THE BRITISH ARMAMENTS INDUSTRY DURING DISARMAMENT 1918-36

R. P. T. DAVENPORT-HINES
Selwyn College

Thesis submitted for the degree of Ph. D.
University of Cambridge
1979

Richard Peter Treadwell
DAVENPORT-HINES
This dissertation documents the British armaments industry from both public and private archives, as detailed in the Bibliography. The Public Records Office has provided material from the Cabinet Office, the three Service ministries, the Foreign Office, Treasury and the munitions ministries of two world wars. The largest single source is the microfilm collection at Vickers House, and to the best of my knowledge, none of the quotations used by me from this source have been published previously. I have also used other historical papers, hitherto unpublished, preserved at Vickers House; together with the surviving papers of the Armstrong Whitworth and Birmingham Small Arms companies listed in the Bibliography. I have also consulted the private papers of various individuals concerned with the inter-war armaments industry, notably Lord Hankey, Sir Eustace Tennyson-d'Eyncourt and Sir Patrick Hannon.

For permission to use the material at Vickers House, which is not generally available, I am indebted to Mr H.E. Scrope, Secretary of Vickers Ltd., and I am also grateful to Mrs Daisy Dixon for the cheerfulness with which she fitted me into a busy working department at Vickers House. All industrial historians must be thankful to Mr Richard Storey, Keeper of the Modern Records Centre at Warwick University, for literally snatching the surviving B.S.A. papers from the flames and carrying them off in his car, when the Meriden Co-Operative was formed after B.S.A.'s collapse.

I owe other debts to Mr Martin Gilbert, for providing me with copies of Sir Winston Churchill's papers on the armaments industry in 1935; and to Colonel E.G. Boxshall, General Sir James Marshall-Cornwall and Major General Sir Kenneth Strong for corresponding with me about the international arms trade in the 'thirties.

In chapters three to five, I occasionally quote from interviews conducted some twenty years ago by Mr J.D. Scott with Colonel A.T. Maxwell, the late Sir Edward Peacock and the late Sir James Reid-Young; and my frequent references to the writings of Mr Clive Trebilcock show a little of what I owe to him; but this dissertation is entirely my own work, and no portion is the outcome of work done in collaboration.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables and Graphs</td>
<td>i</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>iii</td>
</tr>
<tr>
<td>Abstract</td>
<td>v</td>
</tr>
<tr>
<td><strong>Chapter</strong></td>
<td></td>
</tr>
<tr>
<td>1 Industrial Mobilization during Disarmament</td>
<td>1</td>
</tr>
<tr>
<td>2 Private Armourers and their opponents</td>
<td>33</td>
</tr>
<tr>
<td>3 Vickers</td>
<td>85</td>
</tr>
<tr>
<td>4 BSA and Armstrong</td>
<td>168</td>
</tr>
<tr>
<td>5 Vickers and the supply of British armed forces</td>
<td>203</td>
</tr>
<tr>
<td>6 International Armaments Markets</td>
<td>266</td>
</tr>
<tr>
<td>Conclusions</td>
<td>337</td>
</tr>
<tr>
<td>Sources and Bibliography</td>
<td>341</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>To show allocation of armament work between Royal Ordnance Factories and private trade 1921-38.</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>To illustrate numbers of skilled, semi-skilled and unskilled employees in certain Vickers-Armstrong works at 7 December 1935.</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>To illustrate numbers of drawing-office staff employed at certain Vickers-Armstrong works at 7 December 1935.</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>To illustrate construction of British warships 1914-18.</td>
<td>7</td>
</tr>
<tr>
<td>5.</td>
<td>To show supplies of guns to Britain 1914-18.</td>
<td>8</td>
</tr>
<tr>
<td>6.</td>
<td>To illustrate output of empty shell in Britain 1914-18.</td>
<td>8</td>
</tr>
<tr>
<td>7.</td>
<td>To illustrate percentages of output of empty shell from home sources 1914-18.</td>
<td>8</td>
</tr>
<tr>
<td>8.</td>
<td>To show expenditure on armament advertising by Vickers-Armstrong 1930-34.</td>
<td>52</td>
</tr>
<tr>
<td>9.</td>
<td>To show group advertising by Vickers 1930-34.</td>
<td>53</td>
</tr>
<tr>
<td>10.</td>
<td>To summarise profits and dividends of Vickers Ltd., 1912-36.</td>
<td>86</td>
</tr>
<tr>
<td>11.</td>
<td>To compare ownership of capital in ten selected major companies in 1929.</td>
<td>90</td>
</tr>
<tr>
<td>12.</td>
<td>To illustrate percentages of Vickers family and directors' shareholdings in Vickers 1898-1931.</td>
<td>91</td>
</tr>
<tr>
<td>13.</td>
<td>To illustrate capitalisation of M. C. W. F., 1917-20.</td>
<td>113</td>
</tr>
<tr>
<td>14.</td>
<td>To illustrate percentage dividend paid by Metropolitan-Vickers 1920-28.</td>
<td>113</td>
</tr>
<tr>
<td>15.</td>
<td>To show Wolseley Motors' profitability 1913-18.</td>
<td>133</td>
</tr>
<tr>
<td>16.</td>
<td>To show capital position of Beardmore 1921-26.</td>
<td>136</td>
</tr>
<tr>
<td>17.</td>
<td>To show value of Vickers' Sheffield sales 1929-32.</td>
<td>163</td>
</tr>
<tr>
<td>18.</td>
<td>To show output of ingots at Vickers' Sheffield steelworks and at Armstrongs' Manchester steelworks 1923-27.</td>
<td>163</td>
</tr>
<tr>
<td>19.</td>
<td>To illustrate the fortunes of B. S. A. 1914-31.</td>
<td>173</td>
</tr>
<tr>
<td>20.</td>
<td>To illustrate interest charges accumulated by Armstrong 1922-5.</td>
<td>193</td>
</tr>
<tr>
<td>21.</td>
<td>To analyse Vickers-Armstrong's expenses for 1928.</td>
<td>199</td>
</tr>
<tr>
<td>22.</td>
<td>To show yearly armament turnover and armament profit of Vickers-Armstrong, 1930-34.</td>
<td>204</td>
</tr>
<tr>
<td>23.</td>
<td>To illustrate Vickers-Armstrong armament turnover 1930-34.</td>
<td>205</td>
</tr>
<tr>
<td>24.</td>
<td>To show British output of machine-guns 1914-18.</td>
<td>231</td>
</tr>
</tbody>
</table>
25. To illustrate war-time rate of producing machine-guns as estimated in 1928.


27. To illustrate productive capacity of various types of fighting vehicles in first year of a great war, as estimated in 1932.

28. To show annual value and distribution of Vickers' major arms exports, with sales expenses expressed as a percentage of value of contracts, 1926 - 34.

29. To illustrate the distribution of Vickers' major arms exports, as percentage of annual arms sales, 1926 - 34.

30. To show value of Ordnance orders on hand at Bofors Works 1924 - 8.

31. To show number of licences for export of war materials issued and refused by British Government 1929 - 35.

32. To show interest paid by Terni to Vickers 1922 - 3.

33. To show re-organisation of share-holding of Japanese Steelworks and Wanishi Ironworks, 1931.

34. To show dividends paid by Japanese Steelworks to Vickers-Armstrong 1928 - 34.

35. To show Vickers' return from Resita, Roumania 1922 - 8.

36. To show value of armament orders placed by Copsa-Mica & Cugir Company in Britain 1925 - 9.

LIST OF GRAPHS

1. To show Vickers' Ordinary share values 1919 - 30

2. To show Vickers' Ordinary share values 1932 - 6.

3. To show distribution of money spent on British naval armament as between Government factories and private trade, 1920 - 37.

4. To show distribution of money spent on armament for British Army as between government factories and private trade 1920 - 37.

5. To show commercial and armament orders received by Vickers at Barrow 1917 - 34.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.E.I.</td>
<td>Associated Electrical Industries Ltd.</td>
</tr>
<tr>
<td>A.W.</td>
<td>Prefix of Armstrong, Whitworth papers in Tyne &amp; Wear Records Office.</td>
</tr>
<tr>
<td>B.E.F.</td>
<td>British Expeditionary Force.</td>
</tr>
<tr>
<td>B.S.A.</td>
<td>Birmingham Small Arms &amp; Co Ltd.</td>
</tr>
<tr>
<td>B.T.</td>
<td>Prefix of Board of Trade document in Public Records Office of series indicated.</td>
</tr>
<tr>
<td>C.I.D.</td>
<td>Committee of Imperial Defence.</td>
</tr>
<tr>
<td>C.I.G.S.</td>
<td>Chief of Imperial General Staff.</td>
</tr>
<tr>
<td>C.M.C.</td>
<td>Copsa-Mica &amp; Cugir Company, Romania.</td>
</tr>
<tr>
<td>C.P.</td>
<td>Cabinet Paper.</td>
</tr>
<tr>
<td>D.A.C.</td>
<td>Director of Army Contracts, War Office</td>
</tr>
<tr>
<td>DEY</td>
<td>Prefix of d'Eyncourt papers at National Maritime Museum.</td>
</tr>
<tr>
<td>D.N.C.</td>
<td>Director of Naval Construction, Admiralty.</td>
</tr>
<tr>
<td>E.S.C.</td>
<td>English Steel Corporation.</td>
</tr>
<tr>
<td>F.O.</td>
<td>Prefix of Foreign Office document at Public Records Office.</td>
</tr>
<tr>
<td>H.</td>
<td>Prefix of Hannon papers at House of Lords.</td>
</tr>
<tr>
<td>HNKY.</td>
<td>Prefix of Hankey papers at Churchill College, Cambridge.</td>
</tr>
<tr>
<td>L.N.U.</td>
<td>League of Nations Union.</td>
</tr>
<tr>
<td>M.A.</td>
<td>Military Attaché.</td>
</tr>
<tr>
<td>MCKN.</td>
<td>Prefix of McKenna papers at Churchill College, Cambridge.</td>
</tr>
<tr>
<td>M.C.W.F.</td>
<td>Metropolitan Carriage, Wagon &amp; Finance Company.</td>
</tr>
<tr>
<td>Metrovic</td>
<td>Metropolitan-Vickers Electrical Company.</td>
</tr>
<tr>
<td>M.G.O.</td>
<td>Master General of Ordnance.</td>
</tr>
<tr>
<td>M.I.</td>
<td>Military Intelligence.</td>
</tr>
<tr>
<td>M.O.D.</td>
<td>Ministry of Defence.</td>
</tr>
<tr>
<td>P.S.O.C.</td>
<td>Principal Supply Officers Committee.</td>
</tr>
<tr>
<td>R. &amp; D.</td>
<td>Research and Development.</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>RIC</td>
<td>Prefix of Richmond papers at National Maritime Museum.</td>
</tr>
<tr>
<td>R. O. F.</td>
<td>Royal Ordnance Factories.</td>
</tr>
<tr>
<td>S. B.</td>
<td>Supply Board.</td>
</tr>
<tr>
<td>SWIN</td>
<td>Prefix of Swinton papers at Churchill College, Cambridge.</td>
</tr>
<tr>
<td>T.</td>
<td>Prefix of Treasury papers at Public Records Office of series indicated.</td>
</tr>
<tr>
<td>U. D. C.</td>
<td>Union of Democratic Control.</td>
</tr>
<tr>
<td>V.</td>
<td>Vickers Ltd (reference to microfilm collection).</td>
</tr>
<tr>
<td>W. O.</td>
<td>War Office; also prefix of War Office document in Public Records Office of series indicated.</td>
</tr>
</tbody>
</table>
ABSTRACT.

