	5,659,480	102,140	14,400,000
Chemicals, miscellaneous . . . . .	..	95,000	..	200,000
		£7,320,200		£19,605,850



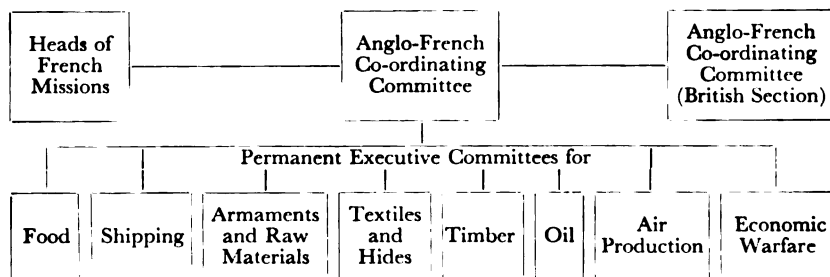
## APPENDIX 29

# Anglo-French Liaison for Supply

(as at 28th February 1940)

### I. THE ORGANISATION AS A WHOLE

1. A complete organisation has been set up for Anglo-French co-operation in the matter of supplies, as shown in the following diagram:



2. The basis of the structure is formed by the permanent executive committees which have been established to provide for joint action in the various departmental fields, e.g. food, shipping, armaments, etc., and of which the functions are:

(a) To lay down a programme of the requirements of the two countries in the particular field covered by each committee and, where possible, to establish an *ad hoc* inventory of the resources of each country in that field.

(b) To secure the best utilisation in the common interest of the resources of the two countries in raw materials, means of production, etc., and, so far as may be possible, provide for a fair allocation of cuts arising out of the necessity for the restriction of programmes.

(c) Having regard to the above considerations, to formulate joint Allied programmes of imports.

(d) To organise purchases under such agreed programmes of imports in such a way as to prevent all competition between French and British purchases. This will in most cases entail the making of purchases through a single purchasing organisation, the form of which should be adapted to suit the particular conditions prevailing in different countries.

(e) To ensure that such programmes are effectively carried out.

3. The direction and co-ordination of the activities of the permanent executive committees are carried out by the Anglo-French Co-ordinating Committee, of which M. Monnet is chairman and Sir Arthur Robinson vice-chairman, and of which the functions are:

(a) To co-ordinate the work of the permanent executive committees.

(b) To deal with differences of opinion arising out of the supply and purchase of munitions, food, coal or other commodities which affect more

than one permanent executive committee or which raise important questions of principle or priority.

(c) To co-ordinate the work of the Allied purchasing missions abroad.

The British members of this committee are the members of the British Inter-Departmental Committee, formerly known as the Anglo-French Supply and Purchases Committee, but now renamed the Anglo-French Co-ordinating Committee (British Section), of which Sir Arthur Robinson is chairman. . . .

## II. THE PART AFFECTING THE MINISTRY OF SUPPLY

4. The permanent executive committees within the purview of the Ministry of Supply are the following:

Armaments and Raw Materials;  
Textiles and Hides;  
Timber. . . .

5. The existence of these committees is not intended to supersede the direct contacts and negotiations which have been taking place between the various branches of the Ministry and members of French missions, but to provide a framework within which they can be carried on in future and also a means of discussing cases in which it has not been found possible in direct negotiations to satisfy the requirements of one side or the other.

6. Each branch should keep a record of each direct negotiation on which it embarks, and should furnish the British secretary of the permanent executive committee concerned either with a copy of the record or a resumé of it, in order that he may be able at any time to present his committee with an up-to-date statement showing what has been discussed, the parties to the discussion, and the result of it. He should also be kept informed by the branches of the progress of the actual deliveries of supplies from France to this country. The progress of deliveries from this country to France is primarily the concern of the French secretary. The British secretary should also be consulted in any case in which a branch wishing to make direct contact is uncertain how to do so.

## APPENDIX 30

*Table 1. Pre-war estimate of requirements of raw materials in Canada during first year of war<sup>1</sup>*

Material	Tons	£	Remarks
Abrasives (artificial) <sup>2</sup>	10,000	230,000	About 25% over normal imports.
Aluminium	45,000	4,000,000	Only Canada could supply this quantity. British-owned company in Norway normally supplies 4,000 tons which could be expanded to 10,000 tons. Switzerland can supply 5/6,000 tons in peace-time. U.S.A. only other source.
Asbestos	15,000	300,000	About normal imports. U.K. company owns mines.
Bismuth <sup>2</sup>	30	11,000	Normal imports.
Calcium carbide	50,000	750,000	On assumption that supplies from Scandinavian countries and Yugoslavia will be drastically curtailed. Canada normally supplies only about 400 tons. U.K. also imports in small quantities from Germany, Belgium, Switzerland and Italy.
Cobalt	450	280,000	On assumption that no supplies of refined metal will be available from Belgium.
Copper (electrolytic) <sup>2</sup>	150,000	6,500,000	
Flax seed	15,000	50,000	This is only a possibility.
Hides and skins	3,000	100,000	Normal imports.
Lead (pig)	45,000	1,080,000	Half normal imports. Australia could supply all our requirements and Burma could supply half of the estimate.
Leather	1,250	750,000	Normal imports.
Magnesite	20,000	10,000	Normal imports about 2,000 tons. Whole question depends upon increasing U.K. production of magnesium and possibility of substituting native dolomites.
Nickel matte	25,000 (metal content)	5,000,000	U.K. producers of nickel are subsidiary of Canadian producers of matte covering 90% world production.
Platinum concentrates	100,000 oz.	500,000	Only a possibility. Is linked up with production of nickel.

<sup>1</sup> Estimate made in February 1939.

<sup>2</sup> If there were no supplies of these materials available in the United States it was expected that the estimates would undergo considerable revision.

Timber Woodpulp	4,000,000 1,200,000	20,000,000 6,000,000	The position depends upon the availability of supplies from Scandinavian countries and U.S.S.R. If these fail, something over 4 million loads <sup>3</sup> of timber will be required from Canada which is four times her normal exports to U.K., together with over 1 million tons of woodpulp against a normal 25,000 tons. The estimate is on this basis.
Tobacco	4,000	600,000	Normal imports but not essential, having regard to stocks position.
Zinc (Electrolytic)	100,000	2,000,000	Normal imports. Australia and Northern Rhodesia could supply part of this quantity in addition to the amounts separately estimated for them.

<sup>3</sup> A load of softwood here means a railway car load of approximately 50 cubic feet, i.e. slightly less than one ton in weight.

*Table 2. Pre-war estimate of requirements of raw materials in the United States during the first year of war<sup>1</sup>*

Material	
Bismuth . . . . .	200 tons
Boron minerals . . . . .	7,250 tons
Cotton . . . . .	300,000 tons (1·2 m. bales)
Molybdenum concentrates . . . . .	3,000 tons
Sulphur . . . . .	150,000 tons
Turpentine . . . . .	20,000 tons
Rosin . . . . .	20,000 tons
Phosphate rock . . . . .	50,000 tons
Iron and steel scrap . . . . .	500,000 tons
Abrasives . . . . .	3,000 tons
Magnesium . . . . .	1,000 tons
Aluminium . . . . .	10,000 tons
Timber—	
Hardwoods . . . . .	6,000,000 cubic feet
Softwoods . . . . .	100,000 standards

<sup>1</sup> Estimate made in July 1939.