This study is neither an exercise in economic history nor in the history of Imperial Defence, although it touches both. It is intended as a venture in industrial history: a phrase which is deliberately chosen instead of business history for two reasons.

Much business history is written in the language of biography. Whether because of the character of commissioned history, or the lure of writing about 'heroic' entrepreneurs, or the difficulty of finding material to support an alternative procedure, such work seldom succeeds in re-creating the group-character of Boards, and rarely attempts comparative study of senior planning. Individual relations between directors and total Board performance are largely elided. The falsity of this must be clear to anyone who has participated in group decision-making. Although the personality of a particular Chairman can be felt down to site-level — as indeed occurred with at least three industrialists discussed in chapters 3 and 4 — this was much less important than the Board persona which had to conceive policies suitable to meet the adverse conditions described in chapters 1 and 2. The managerial organisation which had to execute such policies was itself, of course, a reflection of the different Boards' reactions and capacities.

I have attempted to describe and compare the character of three directorates, one of which reformed itself (Vickers), leaving its competitors (Armstrong and B.S.A.) to illustrate the various dangers of weak and divided counsels. A comparative managerial study, such as this, is probably more realistic than any comparative statistical analysis. The latter (unless really detailed figures on different operating divisions survive, as they do not for the companies studied here) rely as much on arrangement and the historian's interpretation as does the re-working of papers in which industrialists comment on one another, discuss company methods and abilities, and recount successes or missed opportunities. One method is not more objective than the other; and statistics are less instructive of human behaviour.

Another tendency of business history —to which there are distinguished exceptions—is to view the subject material in overm much isolation from its national and political context. I have been fortunate in writing about an industry with close and controversial political connections which acted as a decisive external influence on many of its activities. These wider considerations,
involving for example British perception of the Continental commitment or
the power of Whitehall administration (chapter 1), the influence of pacifism
(chapter 2), the limits of Government spending-power (chapter 5), or the
relative British weakness in international commercial diplomacy (chapter 6)
are all to the fore in this study. Forcible reflections on the divorce of
reliable financiers from both industrial management, and certain connected
national policy-making, occur in every chapter.

This work differs in both purpose and scale from the official history
of Vickers by Mr. J. D. Scott. Although a fairly strict interpretation has
been made of the phrase 'armaments manufacture' in the title, a comprehensive
account of the technical characteristics of the weaponry of the Disarmament
period has not been attempted.

This dissertation is the result of my own work and includes nothing which
is the outcome of work done in collaboration.
The material armament of a country consists nowadays not in the accumulation of stocks of arms, but in the preparatory measures for their manufacture.

General von Seeckt (Chief of German Army Command 1920-6), Gedanken eines Soldaten (Berlin 1929), 99.

The past war has proved that unpreparedness is not only a vice but that the saving effected is infinitesimal compared with the cost of afterwards repairing deficiencies. At the finish the pace is made by the nation which aspires to hold a leading position in the normal intercourse of peaceful periods...while the best that can be looked for is a long interval between now and the next strife, that interval will be made the longer by the provision of reasonable safeguards against aggression from wheresoever it may come. From the commercial standpoint war business must be regarded as substantially dead for many years to come.

Arms and Explosives, 2 June 1919.

We are properly caught with our trousers down. The Service deficiencies are very great.

Major Henry Pownall of C.I.D., diary 2 September 1935.

People do not understand what a heavy tax parsimony can be.

Walter Bridgeman, First Lord of Admiralty, House of Commons 19 March 1925.

We want everything, everything, but it is principally a question of money (eine Geldfrage).

Colonel Palous, of the Armaments Department of War Ministry in Esthonia, 6 August 1932.
CHAPTER ONE

This is a study of the years during which the armament business was commercially dead, a period running from the Armistice in 1918 past the lowest of the inter-war Service Estimates, those presented for 1932, up to the defence programme allocated in 1936 (see table 1).

It is substantially a study of the firm of Vickers, which in the quarter-century before 1914 had transformed itself from a civilian steel manufacturer into perhaps the world's greatest armourer, and which was the only British firm to survive the 'twenties as primarily an armament manufacturer. As the story of a depressed trade, it is inevitably a catalogue of setbacks, but it also describes problems of Imperial Defence and recounts the failure of British institutions for financing industry.

The arms business has several unique characteristics. It serves 'one class of customer only, namely Government', a client with no civilian equivalent in power or possible ruthlessness. Unlike other industrial work, the demand for armament fluctuates with extreme unpredictability, not according to any economic cycle, but in the thrall of international tension. The private armourer must adapt to the rises and falls of peace-time Defence expenditure, without sacrificing his power of swift and immense war-time productive expansion.

Table 1 to show allocation of armament work between Royal Ordnance Factories and the private trade 1921-38.

<table>
<thead>
<tr>
<th>Year</th>
<th>ROF 1921-22(f)</th>
<th>Trade 1921-22(f)</th>
<th>ROF 1922-23(f)</th>
<th>Trade 1922-23(f)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>£</td>
<td>£</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>1921-22</td>
<td>1,210,000</td>
<td>2,390,000</td>
<td>1,234,000(a)</td>
<td>1,622,000(a)</td>
</tr>
<tr>
<td>W.O.</td>
<td>2,718,000</td>
<td>4,814,000</td>
<td>1,739,000</td>
<td>1,698,000</td>
</tr>
<tr>
<td>Air Mny</td>
<td>109,000</td>
<td></td>
<td>87,000</td>
<td></td>
</tr>
<tr>
<td>1923-24</td>
<td>1,628,280</td>
<td>2,186,950(a)</td>
<td>1,103,625</td>
<td>2,004,565</td>
</tr>
<tr>
<td>W.O.</td>
<td>1,514,225</td>
<td>1,598,297</td>
<td>1,698,775</td>
<td>1,479,920</td>
</tr>
<tr>
<td>Air Mny</td>
<td>107,600</td>
<td></td>
<td>104,700</td>
<td></td>
</tr>
<tr>
<td>1925-26</td>
<td>1,151,159</td>
<td>2,176,000(a)</td>
<td>846,530(b)</td>
<td>1,657,000(b)</td>
</tr>
<tr>
<td>W.O.</td>
<td>1,475,547</td>
<td>1,856,243</td>
<td>1,332,180</td>
<td>1,654,347</td>
</tr>
<tr>
<td>Air Mny</td>
<td>156,670</td>
<td></td>
<td>113,410</td>
<td></td>
</tr>
<tr>
<td>1927-28</td>
<td>851,080</td>
<td>2,199,150(a)</td>
<td>932,426</td>
<td>2,425,876(a)</td>
</tr>
<tr>
<td>W.O.</td>
<td>1,164,790(c)</td>
<td>1,443,878</td>
<td>1,120,969</td>
<td>1,613,229</td>
</tr>
<tr>
<td>Air Mny</td>
<td>173,680</td>
<td></td>
<td>115,550</td>
<td></td>
</tr>
<tr>
<td>1929-30</td>
<td>981,193</td>
<td>1,032,827(a)</td>
<td>921,863</td>
<td>1,025,835(d)</td>
</tr>
<tr>
<td>W.O.</td>
<td>1,183,731</td>
<td>1,739,444</td>
<td>937,179</td>
<td>1,202,161(d)</td>
</tr>
<tr>
<td>Air Mny</td>
<td>83,120</td>
<td>177,800</td>
<td>101,640</td>
<td>303,950(d)</td>
</tr>
<tr>
<td>1931-32</td>
<td>886,910</td>
<td>1,050,112</td>
<td>778,135</td>
<td>1,174,160</td>
</tr>
<tr>
<td>W.O.</td>
<td>1,022,036</td>
<td>1,356,000</td>
<td>991,192</td>
<td>1,112,765</td>
</tr>
<tr>
<td>Air Mny</td>
<td>144,225</td>
<td>352,290</td>
<td>103,417</td>
<td>264,938</td>
</tr>
<tr>
<td>1933-34</td>
<td>866,060</td>
<td>1,840,605</td>
<td>876,180</td>
<td>1,882,500</td>
</tr>
<tr>
<td>W.O.</td>
<td>1,018,760</td>
<td>1,349,877</td>
<td>1,143,987</td>
<td>1,872,928</td>
</tr>
<tr>
<td>Air Mny</td>
<td>128,234</td>
<td>314,637</td>
<td>151,102</td>
<td>416,322</td>
</tr>
<tr>
<td>1935-36</td>
<td>963,795</td>
<td>2,490,000</td>
<td>1,172,800</td>
<td>no data</td>
</tr>
<tr>
<td>W.O.</td>
<td>1,438,553</td>
<td>4,627,646</td>
<td>2,080,996</td>
<td>6,656,548</td>
</tr>
<tr>
<td>Air Mny</td>
<td>327,835</td>
<td>1,197,165</td>
<td>228,861</td>
<td>no data</td>
</tr>
<tr>
<td>1937-38</td>
<td>1,717,110</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>W.O.</td>
<td>4,841,089</td>
<td>20,197,913</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>Air Mny</td>
<td>1,088,071</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
</tr>
</tbody>
</table>

Source: Reports of Director of Army Contracts, 1921-38.

Notes: (a) Inclusive of work carried out at Holton Heath Cordite Factory, Greenock Torpedo Factory and other naval establishments.
(b) This figure of £846,530 was originally £896,530 but a Shadow Cut of £50,000 was made to allow for possible delays in design etc preventing the placing of the full programme of orders.
(c) 'The reduction is partly due to the reduction in Estimates and partly to the fact that the mechanisation programme is tending to include on an increased scale proprietary M.T. vehicles which can only be obtained from the trade'. Note in D.A.C. Report 1927-28, p.4.
(d) Figures for trade 1930-31 include interdepartmental purchases and in the case of the Admiralty, include work performed by naval factories.
(e) The original allocation 1936-37 was rendered largely useless by the incidence of the Defence Programme and is not strictly comparable.
(f) Figures 1921-22-23 are rounded.
Against the chance of an international emergency, he must maintain industrial capacity which can switch into 'immediate repetition in large quantities of highly complex engineering structures'. This unbusinesslike peculiarity indeed 'has no parallel in private industry'.

This difficulty is compounded by the higher quality and complexity of product which distinguishes armament from most civilian lines. Thus in 1931 the manufacture of a 4.5 inch gun carriage entailed over 4,000 operations requiring 2,500 jigs, tools and gauges. The construction of a light tank (excluding the engine and armour plate) involved 6,400 manufacturing operations, whilst the relatively simple tank gun-mounting required 417 operations. 'Departure from pattern by one thousandth... of an inch...may bring about...disaster'. For success in such precision engineering, a carefully organised and high-skilled staff is essential (see tables 2 and 3): if such staff is disbanded during a hiatus in armament orders, it is grievously hard to re-assemble. Not surprisingly, therefore, while most industrialists subordinate technical standards to cost considerations, the armourer's intricacies often require the reverse.

2. Arms & Explosives, July 1913.
4. History of the Ministry of Munitions, vol 9, pt 2, 1
Table 2 to illustrate numbers of skilled, semi-skilled and unskilled employees in certain works of Vickers-Armstrong at 7 December 1935.

<table>
<thead>
<tr>
<th></th>
<th>Semi-skilled</th>
<th>Skilled</th>
<th>Unskilled</th>
<th>All staff</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrow</td>
<td>5,043</td>
<td>2,185</td>
<td>1,994</td>
<td>1,707</td>
<td>10,929</td>
</tr>
<tr>
<td>Elswick</td>
<td>2,104</td>
<td>2,596</td>
<td>844</td>
<td>1,252</td>
<td>6,796</td>
</tr>
<tr>
<td>Naval Yard</td>
<td>899</td>
<td>231</td>
<td>236</td>
<td>161</td>
<td>1,527</td>
</tr>
<tr>
<td>Crayford</td>
<td>1,530</td>
<td>636</td>
<td>447</td>
<td>608</td>
<td>3,221</td>
</tr>
<tr>
<td>Dartford</td>
<td>500</td>
<td>670</td>
<td>939</td>
<td>183</td>
<td>2,292</td>
</tr>
<tr>
<td>Whitehead</td>
<td>560</td>
<td>188</td>
<td>55</td>
<td>94</td>
<td>897</td>
</tr>
<tr>
<td>English Steel Corp., Sheffield</td>
<td>1,683</td>
<td>2,199</td>
<td>2,165</td>
<td>957</td>
<td>7,004</td>
</tr>
<tr>
<td>Openshaw</td>
<td>320</td>
<td>218</td>
<td>231</td>
<td>79</td>
<td>848</td>
</tr>
<tr>
<td>Total</td>
<td>12,639</td>
<td>8,923</td>
<td>6,911</td>
<td>5,041</td>
<td>33,514</td>
</tr>
</tbody>
</table>

Source: Minutes of Evidence, 430.

Table 3 to illustrate numbers of drawing office staff employed in certain works of Vickers-Armstrong at 7 December 1935.

<table>
<thead>
<tr>
<th></th>
<th>Draughtsmen</th>
<th>Apprenticed Draughtsmen</th>
<th>Tracers</th>
<th>Drawing Office Clerks etc</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrow</td>
<td>442</td>
<td>57</td>
<td>.121</td>
<td>92</td>
<td>712</td>
</tr>
<tr>
<td>Elswick</td>
<td>205</td>
<td>17</td>
<td>67</td>
<td>72</td>
<td>361</td>
</tr>
<tr>
<td>Naval Yard</td>
<td>28</td>
<td>5</td>
<td>15</td>
<td>3</td>
<td>.51</td>
</tr>
<tr>
<td>Crayford</td>
<td>170</td>
<td>28</td>
<td>41</td>
<td>45</td>
<td>284</td>
</tr>
<tr>
<td>Dartford</td>
<td>17</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>Whitehead</td>
<td>24</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>35</td>
</tr>
<tr>
<td>E.S.C., Sheffield</td>
<td>35</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Openshaw</td>
<td>4</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>925</td>
<td>122</td>
<td>257</td>
<td>222</td>
<td>1,526</td>
</tr>
</tbody>
</table>

Source: Minutes of Evidence, 430.

Another individuality of armaments is their emphasis on technological renewal. Weaponry may become abruptly and wholly obsolete. The initiative of an imaginative procurement officer can achieve more than a whole school of strategists in little longer time than it takes to reach production orders. The possible rate of technical improvement is such that, less than three years after the U.S.A.'s entry into war in December 1941, their War Department was 'not using a single weapon in the same form or design as before Pearl Harbour'.

1. Alfred P. Sloan, My Years With General Motors, 380
Certainly, these characteristics face the armourer with 'a task illusory or fantastic by conventional industrial criteria', 1 which have produced two other responses much associated with the trade. The first of these is the 'ring', already long established before this description of 1913.

The orders of a given year must be distributed so as to maintain private factories in efficient condition, during periods of limited demand. Capital must be maintained in tact, and staffs must not be dissipated even when orders are so scarce as to require but a skeleton of full output conditions. Individual companies would be tempted to seek salvation by cutting prices so as to secure a disproportionate share of orders when these are not plentiful enough to go round. The victims of any such attempt naturally respond by a further drop in prices, and...the impossible combination of scarcity of orders and low prices supervenes.

The object of a ring is to regulate personal greediness in the common interest, so as to maintain manufacturing facilities in tact for the time when the strain of exceptional demand arises. Government officials approve any machinery for the peaceful division of orders in proportion to the relative scope of individual firms, this course only being possible when prices are standardised by mutual agreement...any undue inflation of prices would being new firms into the business. 2

Other implications of armament rings are examined in Chapter two.

The second feature of arms is the emphasis on export. In Britain, as elsewhere, the development and production costs of armament have always out-run government funds for military use. Except during the Boer and world wars, the costs of maintaining unused facilities for such elaborate and expensive production has been high, as similarly were the production costs on the small output required to meet peace-time domestic demand. For these reasons, arms exports became essential. Foreign markets reduced labour and material costs per unit of production, and supported the maintenance of skilled employees. Research and development costs, and other special expenses, were distributed over wider production runs, altogether rendering exports crucial for the maintenance of a flexible armaments capacity. (Chapter six considers foreign markets).

2. Arms & Explosives, October 1913.
Although the essentials of armament manufacture have scarcely altered since the end of the nineteenth century, many features were transformed by the munitions revolution of 1914-18. For Edwardian armourers it seemed sensible to have a circle of private defence contractors to supply requirements beyond Woolwich Arsenal's capacity during armament upswings. One director of Armstrongs described his firm as 'not only an essential auxiliary of the Government but... itself essentially dependent... upon its relations with the Government'.

There was close co-operation between the Government and its suppliers, and it was assumed that the latter would satisfy productive needs in any emergency. These beliefs did not survive the Great War, and consequently most specialist armament firms existent in 1914 had left the sector within twenty years. Coventry Ordnance Works, set up (1905) by John Browns, Fairfields of Govan and Cammell Laird was in 1919 merged with three other firms to comprise the English Electric Corporation. The Darlington Forge Company went into voluntary liquidation in November 1933. The armament side of John Browns' business merged in 1930 with their Sheffield neighbour, Firths; and by 1936, Firths were capable of meeting only small orders for hardened shell. Birmingham Small Arms largely left armament manufacture by 1925, although dealing in second-hand material. Armstrongs' armament side was merged into Vickers in 1927, as was Cammell Lairds in 1928. Beardmore was reduced to an armament nucleus, capable in 1936 of meeting small orders for naval guns. The Projectile Co. could cope with various shell orders, and Hadfields could meet a fair proportion of all available orders for hardened shell. This reduction in the number of armament manufacturers, although partly caused by the paucity of orders after 1918, was chiefly produced by lessons in industrial mobilization learnt in 1914-18, which we will now examine.