NOTE.—A rough calculation made in May 1939 of total currency requirements in N. America for the first year of war put the Canadian figure at £49,510,000 and the American one at £25,700,000. (See Chapter XVII, pp. 254-255.)

## APPENDIX 31

Table 1. Requirements of raw materials in Canada during the first year of war  
(As estimated in October 1939 and April 1940)

	Quantity		Value F.O.B.	
	October 1939	April 1940	October 1939	April 1940
Calcium carbide . . . . .	Tons 5,000	Tons 10,500	£ 50,000	£ 126,000
Acetylene black . . . . .	450	500 <sup>1</sup>	15,000	35,000
Paper . . . . .	130,000	82,500	956,000	1,800,000
Paper-making materials (woodpulp) . . . . .	250,000	110,000 <sup>4</sup>	2,000,000	1,500,000
Flax . . . . .	1,000	1,000	75,000	100,000
Asbestos . . . . .	20,000	34,000	300,000	544,000
Ferro-silicon . . . . .	5,000	26,000	80,000	520,000
Lead . . . . .	110,000	110,000	2,500,000 <sup>2</sup>	1,660,000
Zinc (metal and concentrat <sup>c</sup> ) . . . . .	130,000	310,000 <sup>1</sup>	2,100,000	3,230,000
Copper . . . . .	187,000	185,000	9,400,000 <sup>3</sup>	9,050,000
Aluminium . . . . .	48,000	34,155	5,000,000 <sup>5</sup>	3,403,000
Nickel (metal and matte) . . . . .	38,000	42,000	3,350,000	3,980,000
Cobalt . . . . .	20	50	21,000	8,000 <sup>6</sup>
Timber . . . . .	..	2,546,111	21,640,000	8,520,000
Steel . . . . .	100,000	152,616	793,750	1,513,400
Iron ore . . . . .	750,000	331,600	487,500	226,593
Abrasives . . . . .	8,000	..	200,000	415,000
Magnesite . . . . .	2,000	6,000	20,000	39,000
Copper rods . . . . .	..	—	40,000 <sup>7</sup>	—
Silico-manganese . . . . .	—	4,000	—	100,000
Silico-spiegel . . . . .	—	750	—	15,000
Cadmium . . . . .	—	300	—	150,000
Newsprint (including Newfoundland)	—	240,000	—	2,700,000
Woodpulp (for rayon, etc.) . . . . .	—	25,000	—	560,000
Dressed leather (other than goat and sheepskin) . . . . .	—	..	—	C.I.F. 1,649,000
Bismuth . . . . .	—	40	—	..
			£49,022,250	£41,843,993

<sup>1</sup> Carbon black (including acetylene).

<sup>2</sup> Including pulpwood.

<sup>3</sup> Assuming that the original arrangement for block sterling was cancelled.

<sup>4</sup> 20,000 tons of this had been resold to the French; it was possible that we should accept payment for this in Belgian currency.

<sup>5</sup> 17,500 tons already sold for delivery and forward dollars bought.

<sup>6</sup> Refining charges.

<sup>7</sup> Cost of rolling only.

Table 2. Requirements of raw materials in the United States during the first year of war  
(As estimated in October 1939 and April 1940)

	Quantity		Value F.O.B.	
	October 1939	April 1940	October 1939	April 1940
Timber—				
Softwoods . . . . .	..	25,000 standards	} £	577,000
Hardwoods . . . . .	..	169,000 loads		1,615,000 <sup>1</sup>
Hardwoods (Philippines) . . . . .	..	9,000 loads		53,000 <sup>1</sup>
Pitprops and pitwood . . . . .	..	3,000 cu. fathoms		12,000
Plywood . . . . .	..	..		2,175,000
Pig iron . . . . .	Tons	Tons		
Scrap iron . . . . .	100,000	144,550	600,000	694,515
Steel . . . . .	200,000	729,761	1,100,000	8,702,296
Tube hollows, ball race tubes, etc. (estimated)	200,000 <sup>2</sup>	657,500 <sup>3</sup>	1,800,000	2,938,000
Refined ferro-manganese . . . . .	—	2,000	—	100,000
Molybdenum . . . . .	—	500	—	30,000
Ferro-chrome (high carbon) . . . . .	2,000	3,500	400,000	185,000
Ferro-chrome (low carbon) . . . . .	—	1,000	—	50,000
Chrome ore (Philippines) . . . . .	—	2,000	—	130,000
Aluminium . . . . .	12,000	2,000	—	5,000
Copper . . . . .	—	11,814	1,350,000	1,349,000
Cotton (raw) . . . . .	326,500	24,000	—	115,000 <sup>4</sup>
Hemp, manila (Philippines) . . . . .	24,000	390,000 <sup>5</sup>	16,855,000	24,000,000
Paper (other than newsprint) . . . . .	—	28,800	6,48,000	706,400
Wood pulp for paper . . . . .	—	175,000	—	3,300,000 <sup>6</sup>
Wood pulp for industrial purposes (rayon, etc.) . . . . .	—	90,000	—	1,200,000 <sup>7</sup>
Cotton and linen rags . . . . .	—	11,500	—	250,000 C.I.F.
	—	3,600	—	120,000 C.I.F.

<sup>1</sup> Prices quoted in sterling.

<sup>2</sup> Semi-finished steel.

<sup>3</sup> Including special steel. The estimated payments for alloy steel which are included here cover imports under special licence as well as under the open licence held by the Iron and Steel Corporation.

<sup>4</sup> For refining only. Additional purchases from U.S.A. are under consideration.

<sup>5</sup> In addition 60,000 tons are being shipped under the cotton and rubber barter agreement.

<sup>6</sup> C.I.F. value is £4,800,000. Both C.I.F. and F.O.B. values are given because purchases are on a C.I.F. basis and foreign currency is required for the full C.I.F. value.

<sup>7</sup> C.I.F. value is £1,700,000. The F.O.B. is very approximate.

Table 2 (continued)

	Quantity			Value F.O.B.		
	October 1939	April 1940	October 1939	April 1940	October 1939	April 1940
Silk, raw and waste . . . . .	600,000 lb.	785,000 lb. <sup>9</sup>	£	£	90,000	520,000 <sup>9</sup>
Silk noils . . . . .	—	—			—	485,000 <sup>10</sup>
Dressed leather (other than goat and sheepskin) . . . . .	—	—			—	360,000 <sup>12</sup>
Tanning materials (including Italy) . . . . .	8,000 tons	12,000 tons <sup>11</sup>			80,000	75,000
Phosphate rock . . . . .	—	60,000 tons			—	492,000
Sulphur . . . . .	—	125,000 tons			340,000	1,343,200
Molasses (Cuba) . . . . .	—	518,000 tons			400,000	18,750
Molasses (Hawaii) . . . . .	294,000 tons	39,500 tons			—	225,000 <sup>13</sup>
Bismuth . . . . .	—	310 tons			—	—
Cotton, waste . . . . .	50,000 tons	—			2,500,000	—
Magnesium . . . . .	3,300 tons	—			500,000	—
Borax and boric acid . . . . .	—	17,400 tons			—	217,000 <sup>14</sup>
Abrasives (including manufactured abrasives) . . . . .	—	—			—	195,000
Bristles . . . . .	—	900 tons			—	575,900 C.I.F. <sup>15</sup>
Carbon black (including acetylene) . . . . .	20,000 tons	22,000 tons			500,000	880,000
French chalk . . . . .	—	3,000 tons			—	15,000
Hair, raw . . . . .	—	86,700 cwt.			—	344,500 C.I.F.
Mica (ground and waste) . . . . .	—	500 tons			—	9,000
Rosin . . . . .	—	54,500 tons			—	820,000
Tar and pitch (from wood) . . . . .	—	4,800 tons			—	55,000
Turpentine . . . . .	—	18,000 tons <sup>16</sup>			—	450,000 <sup>16</sup>
Boron minerals . . . . .	—	14,000 tons			—	70,000 <sup>17</sup>
					£36,713,000	£55,457,561

<sup>9</sup> Purchased on Government account for reserve. Purchases from the United States are now prohibited. This estimate should be treated with caution — values are very approximate.

<sup>10</sup> Prices are usually quoted in sterling.

<sup>11</sup> C.I.F. value is £500,000 and is more reliable than the F.O.B.

<sup>12</sup> It was considered that part of this total might have to be imported from Italy.

<sup>13</sup> Imports of chestnut from the United States are normally about 7,000 tons (£100,000); the possibility of supplying needs by purchasing walena from Turkey and chestnut from Italy is under consideration.

<sup>14</sup> Includes value of 40 tons from Canada. Canadian is bought from New York controlled companies and payment is mostly in United States dollars.

<sup>15</sup> Freight charges, etc. (about £87,000), are also paid in American dollars.

<sup>16</sup> This estimate does not include imports which are re-exported.

<sup>17</sup> This estimate is very speculative.

<sup>18</sup> Freight charges (about £70,000) are also paid in United States dollars.

## APPENDIX 32

*Table 1. Requirements of raw materials in Canada during the second year of war<sup>1</sup>*

<i>Material</i>	<i>Quantities (tons)</i>	<i>Material</i>	<i>Quantities (tons)</i>
Steel . . . . .	216,000	Silicon . . . . .	4,000
Magnesite . . . . .	3,000	Flax . . . . .	4,200
Alloy steel . . . . .	25,000	Woodpulp . . . . .	232,900
Silica manganese . . . . .	20,000	Paper and board . . . . .	137,900
Ferro-chrome (high carbon) . . . . .	13,500	Abrasives, aluminous . . . . .	3,000
Ferro-silicon . . . . .	40,000	Abrasives, white aluminous . . . . .	1,100
Silica-spiegel . . . . .	1,500	Silicon carbide or carborundum . . . . .	3,700
Refined ferro-manganese . . . . .	5,000	Other abrasive raw materials (bond, etc.) . . . . .	200
Calcium silicide . . . . .	2,600	Acetic acid and anhydride . . . . .	3,000
Cobalt metal and oxide . . . . .	600	Asbestos . . . . .	37,500
Aluminium . . . . .	130,000	Calcium carbide . . . . .	77,000
Copper and copper rods . . . . .	197,000	Carbon black . . . . .	1,200
Lead . . . . .	100,000	French chalk (talc, steatite and soapstone) . . . . .	3,000
Zinc . . . . .	128,000	Materials for plastics (vinyl resins, etc.) . . . . .	1,200
Nickel matte . . . . .	38,000		
Nickel metal . . . . .	4,000		
Cryolite . . . . .	5,000		
Cadmium . . . . .	180		

<sup>1</sup> Based on estimates made in July 1940. Timber was not included as detailed requirements by country of origin were not known.

*Table 2. Requirements of raw materials in the United States during the second year of war<sup>1</sup>*

<i>Material</i>	<i>Quantities (tons)</i>	<i>Material</i>	<i>Quantities (tons)</i>
Pig iron . . . . .	600,000	Acetone . . . . .	10,000
Steel . . . . .	6,000,000	Asphalt-gilsonite . . . . .	1,800
Alloy steel . . . . .	340,000	Asphalt-bitumen . . . . .	1,000
Iron and steel scrap . . . . .	1,200,000	Calcium carbide . . . . .	3,000
Ferro-chrome (low carbon) . . . . .	16,000	Carbon black . . . . .	23,400
Ferro-silicon . . . . .	2,000	Diatomaceous earth . . . . .	4,000
Calcium silicide . . . . .	300	French chalk (talc, steatite and soapstone) . . . . .	2,000
Molybdenite . . . . .	5,000	Hair, bristles and fibres . . . . .	3,000
Copper and copper rods . . . . .	110,000	Lampblack . . . . .	420
Brass . . . . .	67,000	Potassium compounds—	
Zinc . . . . .	70,000	Carbonate . . . . .	1,200
Bismuth . . . . .	500	Caustic potash . . . . .	1,200
Silicon . . . . .	2,400	Rutile . . . . .	1,200
Cotton . . . . .	77,000	Pine tar . . . . .	8,000
Cotton linters . . . . .	3,600	Rosin . . . . .	10,000
Cotton waste . . . . .	1,000	Liquid rosin . . . . .	500
Woodpulp . . . . .	135,300	Turpentine . . . . .	7,500
Paper and board . . . . .	260,300	Sulphur . . . . .	430,000
Abrasives, aluminous . . . . .	19,000	Phosphate rock . . . . .	550,000
Abrasives, white aluminous . . . . .	1,100	Potash . . . . .	10,000
Silicon carbide or carborundum . . . . .	4,000	Boron minerals, etc. . . . .	29,800
Other abrasive raw materials (bond, etc.) . . . . .	800		

<sup>1</sup> Based on estimates made in July 1940. As in the case of Canada, timber was not included.



## APPENDIX 33

# Note on organisations and procedure for dealing with supplies from North America

(as at summer 1941)

### 1. BRITISH ARRANGEMENTS IN NORTH AMERICA

The United Kingdom organisation for dealing with supplies from North America has been substantially modified since the beginning of 1941, and especially since the passing of the Lend-Lease Act. It is now briefly as follows:

#### (a) *British Supply Council in North America*

The function of this council is to deal, in harmony with H.M.'s Ambassador in the United States, with all issues of policy concerning supply of warlike and non-warlike stores of all kinds, including representations to the United States administration. The council is composed as follows:

*Chairman:* The Rt. Hon. Arthur B. Purvis.

*Deputy Chairman:* Mr. Morris Wilson.

*Members:*

Sir Clive Baillieu, K.B.E., C.M.G. (Director General, British Purchasing Commission).

The Hon. R. H. Brand (Director General, British Food Mission).

Admiral A. E. Evans (British Admiralty Technical Mission).

The Hon. C. D. Howe (Minister of Munitions and Supply, Canada).

M. Jean Monnet, K.B.E.

The Rt. Hon. Sir Arthur Salter, M.P. (Head of Merchant Shipping and Shipbuilding Mission).

Sir Henry Self, K.B.E., C.B. (Director General, British Air Commission).

*Associate Secretaries:*

Leslie G. Chance.

G. H. S. Pinsent.

The body corresponding to the Supply Council at the London end is the North American Supply Committee, a War Cabinet committee under the chairmanship of the Minister of Supply. . . .

#### (b) *Purchasing Commissions, etc., in the United States*

The various supply ministries in the United Kingdom have their own separate organisations for dealing with their supply requirements in the United States as follows:

Ministry of Supply

Ministry of Aircraft Production

Admiralty

British Purchasing Commission

British Air Commission

Admiralty Technical Mission and Naval Inspectorate. British Advisory Repair Mission.