1. Lord Rendel to Lewis Harcourt, Secretary for the Colonies, letter 12 July 1912. A.W. box 163.
The Great War mobilized British industry for armament production on a scale hitherto unimaginable. \(^1\) Private manufacturers supplied to the Army 25,513 guns, the total of 31,232 guns being made up by 4,326 from Woolwich and 1,406 from U.S.A; 73 million shell out of a total of 162.5 million; 230,840 machine guns; 1,946,068 out of a total of 3,954,226 rifles; 5,428,794,000 rounds out of a total of 7,760,525,000 rounds of small arms ammunition; 53,891 aeroplanes and seaplanes, compared with 1,202 from Government sources; and 41,034 aero-engines out of a total of almost 58,000. \(^2\)

Table 4 to illustrate construction of British warships 1914-18.

<table>
<thead>
<tr>
<th>Type of ship</th>
<th>Built at Govt. yards</th>
<th>Built by private contractors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battleships</td>
<td>6</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Battle cruisers</td>
<td>-</td>
<td>7</td>
<td>7 (a)</td>
</tr>
<tr>
<td>Large light cruisers</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Light cruisers</td>
<td>14</td>
<td>45</td>
<td>59</td>
</tr>
<tr>
<td>Monitors</td>
<td>-</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Sloops</td>
<td>-</td>
<td>86</td>
<td>86</td>
</tr>
<tr>
<td>Convoy sloops</td>
<td>-</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>Minesweepers</td>
<td>-</td>
<td>139</td>
<td>139 (b)</td>
</tr>
<tr>
<td>Patrol Boats</td>
<td>-</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Destroyer flotilla</td>
<td>-</td>
<td>39</td>
<td>39)</td>
</tr>
<tr>
<td>leaders</td>
<td></td>
<td></td>
<td>384</td>
</tr>
<tr>
<td>Torpedo boat</td>
<td>-</td>
<td>345</td>
<td>345)</td>
</tr>
<tr>
<td>destroyers</td>
<td></td>
<td></td>
<td>384</td>
</tr>
<tr>
<td>Submarines</td>
<td>29</td>
<td>180</td>
<td>209</td>
</tr>
<tr>
<td>Totals...</td>
<td>49</td>
<td>991</td>
<td>1,040</td>
</tr>
</tbody>
</table>

Source: Sir M. Hankey, Minutes of Evidence 631

Notes: (a) three dismantled before completion.
(b) 27 further vessels of this type cancelled.


2. Minutes of Evidence, 615 & 631. The most remarkable of industrial mobilisation came from the U.S.A, where the destroyer Reid, one of 35 being built by Bethlehem Steel at Squantum, Massachusetts, had its keel laid on 9 September 1919, was launched on 15 October, and was delivered after trials on 6 November 1919. Admiralty Monthly Intelligence Report number 15, July 1920, 59. Copy in Admiral Richmond's papers. RIG 4/1. For another view of U.S. munitions 1917-18, see Alfred Chandler & Stephen Salsbury, Pierre du Pont and the Making of the Modern Corporation. New York & London 1971, 359-428.
Table 5 to show Supplies of guns to Britain 1914-18

<table>
<thead>
<tr>
<th></th>
<th>Home</th>
<th>U.S.A.</th>
<th>Woolwich Arsenal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1914</td>
<td>1915</td>
<td>1916</td>
</tr>
<tr>
<td>Light (2-pdr.-4-in A.A.)</td>
<td>43</td>
<td>2,465</td>
<td>1,792</td>
</tr>
<tr>
<td>Medium (60-pdr.-4.5-in How)</td>
<td>40</td>
<td>695</td>
<td>1,648</td>
</tr>
<tr>
<td>Heavy (6-in.-15-in.)</td>
<td>8</td>
<td>66</td>
<td>1,074</td>
</tr>
<tr>
<td></td>
<td>91</td>
<td>3,226</td>
<td>4,514</td>
</tr>
<tr>
<td></td>
<td>25,513</td>
<td>26,919</td>
<td>4,326</td>
</tr>
</tbody>
</table>

Source: Minutes of Evidence, 631.

Table 6 to illustrate Output of Empty Shell 1914-1918. (Figures in thousands)

<table>
<thead>
<tr>
<th></th>
<th>1914</th>
<th>1915</th>
<th>1916</th>
<th>1917</th>
<th>1918</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordnance Factories</td>
<td>77.3</td>
<td>1,209.2</td>
<td>1,821.3</td>
<td>1,536.1</td>
<td>924.2</td>
<td>5,568.2</td>
</tr>
<tr>
<td>National Shell Factories</td>
<td>-</td>
<td>163.1</td>
<td>4,154.9</td>
<td>7,694.7</td>
<td>8,014.2</td>
<td>20,026.9</td>
</tr>
<tr>
<td>National Projectile Factories</td>
<td>-</td>
<td>37.3</td>
<td>2,557.8</td>
<td>8,100.2</td>
<td>9,421.5</td>
<td>20,116.8</td>
</tr>
<tr>
<td>Co-operative Groups</td>
<td>-</td>
<td>520.3</td>
<td>9,839.3</td>
<td>17,233.4</td>
<td>16,757.0</td>
<td>44,350.0</td>
</tr>
<tr>
<td>Total Home</td>
<td>168.1</td>
<td>6,384.5</td>
<td>15,315.2</td>
<td>22,074.4</td>
<td>28,704.0</td>
<td>72,646.2</td>
</tr>
<tr>
<td>Abroad</td>
<td>-</td>
<td>8,314.5</td>
<td>33,688.5</td>
<td>56,638.8</td>
<td>63,820.9</td>
<td>162,708.1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>245.4</td>
<td>16,336.9</td>
<td>75,537.0</td>
<td>84,171.8</td>
<td>82,150.9</td>
<td>258,442.0</td>
</tr>
</tbody>
</table>

Source: Minutes of Evidence, 632; History of Ministry of Munitions, vol 10, 120.

Table 7 to illustrate Percentages of output of empty shell from home sources 1914-18

<table>
<thead>
<tr>
<th></th>
<th>Light</th>
<th>Medium</th>
<th>Heavy</th>
<th>Very Heavy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordnance Factories</td>
<td>4.5</td>
<td>3.0</td>
<td>.04</td>
<td>.3</td>
<td>3.4</td>
</tr>
<tr>
<td>National Shell Factories</td>
<td>12.5</td>
<td>16.0</td>
<td>8.0</td>
<td>2.1</td>
<td>12.3</td>
</tr>
<tr>
<td>National Projectile Factories</td>
<td>1.6</td>
<td>18.3</td>
<td>37.0</td>
<td>47.7</td>
<td>12.4</td>
</tr>
<tr>
<td>Co-operative Groups</td>
<td>30.1</td>
<td>29.7</td>
<td>16.9</td>
<td>6.2</td>
<td>27.3</td>
</tr>
<tr>
<td>Direct Contractors</td>
<td>51.3</td>
<td>33.0</td>
<td>38.0</td>
<td>43.7</td>
<td>44.6</td>
</tr>
</tbody>
</table>

But demands such as these are almost ruinous to business. One of the few metallurgical firms which continued to pay ordinary dividend through the depressed twenties was the South Durham Steel & Iron Co., which had disagreed with the munitions authorities during the Great War and did little armament work. Without big wartime extensions to adapt, they did not issue new capital after 1918 and enjoyed greater flexibility than most competitors.¹ In contrast, Greenwood and Batley told the War Office in September 1914 that in times of peace the existing plant of the various factories is capable of dealing with approximately four or five times the amount of cartridges ordered. That in view of the present urgent demand, all manufacturers are increasing their plant very considerably, and therefore when normal conditions again prevail, the large increases made to the now existing plant will become useless. ... In view of the temporary and abnormal conditions... contractors [must] protect themselves against probable heavy loss of capital by asking rather higher prices.²

Similarly Sir Peter Rylands (1868-1948), a Lancashire steel leader who was President of the Federation of British Industries 1919-21 and intimately connected with the collapse of Armstrongs in 1926-7, said at that time if we could set the clock back, and have been able to see the future when in negotiation with the Government for the wartime expansion of the plant, we would have flatly refused to have entertained the Government's proposals.³

Notwithstanding the facilities provided by the Government to finance war expansion, or write it down after the cessation of hostilities, the addition of emergency plant could be crippling expensive.

2. History of Ministry of Munitions, vol 1, pt 1, 76.
3. The Economist, 2 October 1926.
In particular, because 'war-like stores are a high-class engineering job involving heavy overhead expenses', the costs of armourers (and consequently their prices during the Great War) were often higher than those of firms which were mobilized to munition production during 1914-18, but usually geared to satisfying a stable civilian demand requiring lower overheads.

Attempts were made to meet this problem at the time. From October 1914 onwards, the War Office placed 'assisted contracts', whereby the armourers or other manufacturers engaged on munitions work received grants or advances of money enabling extensions of capacity. Such grants usually comprised the total estimated cost of extensions required to reach a given maximum output by a given date. In earlier 'assisted contracts', these extensions were to remain the property of the firms: subsequently, when the proportions of post-war over-capacity were clearer, firms agreed that subsidised plant would remain Government property. Other means by which the Government helped firms' liquidity were introduced in 1915: advances and banking loans worth 80 per cent of the value of arms, paid on delivery; and remittance of part of the firms' tax bill in order to assist their capital expenditure incurred in expanding armament output. As the official history recounts, this manner of making advances became the general practice during 1918... It postulated that the firm was prepared to take at least a portion of the risk, that the new buildings and plant were likely to be of use to it after the war, and that profits would be earned sufficient to make an appreciable obligation under the excess profits duty probable. These postulates were not always present. After 1918 it proved that many of the new buildings and plant were not easily convertible to peace-time industrial production, and that the costs of such changes constituted a heavy charge on future profits. This point is nicely shown by the experience of the Skeffo ball bearing factory at Luton.

Up to the outbreak of war in 1914 Britain imported some 2,250,000 bearings from Germany annually, and the capital cost of the Luton factory was about £50,000. At Government's urging, after August 1914, Skeff spent £500,000 on buildings, plant and machinery, and imported manufactured stock from its Swedish parent company until its indebtedness to the latter reached £465,000. The Government provided writing off allowances at 40 per cent of cost for buildings, and 50 per cent for cost of plant (£240,300), and financed £525,000. This left, at the end of the war, a balance of £284,700 on loan, repayable during 1922-24, and a situation which soon reached crisis. There was a vast over-capacity of ball bearings: other firms had been encouraged by the Ministry of Munitions, such as Hoffman's (who had four times Skef's capacity), Rudge Whitworth and Ransome and Marles. By 1921, when both Hoffman's and Rudge, Whitworth were 'entirely shut down' and Government-owned, the average sales of ball bearings in Britain were worth £70,000 per month—an amount which the Skef factory alone could absorb threefold. Skef calculated their position as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cost of freehold land, plant, buildings, machinery etc.</td>
<td>289,000</td>
</tr>
<tr>
<td>stock in trade</td>
<td>720,000</td>
</tr>
<tr>
<td>total</td>
<td>1,009,000</td>
</tr>
</tbody>
</table>

A factory suitable for their post-war requirements would have cost £175,000 with £300,000 of stock, totalling £475,000. Of the difference of £500,000 between these totals, £300,000 was recoverable by forced liquidation of stock, leaving a balance of £200,000 which was a dead loss. Owing to Government limitation of prices, Skef made little war-time profit, and achieved a loss for 1921 of £120,000.

2. Memorandum by Skeffo, 10 January 1922. Mun 7/142.
It must be said at once that few other munitions producers had so many ingredients for losses as Skeflø—expansion almost from nowhere in 1914, limitation of profit such as to remove liability for large E.P.D. and extreme post-war over-capacity—but all met, with more or less force, similar trouble to Skeflø's.

The risks which attended additions to productive capacity, involving outside borrowing, received recognition in the later phase of rearmament. An agreement of 1936 apropos the Air Ministry's Expansion Programme 1935-9 provided that if the contractor found during 1939-41 that he had seriously excess capacity, he could claim compensation for 'the difference between the cost of the . . . capital assets written down by depreciation at income tax rates, or any higher rates allowed in Air Ministry contracts, and the market value of such assets at 31 March 1941'. Other 'capital assistance schemes', where the Government partly or wholly provided the fixed capital for re-armament extensions, were agreed from 1937. Where there was a possibility of building extensions having post-war utility as in shipbuilding, capital assistance schemes sometimes included a contributory element from the firms concerned. Indeed, such was the magnitude

of the problem of fixed capital for war-time expansion that in 1936, Vickers stated publicly that in another major war, they would be happy for their ownership to be taken over by the Government for the duration of war, as was done with the railways in 1914-18, with the management left in the hands of the private firms, with dividends paid to shareholders, and with allowances for depreciation and an agreed payment for obsolescence, when the factories were returned to private ownership. 1 Deep difficulties are certainly suggested by any large private manufacturer equably contemplating its temporary nationalisation. This would have been unthinkable before 1914, and shows how much was changed by four years of war. Other revolutions in thinking, as expressed by an enquiry of 1918, will be considered next.

With most of British heavy industry mobilized for war supplies, the situation at the Armistice was unique. There was prodigious experience of armament making at all levels of industry, and there was a prodigious amount of suitable plant. What should be done with it? Recognizing the opportunity to plan the future of arms procurement, the Minister of Munitions, with the concurrence of the Admiralty and War Office, appointed a Committee in July 1918 to consider the control, administration, organisation and lay-out of the ROF at Woolwich.

1. Minutes of Evidence, 347 & 357. Samuel Roberts, M.P., a director of Cammell Laird, said on 21 April 1915, that if the armament firms were brought under 'the kind of control' which the railways had, 'we of the armament firms shall not oppose it'. H.C. Deb. vol. 71 col. 310. It should be added, however, that Cammell Laird's Chairman, Lionel Hichens, a protégé of Lord Milner, was the most politically sensitive armourer of the period, and his thinking was usually in advance of his counterparts in the other firms.
Noel-Baker has written that this Committee 'had greater collective experience of the problem than any other body of men who have ever considered it', and has found 'no study of equal authority'. The Committee is known by the name of its Chairman, Thomas McKinnon Wood (1855-1927), an orthodox Liberal politician who twice served as Financial Secretary to the Treasury. Its other members were William Adamson (1863-1936), the Scottish miners' leader who was then Chairman of the Parliamentary Labour Party; Admiral Sir Reginald Bacon (1863-1947), Director of Naval Ordnance at the Admiralty 1907-9, managing director of Coventry Ordnance 1910-15, and Controller of Munitions Inventions 1918; Mr H.S.B. Brindley (1867-1920), a businessman with great knowledge of industrial mobilization;


2. Throughout the 'twenties and 'thirties, as part of the campaign against private armourers (recounted in chapter two), many suppositions were made as to McKinnon Wood's committee, including evidence it may have received, and the extent of its deliberations. Some of its surviving members recalled that its work had been superficial, and the Government said that no surviving working papers were traceable. In point of fact, voluminous papers survive in Mun 4/5329 (including Minutes of Main Committee, and Engineering sub-committee), Mun 4/6368 (including minutes of filling and small arms sub-committee), Mun 4/6375 (including Minutes of Costs sub-committee) etc.

3. Brindley was born at Birmingham, but educated at Tokio Engineering College until 1883. Acquired experience of shell manufacture whilst an engineer with Firth's, 1889-93. Consulting engineer in Japan 1895-1907, before joining Rees Roturbo Manufacturing Co. Rees Roturbo was a civilian firm which was almost the first non-armourer to receive direct contracts for H.E. shell from the War Office in 1914. (The heads of agreement were signed on 26 December 1914). He subsequently set up and managed the Ponders End Shell Factory, which reached weekly output of over 8,000 8 in. shells, 250 12 in. shells and 4,000 6in. shells, plus a quantity of forgings. They produced the largest single output of 8 in. shells from any source during 1914-18 at a price roughly two-thirds that paid to the armament firms. History of Ministry of Munitions, vol 1, pt 1, pp 108-9 & 115; vol 3, pt 2, 37; vol 8, pt 2, 125. See obituary in *Engineering*, 9 April 1920: 'despotic in his manner...he spared neither himself nor others', and died three days before his knighthood was gazetted.
Sir Arthur du Cros (1871-1955), founder of Dunlop Rubber and early patron of aviation; George Currie (1870-1950), a Unionist backbencher who was a senior official at the Ministry of Munitions and later joined the Labour party; Sir Henry Fowler (1870-1938), Director of Production at the Ministry of Munitions (1915) and Superintendent of the Royal Aircraft Factory; Lt. Gen. Sir William Furse (1865-1953), Master General of Ordnance 1916-20; John Henderson (1846-1922), a Liberal backbencher and chartered accountant; G.F.S. Hills of the War Office; Lord Marchamley (1855-1925), a cotton-spinner who had been Campbell-Bannerman's Chief Whip; Sir Holberry Mensforth (1871-1951), Director General of Factories at the War Office 1920-6; Sir Thomas Munro (1866-1923), Labour adviser to the Ministry of Munitions; Admiral Sir Richard Peirse (1860-1940), Naval Member of the Board of Invention & Research 1916-18; and Will Thorne (1857-1946), Labour M.P., founder (1889) and General Secretary (1889-1934) of the National Union of General and Municipal Workers.

1. du Cros and his father gave to the Army its first airship. As a Conservative backbencher in 1909, he formed the Aerial Defence Committee to secure the inclusion of aviation in the Service Estimates. See his history of the pneumatic tyre industry, Wheels of Fortune (London 1938) and article in Dictionary of National Biography.

2. At the time of McKinnon Wood's committee, Mensforth was an industrialist with British Westinghouse electric co. Westinghouse later became called Metropolitan-Vickers, of which he was managing director; in later life, he was a director of Westland Aircraft and John Brown's.

The unflattering opinion of Mensforth's colleague, Sir Philip Nash, Chairman of Metropolitan Vickers, of the former's capacity is given in Sir Oswyn Murray to Bridgeman, First Lord of Admiralty, 12 Jan 1927. Adm 116/2374.
This Committee, reporting in November 1918, gave three reasons why the retention of a Government arsenal in peace-time was an 'overwhelming' necessity. First, R & D secrecy is better kept in a Government arsenal; secondly, Government establishments can keep close relations with the Ordnance Committee and better supervise financial details. Finally, they judged that 'repair work, which may form an essential mainstay of the productive factory, is better undertaken under Government control', because design failures and weak construction identified during repairs could be more forcibly brought to the notice of designers if the design office was Government controlled. Most significantly the Committee saw few prospects other than repair work for the Government arsenal, because 'reserves of guns and ammunitions and war appliances will be retained sufficient to last the country for peace purposes and a moderate reserve for war for at least ten years'. Looking ahead, they predicted that the present outlay of the larger armament firms for armament production will be considerably reduced, and such manufacture will not improbably disappear as a specialty. It is also probable that the country will insist on the production of all armaments being confined to Government factories; nor would the disappearance of the larger armament firms materially handicap production in the event of a serious war, since during the present war a very large number of engineering firms have been educated in armament manufacture, and the basis for armament supply is now so broad that specializing in the future on the part of a limited number of firms will probably not be necessary for the safety of the country. The magnitude of present-day war operations is such that the reserve of manufacturers in peace-time for war development cannot be looked upon as being concentrated in the Government arsenal and two or three firms. The real reserve for war is the whole of the manufacturing reserve of the country, which has been educated in the supply of armaments.¹

This conclusion by McKinnon Wood was the motif of the next quarter century. In 1934 Charles de Gaulle (1890-1970), then on the secretariat of the Conseil Superieur de la Defense National, opened an international survey of mobilization plans thus:

That war has now become a matter for the whole nation rather than for the Army alone has become an axiom... Politicians, soldiers, businessmen and economists increasingly proclaim the comprehensiveness of National Defence nowadays, and the necessity accordingly for preparations to utilise all the resources of the country.¹

One illustration can be given. A 1932 estimate of required weekly output, in the event of a European war, included 500,000 fuzes for shell. The total of machine shop items needed to reach that target was 11,644–2,450 automatic machines, 3,850 lathes and 2,380 drilling machines—of which only about 900 would be purpose-built for armament work.