The Ministry of War Transport, the Ministry of Food, and the Petroleum Department each have separate missions in the United States. The requirements in the United States of certain other departments, e.g. the Ministries of Agriculture and of Works and Buildings, are handled by the B.P.C.

The various ministries communicate direct with their missions in the United States, but complete information regarding these communications is at the disposal of the British Supply Council in North America. As indicated in para. 1a above, the heads of the missions are members of the Council. The Central Scientific Office in Washington, under the chairmanship of Dr. Darwin, maintains liaison with the National Defence Research Committee and other United States research organisations.

(c) *The British Purchasing Commission* is the representative in the United States of the Ministry of Supply on all matters other than questions of policy which are dealt with by the British Supply Council. It comprises the following departments:

Accounts and Statistics

Legal

Ocean Shipping

Secretariat and Finance

Services and Personnel

Supply Directorates:

1. General Progress and Production (New York)  
(Administration of contracts already placed by the Commission before the lend-lease arrangements and, in particular, dealing with production matters and progress work arising under these contracts, and placing of such new contracts as may be handled by the Commission with United Kingdom funds.)
2. Steel (New York)  
(Administration of existing contracts, and procurement under lend-lease, of iron and steel and allied products, including certain articles manufactured from iron and steel, e.g. pipes, towers, conveyors, etc., ferro-alloys, abrasives, molybdenum.)
3. Tanks, Transport and Ordnance (Washington)  
(Administration of existing contracts for tanks and ordnance (guns of higher calibre than 20 mm.) and for procurement of these stores (including Admiralty requirements) under lend-lease arrangements.)
4. General Lend-Lease (Washington)  
(Procurement under lend-lease, in association with the B.A.T.M., Military Mission, Inspectorate, etc., of all materials and stores not dealt with by Supply Directorates 2 and 3.) . . .

(d) *Canada*

Purchasing and progressing of munitions and manufacturing stores in Canada are undertaken through the Canadian Department of Munitions and Supply. . . .

*The United Kingdom Technical Mission*, located in Ottawa, carries out certain functions on behalf of the Accounting Officer of the Ministry of Supply, including the checking of the authority for the orders placed by the D.M.S. on behalf of the Ministry, the financial administration of the Inspection Department (see below), and the payment of salaries, etc., of

Ministry of Supply personnel stationed in, or employed on, temporary missions in North America.

(e) *Inspection in North America*

The Ministry of Supply Inspection Department has been merged in a joint British-Canadian Inspection Board, which was set up in November 1940, to inspect stores ordered either in Canada or the United States by the Canadian and the United Kingdom Governments. The Board consists of two British and two Canadian members, under the chairmanship of Major-General R. F. Lock, C.B., and its headquarters are at Ottawa.

## 2. UNITED STATES DEFENCE SUPPLY ORGANISATION

(i) The various defence supply agencies in the United States are linked together under a co-ordinating body known as the Office for Emergency Management. The chief of these agencies, so far as supplies to the British Empire is concerned, is the *Office of Production Management* (O.P.M.).

(ii) The functions of the *Office of Production Management* are:

- (a) To co-ordinate the supply activities of other government agencies (chiefly the Army and Navy) and advise on their purchases;
- (b) To increase and regulate the supply of materials and the provision of productive capacity needed for national defence;
- (c) To determine the adequacy of existing supplies and capacity and where necessary secure the creation of additional facilities;
- (d) To determine and administer priorities between competing demands for plant and materials.

The Council of the O.P.M. comprises the Director-General (Mr. Knudsen), the Associate Director-General, and the Secretaries of War and of the Navy.

Apart from certain ancillary services, such as research and statistics, the work of the O.P.M. is divided between

- (i) *The Division of Production*, which assesses the raw material and productive capacity necessary to meet current and future requirements, and makes plans for increasing these resources when necessary. From the supply point of view this division is the key section of O.P.M. and the section with which the British missions have most contact.
- (ii) *The Division of Purchases*, which co-ordinates the placing of all major defence orders, but does not itself make purchases.
- (iii) *The Division of Priorities*.
- (iv) *The Division of Labour*. (Labour supply and training.)

In connection with priorities, the preference ratings laid down in the United States priority directive can be applied by the Army and Navy Munitions Board to contracts for the British Government for articles on the 'Priorities Critical List'. A standing instruction has been issued that British and Canadian orders can be given the same preference rating as is laid down for a United States order for the same supplies. A British representative sits on the Priorities Committee of the Army and Navy Munitions

Board to put the British case when necessary and to keep British missions informed of developments in this field.

(iii) *Lend-Lease organisation*

With the enactment of the Lend-Lease Act, the President of the United States appointed Mr. Harry Hopkins as Administrator of the Act, and sent Mr. Averell Harriman to London to expedite the action which the United States will have to take to make aid to Britain rapid and effective. The offices of Mr. Harriman and his staff are at the United States Embassy, and Mr. Harriman is in close touch with departments in the United Kingdom and with the North American Supply Committee.

(iv) *Administration of Lend-Lease Act in the United States War Department*

A division, called the Defence Aid Division, has been set up in the United States War Department, with the co-ordination and acceleration of all phases of the lend-lease programme within the department as one of its principal objects. The chief duties of the division are the maintenance of liaison with United States and foreign government agencies on matters relating to the Lend-Lease Act; the co-ordination of procurement under lend-lease appropriations and the distribution of items to foreign governments; the supply to foreign governments of defence information, pertaining to defence articles, in collaboration with the United States General Staff; and initiation of requests for priorities for materials, equipment and machine tools for foreign orders; the keeping of records and statistics, and other ancillary duties. The division is enjoined to maintain close contact with accredited foreign representatives concerned with transactions under the Act.

A committee known as the Defence Air Supply Committee has been set up in the War Department for the determination, in collaboration with representatives of the foreign governments concerned, of requirements of defence articles as to types, quantities and destinations and kindred matters.

There is also a committee known as the Facilities Committee consisting of general officers which, under the chairmanship of the Under-Secretary for War, controls the programme for providing new production facilities. Representatives of the British Supply Council have been appointed, with opportunity to present dissenting views if necessary on matters relating to the necessity for, and priority of, additional facilities.

A separate committee, known as the Joint Aircraft Committee, deals with matters pertaining to aircraft standardisation and delivery. The British Supply Council is also represented on this committee.

### 3. GENERAL PROCEDURE IN OBTAINING SUPPLIES IN THE UNITED STATES

*Scope of lend-lease facilities*

Demands upon the appropriate mission in the United States are, wherever possible, implemented by requisition under the Lend-Lease Act, and no contract involving expenditure in British dollars may be placed by any mission until a joint United Kingdom-United States Clearing Committee (see para. 4 (i) below) has agreed that lend-lease terms would not be available for the stores in question.

To qualify for such terms the stores must be 'defense articles'. The Act does not define this phrase but the United States administration is interpreting it generously. It extends substantially beyond the relatively narrow range of 'warlike articles', but to justify the inclusion of 'non-warlike articles' it has to be shown that they are necessary 'to maintain the maximum war effort'; the United Kingdom departments have been asked to adopt this form of words in all requisitions for 'non-warlike articles'.

Recent developments in United States practice make it improbable that many, if any, types of supplies normally required by the Ministry of Supply will be excluded from lend-lease terms solely on the ground that they are not regarded as 'defense articles'.

Certain conditions, however, must be satisfied before stores are obtainable by H.M. Government under lend-lease. In particular:

(a) *The requisition upon the appropriate United States department must pass through the British Purchasing Commission (in the case of Ministry of Supply stores), and thence through the British Supply Council at Washington.*

(b) *The United States department concerned will regard itself as free to conduct all negotiations with suppliers and to settle the price and terms of payment, etc. (Requisitions are for quantities only and do not refer to dollar value.)*

(i) *Warlike articles.* To minimise the difficulties which might arise from the absence of the normal contact between United Kingdom representatives and the United States suppliers, arrangements have been made in the United States to ensure close collaboration between the authorised agents of the two Governments upon technical, production and progress questions.

(ii) *Non-warlike articles.* (Chiefly raw materials and miscellaneous manufactures.) In special cases, the B.P.C. (or other approved United Kingdom agency) may, with the consent of the United States authorities, participate in the discussions with suppliers, but such consent will not ordinarily be extended to direct contact between United States suppliers and United Kingdom private importers. Such direct contact would be contrary to the principles of the lend-lease system. It will be permitted, if at all, only in exceptional circumstances and for special purposes (e.g. technical consultation, inquiries about delivery possibilities, etc.).

(c) *The United States department concerned will regard itself as free to choose the supplier by inviting competitive tenders, and will normally insist upon doing so. This condition may be waived, however, in cases of urgency or necessity, provided that convincing practical reasons are given. Specific nominations of suppliers should be confined to the absolute minimum, but where such nominations are unavoidable the reasons therefore should be clearly stated in the original requisition sent to the B.P.C. For proprietary articles, etc., it may be necessary also to indicate why rival brands would not be suitable.*

(d) *The United States authorities will require to approve the destination of the goods and the uses to which they are intended to be put.*

Under Section 4 of the Act, H.M. Government (or other government directly concerned) is required to undertake that 'it will not without the consent of the President transfer title to or possession of any defense article by gift, sale, or otherwise, or permit its use by anyone not an officer, employee or agent of such foreign government'. H.M. Government has informed the President that every contract or agreement for the disposition of supplies obtained under the Act shall be deemed to include a clause embodying this undertaking.

In consequence, unless Presidential consent has been given, supplies obtained on lend-lease terms cannot be transferred to private distributors, users, or consumers. It has not been possible to obtain any general 'blanket' consent to such transfers.

Before granting consent, the United States administration requires assurances that:

(i) Articles to be distributed through commercial channels, as well as articles into which they are incorporated, are essential to the British war effort;

(ii) If commercial channels are used for distribution, it can be shown that these are the most effective and economical means of ensuring efficient use or prompt delivery;

(iii) There is no profiteering by the commercial distributors; i.e. that the commissions they receive are strictly related to the services which they necessarily render.

#### 4. BRITISH PURCHASES IN THE UNITED STATES

##### (1) *Joint United States-United Kingdom Clearing Committee*

By agreement between the British Supply Council in North America and the Secretary to the United States Treasury, a joint committee has been set up for the purpose of carrying out a daily review of British contracts proposed to be placed in the United States outside lend-lease, with the object of:

(1) Diverting into lend-lease the maximum British contracts for United States supplies and services, and

(2) Keeping a check on British dollar commitments in relation to British dollar resources.

The Committee includes United States Treasury representatives, a representative of Mr. Hopkins, and representatives of the British Supply Council and the United Kingdom Treasury.

All British requirements which might require the expenditure of British dollars will be brought before this committee, including:

(a) All outstanding lend-lease requisitions where undue delay has been encountered.

(b) All cases not yet covered by firm commitments where lend-lease facilities have not yet been granted on the grounds that appropriations are not available.

(c) All amendments to existing British contracts which require additional expenditure, and

(d) Requirements for dominions (other than Canada) and India.

Instructions have been given by the British Supply Council to the various missions in the United States that no new contracts or amendments to existing contracts, requiring British dollars, are to be placed unless and until they have been cleared by Sir Frederick Phillips (the representative in the United States of the United Kingdom Treasury) and, if necessary, been before the above committee; and that any order or amendment involving expenditure of British dollars, already approved but not yet executed, should be re-submitted. This should represent an improvement over previous arrangements, which have left such determination until an indefinite date after the filing of the requisition.

(2) *Procedure*

The procedure by Ministry of Supply departments in placing demands on the B.P.C. is laid down in Ministry of Supply Memorandum No. 265. The stages following the receipt of a demand by the B.P.C. are, in outline, as follows:

(a) The B.P.C. consults the Defence Aid Requirements Committee in the United States War Department (or other appropriate United States departments) to determine the availability of the store or manufacturing capacity, and the feasibility of placing the order in the United States, due consideration having been given to the possibility of placing it in Canada.

(b) A formal requisition in the name of H.M. Government in the United Kingdom for stipulated quantities, but without any reference to values, is drawn up by the B.P.C., with an indication where necessary that the store is to be transferred to the Government of India, or one of the dominions or colonies, or to an ally, or to be disposed of through commercial channels. Where it is desired that supply should be obtained from a particular manufacturer, the reasons have to be clearly stated. Where the material is to be distributed through commercial channels, the requisition must state:

(i) the reason;

(ii) how distribution will be effected;

(iii) the name of the distributing agent, if known, and whether he is acting purely as an agent of the distributing government or as a principal, purchasing to resell to customers.

(c) A requisition for military equipment (other than components for incorporation in products in the United Kingdom) must be approved by Military Mission 200.

(d) The requisition is then filed with the United States Committee for administering the Lend-Lease Act, of which Mr. Harry Hopkins, as Administrator of the Act, is chairman. This committee meets daily and advises the British Supply Council whether the store is obtainable on lend-lease terms and on the routing of the requisition. An appeal lies on all difficult points to the President.

(e) So far as the Ministry's stores are concerned, the routing of requisitions will be, to the War Department for war stores; to the Department of Agriculture for cotton; and to the Treasury Procurement Department for other raw materials and miscellaneous stores.

(f) In the War Department the Defence Aid Supply Committee recommends either the placing of an order or the release of the article from existing United States stocks. An appeal from this committee lies via the Chief of Staff to the President. If the creation of new facilities is desired, the appropriate committee is the Facilities or 'Six Generals' Committee. British representatives sit on all these committees.

(g) The requisition is then submitted through the United States Chief of Staff and Secretary of War to the President, who, having approved the requisition, issues the necessary directive, allocating funds for purchase from the approved allocations, or if the requisition is for material in United States stocks, releasing such material.

(h) The Defence Aid Division in the Office of the Under-Secretary of War receives the Presidential directive and passes the requisition to the procurement agency charged with the purchase.

(i) The procurement agency, in contact with the British representative named in the requisition, considers the detailed specifications and negotiates and concludes the procurement subject to ratification by the Defence Aid Supply Committee.

(j) It is understood that the United States Government propose to furnish the British missions with periodic reports on the progress of production and expected delivery dates. The United States will also undertake inspection, with British assistance where required.

(k) When the material is ready for delivery the United States procurement agency notifies Mr. Hopkins' committee. Thereafter (unless already covered by action under (g) above) the President issues a second directive approving the release of the store. (Until such directive is issued, the United Kingdom Government has only a presumptive interest in the material, as its disposal is within the President's discretion under the \$7,000 million Appropriation Act.)