The principles of McKinnon Wood were mostly sound. If they aimed at a counsel of perfection in their projected Government takeover of peace-time arms production, they were not alone in that. The British Empire Delegation to the Washington Conference of 1921-2, having in mind the limitation of naval armament agreed there, foresaw insufficient orders to support a circle of private suppliers, and expected Governments to undertake responsibility for manufacturing all such material.

McKinnon Wood's chief oversight was in imagining that Parliament would vote sufficient funds to permit State arsenals to be adequately maintained to deal with spurts of demand which might occur a few years later, with the sudden start of re-armament. Armourers met this problem by extending their production runs through exports; but if the ROF armed secondary powers, that would have opened a veritable Pandora's Box of international complications. But another axiom of the defence sector is that private firms have greater elasticity than Government arsenals in meeting demand fluctuations: orders to Government establishments usually remain fairly static, whilst private manufacturers are expected to wait with little work-in-hand during armament downswings, but ready to meet extra orders in up-swings. Private firms derived their elasticity from the profits of civilian work: a line which it was politically impossible for the ROF to enter in McKinnon Wood's day. Although considered and accepted by the Cabinet, the Report was soon buried. The Ministry of Munitions had to meet enough charges of 'squandermania' as it was, and could not face the task recommended. Its Parliamentary Secretary told the Commons, the State...must either take entire control of a particular industry or it must leave it entirely along...there is no half-way house...the man who sets out to reform things...except piecemeal, or bit by bit, comes to disaster.

The armourers themselves had seen the error of such total commitment to an irregular business. As one Vickers director wrote, 'before 1914 these companies made a great deal of money out of sales of...warlike stores... For their ultimate welfare the money was perhaps too easily made'. After 1918 Vickers tried to transfer production into proportionately more civilian lines, and fifteen years later, armaments accounted for just under half their turnover. But if the role of arms firms as war-time suppliers was defunct by 1918, their function as designers was not.

1. Frederick Kellaway, 5 March 1919. H.C.Deb. vol 113, col 495.
McKinnon Wood had said 'The keystone of efficient armament production is design': and during our period, the arms designing power of Britain devolved largely upon Vickers. This study, then, straddles a period when Vickers sought to reduce their dependence on arms orders. Developments during the war of 1939-45 further adjusted Vickers' role: the ambit of weaponry R & D passed from the old manufacturers of heavy guns and armour to rocketry and the lighter technology of guided weapons systems. A breakdown of the larger British based Ministry of Defence contractors in 1976-7 makes the point. M.O.D. paid five firms over £100 million for equipment provided: British Aircraft Corporation; General Electric Company, the Hawker Siddeley group, Rolls Royce and the ROF. Vickers, Plessey electronics and Westland Aircraft came in the band of £50 to £100 million. Of the seven firms with contracts between £25 and £50 million, David Brown's and Yarrow were shipbuilders; British Leyland supply Land Rovers etc.; whilst the other four companies were E.M.I., Ferranti, Hunting Associated Industries and Lucas Industries. Other post-war developments have altered the desiderata of the arms industry: 'the concept of total mobilization has become almost archaic', for in another major war, weapons will be restricted to

equipment in being. The key industries' facilities will be extremely vulnerable to attack... Even if war could be contained geographically and limited to conventional weapons, it is doubtful that new armaments production could make a significant contribution, given the time needed to produce individual items of sophisticated equipment and the high attrition rates of the modern battlefield.¹

If the recommendations of McKinnon Wood were pigeon-holed, other lessons of 1914-8 were taken to heart. For all senior officers

One of the experiences of the Great War was the waste of time, money, effort and raw materials, which can be directly traced to the fact that we were unprepared to meet the emergency, that we had no concrete and definite schemes for utilising the manufacturing capacity of this country, and that, even with approved service stores, no special effort had been made in peace to ensure efficiency of production from the point of view of the consumption of raw materials. The time factor was of such importance that factories were erected as a result of hurried investigations... on incomplete data. There were no process specifications at the outbreak of war showing the exact method to be followed and the standard consumption of raw materials per ton of finished product.²

The cost in lives, prestige and money of this unpreparedness haunted procurement officers. After the dissolution of the Ministry of Munitions' supply duties in 1920, an inter-departmental Contracts Co-ordinating Committee was formed: having wrested their supply duties back, the Service Departments were determined to keep control of design and distribution. In the period 1920-4 a departmental Committee of the War Office, on Mobilization, Equipments and War Reserves, reviewed the holding of munitions reserves by the Army, and was intended to accumulate sufficient stocks to bridge the gap between the outbreak of war and the date when war production would overtake war expenditure.

1. Freedman, Arms Production, 3
In practice this Committee had a hard job, because of four pressures against maintaining a war reserve: it locked up large capital sums without return (the capital value of gun ammunition held in stocks in autumn 1928 exceeded £10,000,000, and costs of inspection were £50,000 per annum), it risked capital loss through obsolescence of type, it absorbed available accommodation and was costly in upkeep, storage and inspection costs.

In 1924 the Committee of Imperial Defence replaced the inter-departmental committee by a new organisation, the Principal Supply Officers Committee. P.S.O.C. was intended to fend off the magnitude and unpopularity of creating a Ministry of Supply, and its remit was

P.S.O.C. was re-constituted in 1927 under the chairmanship of the President of the Board of Trade, and its new procedure was: (1) compilation of process specifications showing the operatives and machines required for the manufacture of specific warlike stores; (2) the compilation of information, including drawings, lay-outs etc., of buildings, plant and machinery for the production of these stores on a 'unit' basis—e.g. the necessities for output of 1,000 rifles per week; (3) the preparations for designs and lay-outs for new and complete factories to produce warlike stores (including ammunition filling) where existing reserves fail; and (4) the actual organization and allocation of the existing commercial factories in order that they might be able to utilise the information available from Stages (1) and (2). Also in 1927, at the recommendation of P.S.O.C., there was constituted the Supply Board. This was instructed to prepare and maintain estimates of national war requirements of raw materials and manufactured products; to determine materials likely to be controlled during an emergency; to make proposals, such as extending capacity of existing resources, dealing with anticipated difficulties in war-time supply of crucial items; to organise local boards with a view to exploiting unknown local manufacturing reserves, and to allocate national productive capacity accordingly. The Board was sub-divided into committees, of which No. 1 covered armaments, and of which the others were:

No 2 - Engineering stores
No 3 - Shipbuilding, including marine engineering
No 4 - General stores
No 5 - Scientific stores
No 6 - Aircraft, tanks, dragons and road transport
No 7 - Foodstuffs, medical and veterinary supplies

The details of these organisations are traced in the official histories of the Second World War—notably by Gibbs who demonstrates 'that at a level of administrative planning Britain had never been better prepared for a major war than...in September 1939'.

3. N.H. Gibbs, Rearmament Policy, 782
It now remains to consider the political climate in which these procurement agencies had to operate.

The cramp of cutting expenditure on the armed services was all pervasive in the 'twenties. In an era of balanced budgets, there were outlays on social services; there was revulsion at the idea of more fighting so soon after the war to end wars; and there was no identifiable enemy against whom Britain would direct an armament programme.

Lord Cavan (1865-1946), C.I.G.S. 1922-6, told the C.I.D. in 1924

No Power or group of Power stands out as both likely and able to attack the British Empire nor as likely to drive our Government into going to war. Nor...are there any indications of an impending collision likely to involve us in a great war...

Excluding America (America is officially excluded from the list of our possible enemies) there are only two powers capable of going to war with the British Empire...these are France and Japan...if France commits this folly it will take the form of a surprise [aerial] attack, and any elaborate preparations which cannot be carried out in secret will be dispensed with...Our plans for war with Japan all centre around Singapore...

...under existing world conditions we require no plans of campaign (except for the small wars incidental to our Imperial position)...We never fight big wars alone, and Europe is not even grouped yet; it is too early to decide even what side we shall be on.

It was British policy to support the League of Nations, and with Germany apparently disarmed, and its fleet at the bottom of the sea, there was, in the Admiralty's phrase after the Washington Conference, 'a new era of hope ushered in for an impoverished and war-weary world'. Nowhere was this made clearer than in the promulgation by the Cabinet on 15 August 1919 of the "Ten Year Rule" instructing that the Service Departments were to plan their budgets on the assumption that there would be no major war for ten years.

1. Note by Lord Cavan, 17 January 1924 for 6th meeting of Chief of Staff Committee. Cab 53/1.
Roskill describes the Rule as 'at the time a perfectly reasonable prognostication [which] in fact proved fairly accurate'; but there is no doubt the Treasury used the Rule 'to cut the services to the bone.'

In 1928 Winston Churchill (1874-1965), Chancellor of the Exchequer 1924-9, got the Rule put on a basis of day-to-day renewal, establishing what Leo Amery (1873-1955), a former First Lord of the Admiralty, critically dubbed 'a revolving credit of peace'. The upshot was that the Service chiefs felt limited in their attempts to obtain weaponry expenditure by the fear, expressed by one C.I.G.S., that 'if the Chiefs of Staff opened their mouths too widely they would end by getting nothing at all'. The Rule was cancelled in 1932.