(l) The B.P.C. then issues a shipping order to the representative of the Ministry of War Transport in New York, who in turn notifies the United States authority of the port of exit.

(m) A shipping ticket is signed by the B.P.C. as a receipt for the store.

##### 5. REQUISITIONS ON BEHALF OF DOMINIONS, ETC.

The United States administration is prepared to supply material on lend-lease terms for the use of dominion, colonial, etc., governments. The normal procedure is for such requisitions to be routed through the B.P.C. (or other appropriate British mission) and the British Supply Council in North America, and made in the name of H.M. Government in the United Kingdom as the principal obligor. Arrangements are being made whereby all dominion, etc., demands for non-warlike supplies which can be conveniently brought within the lend-lease procedure will be centralised by the governments concerned and presented by the appropriate United Kingdom mission. Dominions, etc., will communicate their requirements direct to the B.P.C. through their supply representatives in the United States. In special cases, e.g. steel, global requirements are co-ordinated in London, and individual orders within these requirements are communi-



cated direct. It is also intended to set up a nucleus mission to handle colonial requirements.

As regards warlike supplies it is contemplated that requirements under lend-lease (except aircraft) will be co-ordinated by the War Office or other service department in the United Kingdom and presented to the United States Government on behalf of the Empire as a whole, allocations from deliveries being made in the light of strategic and operational circumstances from time to time.

Requisitions made in the name of the United Kingdom Government require the consent of the United States President, under Section 4 of the Lend-Lease Act, for transfer of the supplies to another Empire government. An application for such consent should wherever possible be filed with the requisition, which is in such cases annotated as follows: 'The above material is intended to be transferred to the Government of "X". We hereby request such consent as may be necessary under Section 4 of the Act to authorise the above transfer.' If, however, it is proposed at a later stage to divert to another Empire government supplies already requisitioned for the United Kingdom, the B.P.C. should wherever possible be informed by cable in order that Presidential consent may be sought.

(Special instructions are being laid down as regards India and the dominions in the Eastern Group area, whose requirements of warlike stores are co-ordinated in the first place under the Eastern Group Supply Council and the Central Provision Office, Eastern Group.)

The case of Canada is special and the foregoing does not apply to Canadian requirements in the United States.

#### 6. REQUISITIONS ON BEHALF OF ALLIES

Requisitions under lend-lease for Allied governments (other than Turkey) are routed through the B.P.C. (or other British mission), but are made in the name of the government concerned, the British representative merely countersigning. In the case of Turkey, a procedure similar to that described above for dominions, etc., is being applied.

## APPENDIX 34(a)

### U.S.A.-U.K. co-ordinated purchasing arrangements (as at October 1942)

The following is a summary compiled by the B.R.M.M. of the arrangements (as at 1st October 1942) agreed or under negotiation between the United States and the United Kingdom for the co-ordination of their purchasing activities in the various raw material markets of the world. These negotiations have been conducted between the B.R.M.M. and various United States agencies under the ægis of the C.R.M.B.

The commodities concerned are:

Balata	Gallnuts	Oiticica oil
Balsa wood	Glycerine	Quartz crystals
Bristles	Graphite	Rubber
Casein	Hemp	Pickled sheepskins
Cinchona bark	Hides	Sheepskin shearings
Cork	Horsehair	Shellac
Cotton	Istle	Silk
Cotton linters	Mercury	Sisal
Flax	Mica	Waxes

Analysis of the arrangements for these commodities:

(a) *The United Kingdom buys, or is expected to buy, on joint account* (and resell an agreed proportion to the United States) in the cases of: long-staple cotton and flax (Egypt: if found necessary), graphite, hides (B.E.A.), mica (India), rubber (Ceylon), shellac, sisal (B.E.A.).

(b) *The United States buys, or is expected to buy, on joint account* in the cases of: balata (subject to possible reconsideration), balsa wood, cotton linters, glycerine, mica (Brazil), quartz crystals, rotenones (South America), sheepskin shearings (South America). In each of these cases it is agreed or contemplated that the United Kingdom will be able to pay in the local currency.

(c) *An exclusive division or allocation of markets* has been made for: bristles, gallnuts, istle, rubber, silk.

(d) *In the following cases each country purchases on its own account* within an agreed framework as to price and supply: cork, flax (Canada), hemp, hides, horsehair, mercury, shearings (some areas), waxes.

(e) *Tentative or indefinite cases*: casein, cinchona, oiticica oil, pickled sheepskins, and also long-staple cotton and Egyptian flax.

(f) *In the following cases the co-ordinated purchasing arrangements are covered or confirmed in recommendations of the C.R.M.B.*: balata, balsa wood, graphite, mica, rubber, shearings, silk, sisal.

In addition, the division of the sources of supply between the United States and the United Kingdom for the following materials has been sub-

ject to allocation or confirmation by C.R.M.B. recommendation: anti-mony, chromite, copper, jute/burlap, lead, manganese, nickel, tin, tungsten, vanadium, zinc.

It should also be noted that the United States and the United Kingdom are negotiating joint agreements for the purchasing of a range of desired commodities with the governments of Spain and Portugal, Turkey, Switzerland, Belgian Congo and French Equatorial Africa.

## APPENDIX 34(b)

### U.S.A.-U.K. co-ordinated purchasing arrangements

(as at September 1943)

The machinery for co-ordinating United Kingdom and United States purchase of needed foodstuffs and other raw materials is under continuous review both here and in Washington. It has been developed on converse lines to those used by pre-war international cartels. These were used to maintain by agreement a selling floor below which the participants refused to dispose of their goods. Co-ordinated purchasing establishes a ceiling above which the participants refuse to dispose of their cash.

There are four main variants to the system of co-ordinated purchasing. They have as their primary purpose the prevention of neutrals and Allies alike from holding purchasers up to ransom. In order to avoid this it is necessary to eliminate competitive inquiries as well as competitive bids; the former can be as much of a stimulus to inflated demands as the latter. Maintenance of stable world prices for raw materials depends either on a system of co-ordinated buying or on import licensing control geared to price ceilings.

The four different types of co-ordinated buying are as follows:

division of markets; single buying; parallel buying; and joint buying.

(i) *Division of markets.* For some commodities, United Kingdom and United States of America agree mutually or are advised by the Combined Boards to confine their purchases to a particular market. The purchases are retained by the country holding the buying monopoly.

(ii) *Single buying.* In the case of some commodities the United Kingdom or United States of America are individually responsible for their purchase. Purchases are, however, not retained by the purchaser (as in the case of division of markets), but resold either by mutual agreement or under C.R.M.B. or C.F.B. allocation. In some cases one or other of the purchasing countries has a global purchasing monopoly: in others the monopoly is only territorial. The distinction between single buying and division of markets is that in the latter case allocations are made before purchase and in the former after purchase.

(iii) *Parallel buying.* For some items United Kingdom and United States of America purchasing agencies share a particular market. They purchase independently at prices and for quantities agreed in advance. This has the disadvantage that unless the respective agents are experienced in co-ordination an impression of competitive buying may be given to the seller. On the other hand there are advantages from the national point of view in maintaining contact with the

market: the fact that both purchasing countries are specifically identified with the purchasing arrangements preserves the commercial prestige of both.