The implications of this policy were clearly understood. After the Armistice the War Office based the size of the Army on Britain's situation as an island power, and like Lord Haldane (Secretary for War 1905-12), made no effort to meet any but the immediate military dangers. 'The fundamental strategic doctrine', according to Cavan, was 'that the security of England depended upon keeping the areas of probable disturbance on the Continent as far as possible from our shores'.

2. Lord Hankey, letter in The Times 2 November 1948. Revisionists who now stress that the limiting factor in re-armament in the 'thirties was industrial capacity, not Treasury spending limits, often seem not to realise that this backwardness in manufacturing power derived from Treasury curbs of the 'twenties.
3. 236th meeting of C.I.D., 5 July 1928. Cab 2/5.
The British Army, as The Times noted in 1920, was not greater but less than our policy. If you want a smaller army, you must have a smaller foreign policy. That issue must be faced.¹

This simple fact was sometimes obscured, as when Ramsay MacDonald (1866-1937) said apropos the Kellogg-Briand Pact (1928) renouncing war as an instrument of policy, 'we must never under-estimate the effectiveness of moral bulwarks, with no bayonet or bludgeon behind them'.² Yet moral bulwarks relied, in the League of Nations schemes, upon economic sanctions, and as Baldwin said in 1934, 'there is no such thing as a sanction which will work, which does not mean war'.³

What emerged was a policy of pseudo-security which, in its anxiety to avoid arms-racing, enfeebled British diplomacy and damaged the cause of peace by making it seem that Britain was incapable of maintaining its Continental commitments, and therefore not serious about them.⁴ Britain's flexibility in international affairs was narrowed by military weakness, especially the backwardness of its armament industry. This was the meaning of J. F. C. Fuller when he wrote,

1. The Times 24 February 1920
'An obsolete army is a national danger; it is in fact worse than no army at all; for it lulls the nation (always ignorant of war) into a false sense of security'.

A steady programme of orders would have minimised the difficulties caused by Britain's 'speculative, anticipatory and contingent' disarmament. Armourers had reiterated this point since the Boer War: when the shortfall of munitions capacity became desperate in 1914, one ammunition manufacturer wrote bitterly to the War Office that 'if in the past the various contractors had been subsidised, or kept going with regular orders for ammunition, the present emergency would not have occurred'. Ideally the policy laid down by the Air Minister in 1920 was for application to other weaponry.

The best reserve for the Royal Air Force is a steady flow of new machines from the trade and a power of expansion in the aeroplane factories...it will be \textit{impossible} to aim at keeping large reserves of perishable aeroplanes always in store. It would be much better to spend the money on helping...the manufacturers to keep spare plant...available in case manufacture has to be increased...before a great war can come there must be a period when the antagonisms of the principal nations will be revealed, and then as a precautionary measure a reserve of aeroplanes will be accumulated.

Similarly the Director of Naval Construction advised, 'If an approximate programme for the next five years could be foreshadowed somewhat as in the case of the Naval Defence Act\textsuperscript{1889}, it would probably be possible to make much more satisfactory financial arrangements with the contractors by offering them a regular sequence of work...than by suddenly placing large orders as has usually been done'.

1. J.F.C. Fuller, Jl. R.U.S.I. (1920) vol 65, 268
2. This phrase is taken from an editorial in The Times, 24 September 1924, on the Geneva Protocol of that year.
And the first meeting of the Tank Committee, held at the War Office in 1919, approved the principle (forgotten in the event) that in order to get the most from tanks, designs of 'the most up-to-date machines should be reviewed' annually, and

A certain number of machines should be built annually embodying the best features and latest requirements. These annually approved machines should be constructed and complete working drawings with patterns, jigs and gauges should all be kept ready, so that on the outbreak of war they could be distributed to manufacturers.  

But these counsels were consistently overborne by the Treasury. 'No-one buys flowers to decorate his dining-room table a week before they are required', the Chancellor told a Cabinet committee on the Naval programme in 1927. 'To build these vessels before they are needed would mean that, like the flowers, they would be faded when required'. In fact this argument is much less clever than it seemed, because the moment the acceleration of a naval programme is proposed, foreigners wonder what its purpose is, and a panic of building ensues which worsens the very international tension which the building programme has been intended to diminish.  

Consistent orders to stabilise the defence sector were not forthcoming, and armament manufacturing capacity ran down. In 1919 the Director of Naval Construction wrote

If the building of warships, gunmountings etc should cease even for a few years, not only would all the skilled workmen accustomed to the higher class of work almost cease to exist, but the trained staffs, to some extent at the Dockyards, and completely at the big contractors, will be dispersed...

1. Minutes of first meeting of Tank Committee, War Office, 30 May 1919. DEY/52.
3. See W.C. Bridgeman, First Lord of Admiralty, 10 November 1927 Idem.
Ship design is the only portion of our warship material which is completely worked out at the Admiralty: both as regards gun-mountings and machinery the working drawings are all got out by the main contractors, and in all cases the actual construction of the machinery and gun-mountings is done by contractors and not in Government establishments, so that if the Contractors lose their staffs, there is no Government establishment which can either produce working drawings complete for gun-mountings or for machinery for our ships, and there is no Government establishment which can manufacture machinery or naval gun mountings.

The same remark applies to the armour... an article which is required solely for war purposes and requires the greatest skill, not only of the chemist and metallurgist but also in the actual manipulation by the skilled workers...

...If provision...is not made, we shall get left behind.

The history of the next decade and a half is that of these recommendations being ignored.

The pattern set quickly. The civilian firms which had been temporarily armourers reverted to peace-production. The specially erected Government munitions factories were dispersed: for instance, the Nottingham Ordnance Factory, built to make 6-inch guns, was sold after the Armistice under certain restrictive conditions, of which the chief was that no structural alterations could be made which would prevent its reconversion in war to gun construction, and that the War Office could occupy it at the start of an emergency. It was bought by the Metropolitan Carriage, Wagon & Finance Co. (owned by Vickers from 1919) who manufactured rolling-stock there. All the tools used for gun construction were sold, necessitating the complete re-equipment of the factory.

Similarly the brand-new machine-gun factory at Burton-On-Trent, which had not entered production before the Armistice, was sold to Crosse & Blackwell in April 1920: a condition of sale to retain certain plant was waived later. ¹

To this loss of capacity must be added the effects of a firm like Birmingham Small Arms more or less wholly relinquishing arms work: the Secretary of War being told by Patrick Hannon (1874-1963: knighted 1936), a B. S. A. director, in 1925: 'you, as a businessman, will understand that we have shareholders...and we must in some way justify the continued maintenance which not only brings us no return at all but imposes upon our profitable undertakings a very heavy charge'. ²

In the first year that the Director of Army Contracts reported himself again working under normal conditions (1922-3), he described the trade as our paramount source of supply in the event of a war of any magnitude but the absence of orders during the present period of financial stringency, coupled with the existence of surplus stocks, renders the problem of keeping alive trade capacity one of great anxiety. ³

Vickers' fusions with Armstrong's (1927), Cammell Laird (1928) and Carden-Loyd (1928) diminished the capacity for armament work yet more. ⁴

The firms' predicament was well enough known. In 1928 the P. S. O. C.

1. History of Ministry of Munitions, vol 2, pt 1, Supplement, 36
warned

of the danger of a serious diminution in the armament-
productive capacity of the country, and of the skilled
operatives and designers on which it mainly depends.
The Service Departments already distribute their orders
over as wide a field as possible; but...there are not
sufficient orders to go round. This applies particularly...[to]
the armament firms, whose position is becoming
increasingly difficult, and which are becoming less and less
susceptible of rapid and efficient expansion in an emergency. ¹

The delay in completing the two capital ships of 35,000 tons each laid
down in 1922, the Rodney and Nelson, 'was due appreciably to the
lack of experienced workmen and design staff' for the gun mountings. ²
Vickers at Barrow and Armstrong's at Elswick 'alone were suitably
equipped for this work', and in 1932 the Admiralty sought allocation
of their entire capacity: 'The provision of gun mountings has always
been a nightmare to the Admiralty, as it was invariably the limiting
factor in every kind of warship'. ³ In 1926 the C.I.G.S. called 'the
Army completely out of date', with research 'behindhand' and modern
weaponry unavailable. ⁴ In 1927 the total national productive capacity
in the first year of a major war was estimated to be 50% deficient for
guns and carriages, and 80% deficient for manufacturing shells. ⁵
In 1930 the estimated required capacity of gun carriages and mountings
was 1,700; the total capacity of the ROF and Vickers-Armstrong left
a deficiency of 1,100 carriages. ⁶

2. See Hankey's private lectures to Royal Commission on Private
   Manufacture, May 1936. Cab 16/126.
3. Rear Adm C.M. Forøes, 3rd Sea Lord & Controller of the Navy
4. Lord Milne, C.I.G.S., to 30th meeting of Chiefs of Staff Committee,
   27 May 1926. Cab 53/1.
5. A.F.C.(27) 2. Note by Secretary for War on Vickers-Armstrong
Yet it was not until 1931-2, when the Service estimates reached their nadir and when the enquiries of the hard-pressed procurement officers were returning fearsome results, that their language became desperate. The Master General of Ordnance described munitions stores in 1931 as 'now...down to bedrock in [spit] of the amount of reserves which existed in 1918'. For the Chairman of Supply Committee No. 1, 'A definite bottleneck was a question of bricks and mortar, i.e. of factories and their erection'—only thirteen years after the huge munitions capacity which had existed in 1918.