(iv) *Joint buying*. The only example of joint buying at present is the Combined Anglo-American Purchasing Mission in India for mica. There have, however, been several cases of a joint approach being made by Anglo-American missions to supplying countries in negotiating contracts. A current example is the commercial delegation recently sent to Latin America by the C.C.C. (Commodity Credit Corporation) who are, with a team of British experts, conducting an inquiry into the prospective supply of dairy products and eggs.

## APPENDIX 35

### The Empire Clearing House for raw materials

(as at May 1942)

...

2. The primary function of the Empire Clearing House will be to construct, for the purposes of the Combined Raw Materials Board, composite and co-ordinated pictures of the actual and potential resources and of the requirements of raw materials of the Empire and Allied countries in the Eastern Hemisphere. A similar function will be performed by the Requirements Committee in Washington in respect of the United States and Allied countries in the Western Hemisphere.

3. These pictures are required so that the total raw material resources available to the Allied nations may be treated as a common pool and used to the best strategic advantage. The raw materials to be pooled will be those required for the production of munitions and supplies for essential services and, more particularly, such of those materials as are in short supply in relation to the Allied requirements as a whole.

4. The materials to be regarded as raw materials for the purposes of the Clearing House will be the same as those so regarded by the Combined Raw Materials Board and must be subject to variation as the necessities may from time to time dictate. For convenience the term 'raw materials' will extend to cover in many cases semi-processed products which are the materials of further fabrication.

5. The intention is that the Clearing House should not be a mere body for the collection of statistics, but should constitute an active part of the machinery for determining the distribution of vital supplies to the best advantage for the war effort.

6. In drawing up a picture of resources and requirements of any particular raw material the Clearing House will consider how the total quantity of that material available for Empire countries can best be utilised, having regard to manufacturing capacity, convenience, speed of delivery, shipping and strategic considerations. It will also enable conflicting requirements within the Empire to be discussed and resolved before a case is presented to the Combined Raw Materials Board.

7. The statement of the requirements of raw materials of the Empire countries as prepared by the Empire Clearing House and its proposals for the development of resources will be furnished to the Combined Raw Materials Board whose joint secretaries will prepare the draft of a joint report and recommendations. This draft will before adoption be communicated to the Minister of Production and will be considered by the Empire Clearing House. Sir Clive Baillieu on the Combined Raw Materials Board will act on instructions from the Minister of Production who will be advised by the Clearing House.

8. The Combined Raw Materials Board will determine on the information and recommendations submitted to it the allocation of the available

supplies of raw materials. Regarding the development of the resources of raw materials it will make recommendations only.

9. The relationship of the functions of the Empire Clearing House to those of the Eastern Group Supply Council are at present under consideration and will be the subject of a later communication.

10. The Clearing House will also provide a means through which the knowledge and experience of the Empire can be used to concert measures for the most effective utilisation of the Allied resources of raw materials in the prosecution of the war and to consider steps to be taken to expand existing sources of supply and where possible to open up new sources.

11. In these tasks it will have at its disposal such expert advice and assistance as it may require, and will be afforded directions as to strategic necessities.

12. The full Clearing House is at present meeting regularly each fortnight and will meet at more frequent intervals if required. Sub-committee meetings are held twice weekly so that representatives can be kept in touch with day-to-day developments and consider individual items prior to their submission to the full Clearing House.

13. The Empire Clearing House will be concerned rather with programmes of requirements and the allocation of supplies than with the placing and progressing of particular orders and requisitions. Such orders and requisitions within the quotas allocated to each government will still be necessary. As regards the lend-lease machinery in the United States it is hoped that in due course this may be simplified so that programmes may no longer be asked for by the Office of Lend-Lease Administration in addition to those required by the Combined Raw Materials Board.

14. The active efforts of the dominions missions in Washington for the support and progressing of such orders and requisitions will continue to be necessary as in the past. It will also be necessary for close touch to be maintained in Washington between missions and the British Raw Materials Mission.

15. During the interval preceding the establishment and full operation of the Empire Clearing House these missions have served as the channels of communication between the Combined Raw Materials Board and the dominions governments, in obtaining for the Board information as to the resources and requirements of raw materials of the dominions and have in so doing discharged one of the functions of the Clearing House. They have in that way acquired considerable knowledge and experience which it is desired should remain at the disposal of the Combined Raw Materials Board.

16. It is now proposed that the following procedure should be followed:

(a) the missions in Washington shall be kept informed by the British Raw Materials Mission of all applications by the Combined Raw Materials Board to the Clearing House for information about Empire resources and requirements, so that they may be in a position to warn their governments of the general purport of the inquiry and thus enable the governments to set the necessary inquiries on foot. The operative requests for information, the form of which may require modification after consideration by the Clearing House, will

reach the dominion governments from the Clearing House through their representatives in London. Any alteration in the form of an inquiry will be communicated to the missions in Washington through the British Raw Materials Mission;

(b) replies when dispatched to London shall be repeated to the missions in Washington;

(c) requests for important supplementary information and answers shall be dealt with in a similar manner.



## APPENDIX 36

### The Combined Raw Materials Board

(as at the second half of 1942)

#### 1. *Constitution*

The Combined Raw Materials Board was set up in January 1942 following upon the visit of the Prime Minister to the United States.

#### 2. *Terms of reference*

The terms of reference of the Board are as follows:

(a) To plan the best and speediest development, expansion and use of the raw material resources under the jurisdiction or control of the British Government or the United States Government, and to make the recommendations necessary to execute such plans. Such recommendations shall be carried out by all parts of the respective governments.

(b) In collaboration with other of the United Nations, to work towards the best utilisation of their raw material resources, and, in collaboration with the interested nation or nations, to formulate plans and recommendations for the development, expansion, purchase or other effective use of their raw materials.

#### 3. *Organisation*

The Board, which sits in Washington, has two members, one representing the United States Government and the other the British Government. Since its inception the members have been Mr. W. Batt for the United States Government and Sir Clive Baillieu, who acts under the instruction of the British Minister of Production. The Board's secretariat is provided by the American Requirements Committee and the British Raw Materials Mission (of which Sir Clive Baillieu is head). There are two executive secretaries to the Board: Mr. Howard Sykes for the United States side and Mr. G. Archer (who is also Secretary-General of the B.R.M.M.) for the British. In order to foster the concept of the Board as a combined undertaking, the American and British secretariats are housed in the same building.

The Board has no counterpart in the United Kingdom; that is to say, there is no Anglo-American raw materials committee sitting in London. The supplies and requirements of the British Empire (other than Canada) and the Middle East (civil needs) are, however, collated in London by the Raw Materials Committee of the Commonwealth Supply Council (until recently known as the Empire Clearing House) before presentation to the C.R.M.B. The interests of Canada are represented on the Board by the United States member.

#### 4. *Activities*

All raw materials come within the scope of the C.R.M.B., but in practice it confines its operations to those where a shortage threatens to curtail war production. Twenty-three such materials have already been

fully reported on and another twenty-five are under consideration at the present time. A material may be brought under review by the Board at the special request of either the American or the British side because their government is experiencing difficulty in meeting its requirements of a particular material owing to the heavy demands or unregulated purchasing of the other side's government or nationals.

As soon as it has been decided that a material must be reviewed by the Board, a draft report is prepared by the staff on the basis of information assembled by the American Requirements Committee for the Western Hemisphere and by the Ministry of Production in London for the Eastern Hemisphere (there have been some exceptions to this zoning principle, but in general it applies). As has been stated in paragraph (3) above, the necessary statistics and other supporting data for the Empire are collected and discussed by the Raw Materials Committee of the Commonwealth Supply Council. This body is to an increasing extent able to screen effectively Empire requirements; it advises the British member of the C.R.M.B. of the allocations it considers appropriate for the various Empire countries concerned. The requirements of the other Allied countries and neutrals in the Eastern Hemisphere are sponsored by the United Kingdom, except in the case of China, which comes within the United States sphere of responsibility, and Russia, allocations to whom are mainly governed by the Protocol agreements and are usually the subject of tripartite negotiations between the United Kingdom, United States and U.S.S.R. The C.R.M.B. does, however, review the allocations to Russia and may suggest modifications in them.

The draft report presents a statistical picture of the position of the United Nations, and on the basis of this discusses possibilities of expansion of production, economies in use, shipping economies, and so forth. After taking all these factors into account, it recommends how the available supplies should be allocated between the members of the United Nations. The allocations are usually made for quarterly periods.

The draft report is first considered by the Operating Committee of the C.R.M.B. This committee is a clearing-house for any points of dispute or uncertainty which may have arisen during the preparation of the report. The Ministry of Production in London is advised by cable, before the Operating Committee meets, of the recommendations made in the report and its comments or any objections it may have to the recommendations are discussed, and, practically speaking, always settled, at the Operating Committee stage. The Operating Committee includes, besides members of the C.R.M.B. secretariat, representatives of the United States War Production Board, the State Department, the Board of Economic Warfare, the Federal Loan Agency, and the British Embassy in Washington.

The report as amended by the Operating Committee is then considered at a formal meeting of the Board. The whole C.R.M.B. machinery is designed to ensure close co-operation between the American and British staffs during the preparation of the report so as to prevent conflicts of opinion coming up for settlement before the Board itself. It has so far been very successful in this, and normally the Board adopts the report as it stands.

In making decisions as to allocations of supplies, expansion of production, etc., the Board names in each case the government responsible for seeing that the decision is carried out. When subsequent reviews are being prepared (a quarterly procedure in the case of most materials), reports are called for on the progress which has been made in implementing the decisions. As regards the British Government, the Ministry of Production has a general responsibility for seeing that these are carried out; the supply ministries (with, of course, the Raw Materials Department of the Ministry of Supply) are usually the departments which must take any action which is needed. On the United States side, the War Production Board acts in a capacity similar to that of the Ministry of Production. Allocation by the C.R.M.B. is accepted by O.L.L.A. as sufficient justification for requisition under lease-lend for supplies from the United States.<sup>1</sup>

In making allocations the C.R.M.B. commonly works on the principle of earmarking particular sources to either the United Kingdom or the United States in order to simplify purchasing arrangements. Where this is not feasible, either one of the governments acts as sole purchaser and resells the agreed quota to the other (e.g. sisal from British East Africa), or, in order to avoid currency difficulties, a co-ordinated purchasing scheme is established (e.g. balsa-wood in Ecuador). In allocating sources of supply, so far as possible Western Hemisphere sources are earmarked for the United States and Eastern Hemisphere for the United Kingdom. The same principle has been adopted in certain cases for determining responsibility for supplying goods made wholly or mainly of critical raw materials, e.g. hard hemp goods and copper semi-manufactures.

If the allocation of a material gives rise to problems of combined production planning in the United States and the United Kingdom, the C.R.M.B. refers to the C.P.R.B. and a joint committee of the two boards may be set up to consider the material in question (e.g. steel).

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<sup>1</sup> But see above, pp. 296-298.

## APPENDIX 37

### Notes to Table 58 (page 414)

(1) *Steel*

The first allocation was provisional and for the period of one year. Quarterly allocations began in April 1940, and it was eventually found necessary to introduce separate allocations for the various iron and steel products, e.g. carbon steel, alloy steel, drop forgings, iron castings, tinplate, terne plate and black plate. Estimates of requirements were made by departments; R.M.D. estimated supplies. Drop forgings and tinplate, amongst other items, were considered by special sub-committees which reported to the Materials Committee. Steel for building was allocated globally to the Works and Building Committee which subdivided it into departmental allocations.

(2) *Copper, lead, zinc and tin*

Supplies and requirements of these non-ferrous metals were reviewed periodically by the Materials Committee which approved allocations by end use. The release of these metals for consumption was administered by the Non-Ferrous Metals Control itself (after consultation with production departments). The processing of non-ferrous metals is highly technical and it was very difficult for departments to estimate their total requirements. Therefore, allocation to end use was the most appropriate method of distribution and detailed consumption was laid down not by departments but by the Control.

(3) *Aluminium*

It was agreed by the Materials Committee in December 1940 that, since the Aluminium Control by pressing economies and careful scrutiny of requirements had kept demand within supply, no formal allocations need be made and that the Control should continue to release aluminium on the lines of previous policy. Periodic reports were made to the committee by the Control.

(4) *Timber*

The original allocations of timber (hardwoods, softwoods and plywood) were six-monthly, but were reduced to three-monthly periods when supplies became scarce. The procedure adopted was as for steel.

Mining timber had only one use and no departmental allocation was therefore necessary. Pitprops were obtained under licence.

(5) *Cotton (for spinning)*

Departmental requirements were estimated quarterly as for steel. Supplies were estimated by R.M.D. Both estimates were in terms of weight of yarn. In addition government bodies representing well-defined industrial groups estimated the requirements of and administered allocations for these industries, e.g. Plastics Control, Rubber Control, Directorate of Medical Supplies, etc. The Cotton Control looked after

miscellaneous residual items for industry. Departmental allocations of cotton were administered in conjunction with preference directions for particular contracts.

(6) *Wool*

Allocation by end use. Worsted yarns in particularly short supply were sub-allocated between service and civilian uses.

(7) *Silk*

The use of raw silk was confined to service items and, since the M.A.P. took most of the supply, no departmental allocations were necessary. The Ministry of Supply took the whole supply of waste silk and noils for cartridge-bag requirements. Allocation was by end use.

(8) *Flax*

Departmental allocations of line, machine tow and low-grade tow were made for specified end uses at six-monthly intervals, or more frequently when necessary. The Control released flax in accordance with the instructions of the committee and the authority of the chairman was required for deviation from those instructions.

(9) *Jute*

Block allocations were made at six-monthly intervals, or more often when necessary, for end uses. As with flax, requirements were notified to R.M.D. which reported to the Materials Committee.

(10) *Hemp*

Allocations were made by end use as for jute, except for true hemp of which no further imports were anticipated and for which departmental allocations were made for the most stringently controlled purposes.

(11) *Paper and paper board*

A special sub-committee allocated paper and board for more than a hundred different uses for four-monthly periods. The Paper Control administered the quotas.

(12) *Leather*

Leather was not allocated until the supply position deteriorated. Then the Materials Committee allocated supplies between service and civilian footwear as necessary.

(13) *Rubber*

Quarterly allocations were made for specific groups of articles and the uses for which rubber might be released or consumed (with specifications) were rigidly prescribed. The Rubber Control, with the assistance of the Director of Tyre Control, administered allocations to individual producers of rubber goods and production was closely watched. The Controls were in constant close touch with the adviser to the chairman of the Materials Committee and allocations were adjusted from week to week as necessary. This detailed administration of allocations was centrally controlled because supplies of crude rubber were only available from diminishing stocks.

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