The peace output of empty shell in 1932 was less than 250,000 per annum: seventy-eight times that number, i.e. 19\(\frac{1}{2}\) million, was the estimated need in the first year of war. Less than 1,000,000 of the 19\(\frac{1}{2}\) million could be found from civilian firms. The deficit of ROF and trade capacity for shell filling was about 7\(\frac{3}{4}\) million fuzes during the first year of war. The Air Ministry was 'frankly disquieted as to the war output of aero-engines': the four specialist firms (Rolls Royce, Napier, Armstrong-Siddeley and Bristol) were 'inadequate', especially Armstrong-Siddeley whose present commitments...with tank engines have attained embarrassing dimensions, and they [the Ministry] are most anxious to prevent a similar situation arising with any of the other three firms.

By 1933 concern had reached the highest quarters. Walter Runciman (1870-1949; Lord Runciman 1937), then President of the Board of Trade, told the C.I.D. 'our armament firms are now weaker than they have been for three generations'. MacDonald the Prime Minister echoed 'the situation was very serious'; and Sir Bolton Eyres-Monsell (1881-1969; Lord Monsell 1935), First Lord of the Admiralty 1931-6, 'viewed the situation...with the greatest gravity'. In the same period the Chairman of Vickers wrote to Sir Maurice Hankey (1877-1963; Lord Hankey 1939), Secretary of the C.I.D. and of the Cabinet, seeking Government support for his group,

Practically every requisite of the three Fighting Services is manufactured by Vickers, and large research and experimental establishments are maintained...unless this organisation is continued, (and from its nature it is inevitably one of the most expensive organisations to maintain) the forces of the Crown must suffer severely in event of war.

....

The British Government often asks Vickers, 'What can you produce, and in what time in the event of war?' The answer to this question must be a constantly diminishing quantity unless a steady flow of work can be maintained in the factories. Large technical staffs cannot be kept in idleness, and the upkeep of...practically empty factories is heavy. Orders which Vickers have passed owing to restrictions have undoubtedly been placed abroad, and Britain is poorer in consequence, her national defence has suffered, and her ability to secure commercial and armament trade abroad weakened. Foreign firms have no fine feelings when in search of armament orders.

It is against this background that we will scrutinise the trade, and if our comments often seem negative, this is inevitable for a period when, as Hankey wrote, the British armaments industry 'was the weakest point in Imperial Defence.'

1. Runciman, MacDonald and Eyres-Monsell to 258th meeting of C.I.D., 6 April 1933. Supp 3/43. Also Cab 2/5.
3. Sir M. Hankey, diary 4 March 1933 HNKY 1/7. Text in Roskill, Hankey, 3, 73.
CHAPTER TWO

Armourers have a very poor reputation. Even if the American Senator who called them 'soulless madmen' was an extreme critic, the titles of books like *The Merchants of Death* or *The Bloody Traffic* are hardly friendly. The extensive popular literature on arms manufacturers, plus memories of yellow press campaigns of the 'thirties, have lodged in most minds presumptions about the industry. It is not idly that the originator of the Nuffield election studies, in his book on public opinion and the Versailles treaty, gives such prominence to 'those who believed that wars were only possible because there were men who either profited by the manufacture or enjoyed...use of...weapons'. If writers as diverse as Dame Rebecca West (1892- ) and Beverley Nichols (1901- ) believed that wars were made by armourers, it is unsurprising that the belief lingers. This chapter, in examining the motives and substance of the propaganda against the industry, finds much that is wanting; yet it is likely that some readers will approach this chapter with a selective eye. Earlier attempts to re-evaluate the merchants-of-death have strangely encouraged the fashionable critics who resort to mis-quotation as readily as to second-hand radicalism, thus demonstrating the apparent human need for armourers in the contemporary demonology.

For the pure pacifist, of course, arms manufacturing is understandably anathema; but for those whose pacifism is watered—perhaps those who loath war, but accept the need for an ultimate force to support the 'moral' foreign policy they seek—opposition to armourers is less clearly justifiable. Many of the latter category found it rebarbative that anyone made profits from selling weapons for killing. There is no baulking the fact that armourers were businessmen who wanted to make a profit. They understood very well the mechanisms, described in the preceding chapter, whereby the profits of private firms enabled the Government to spread and mask the high overhead charges required to maintain even a minimum nucleus of capacity. Before 1914 armourers thought 'war preparations [were] as purely commercial a proceeding as any other human endeavour'.

After 1914 profits meant avoiding industrial unpreparedness such as had existed in the early years of the Great War. Those who had fought in that period went into industry, as others climbed in the Service Departments, alike determined not to repeat the mistakes of 1914. One director of Vickers who 'went through two terrible years at the beginning of the war when we had no ammunition and few guns' gave that as 'one of the reasons why I came to Vickers; I could have gone elsewhere when I left the Army'.

What were the wider reasons for contumely of armourers? One major force emerged in the decade after J.A. Hobson (1858-1940) published his study of Imperialism (1902). There descended 'a kind of intellectual reign of terror of economics', where 'for every political trouble there was an economic explanation'.

1. Arms & Explosives, June 1914
Hobson believed that capitalist Powers were everywhere searching for foreign markets to alleviate their over-production, and that this led to Imperialist expansion and spiralling international tension. For radicals influenced by Hobson, it must certainly have seemed that the huge, capital intensive armament firms, with their network of market agreements, epitomised the capitalist developments which they so suspected. They were an impelling target for the Edwardian left, offering an opportunity to strike not only at capitalist organisation, but at the Liberal governments of Campbell-Bannerman and Asquith. Radicals such as E.D. Morel (1873-1924), G.H. Perris (1866-1920) or J.T. Walton Newbold (1888-1943), whose opposition to armament expenditure had largely failed, found the manufacturers 'a more attractive and vulnerable object for attack' than the Government. Armourers were an easier target than the Government policies which required purchases of arms, and in the heat raised by attacking private profits, questions of higher policy could be avoided.

As one supporter wrote later,

Armament manufacturers - commonly known among us as merchants of death - were a godsend in the way of providing us with an identifiable villain; one of the great needs of the political Left being to be able to appoint an accusing finger at someone, or some corporate body, as being responsible for public and private wrongs.

Morel's successors as Chairman of the Union of Democratic Control, Hobson and Kingsley Martin (1897-1969), Editor of The New Statesman 1930-60, increasingly adopted the private manufacture of armaments as a vehicle both for attacking the socio-economy of Britain, and the conduct of international affairs. These side-issues are clear in the writings of one prominent critic, Fenner Brockway (1888- ; Lord Brockway 1964)², or in the comment of a Labour M.P., 'these directors of armament firms are the highest and completest embodiment of capitalist morality'.³ By 1935 (at the peak of the campaign) it seemed to the Finance Director of Vickers 'that the motive of the attack on the armament firms is an attempt to get at the banks and financial houses'.⁴

Significantly the number and virulence of the radical denunciations of the industry increased in the run-up to the Disarmament Conference summoned for February 1932. The preparations for this Conference dated back more than a decade, and the hopes invested in it for general disarmament were considerable.

Martin's mistress, Dorothy Woodman (−1970), wrote a pamphlet, *The Secret International*, issued by the U.D.C., which sold 40,000 copies 1932-4, and caused a sensation. It spearheaded a national campaign for the abolition of private arms manufacture, and was imitated by other organisations such as the League of Nations Union. Much of the campaign was just escapism from the deteriorating international conditions which dealt the Disarmament Conference its protracted death (it ceased to meet at the end of 1934, but was never formally adjourned). The nationalisation of private armourers, together with air disarmament, became the target of a desperate and unhappy campaign to prevent the Conference disappearing without any identifiable achievement. When Hitler became German Chancellor in 1933, and withdrew Germany from the League of Nations and Disarmament Conference, whilst the Japanese went deeper into Manchuria, when the Austrian Chancellor was murdered, and after Mussolini had the King of Yugoslavia assassinated, the implications could best be dodged by fantasy and vilification of the armourers.

In the words of a spokesman for the Campaign Against the Arms Trade (formed in 1974, but little different from its predecessors of forty years before)

> Arms trade is an issue on which lots of people can be mobilized. It is containable and has specific goals. The more general 'working for peace' is too nebulous for most people to relate to.


Winston Churchill compared believers in the merchants-of-death with those who believed that the Elders of Zion has caused the French Revolution. This is fair. A typical offering from Woodman reads

Those who have worked for the cause of disarmament... those who study the attitudes of the newspapers and even sometimes of government servants at critical moments... agree that they meet in many indirect ways an opposition which is secret and powerful...not internal but external... which is organised by those who have a financial interest in the upkeep of arms. This organisation and propaganda against disarmament is itself international. Those who promote it are not patriots or internationalists; they are businessmen whose interests are to encourage inflated patriotism and natural animosities. They aim not at the triumph of any particular nation, but at selling as many munitions as possible. The armament manufacturer is above patriotism.

The conspiracy could be unravelled, they suggested, by tracing interlocking directorships, Service backgrounds or family connections among the boards of armourers. After the outbreak of war in 1914 the yellow press noted sinisterly that Asquith's brother-in-law was a shareholder in Nobel Dynamite; Brockway noted that the Chairman of Vickers had been Haig's Chief of Staff at British Army G.H.Q. in France during 1918. The brother of a director of Vickers-Armstrong was Controller of Programmes at the B.B.C., and later Director of Public Relations at the War Office; and so on. No specific impropriety was alleged, but the implication of an ineffable plutocratic conspiracy was left.


2. U.D.C., Patriotism Ltd. London 1933, 64. This pamphlet was also written by D Woodman. See Kingsley Martin, Editor. London 1968, 160-1; also Beverley Nichols, The Unforgiving Minute. London 1978.

3. Arms & Explosives, September 1914.
A key to this method was given by a member of the U.D.C. in 1935 who stated: 'we contend that the arms trade must have, on a priori grounds, these tendencies'. Yet stubborn contention is not evidence, and one must agree with the employee of Vickers who wrote in 1933

It is useless to argue with this sort of people because they are straining after an impossible ideal, and will attempt to tackle the problem from the wrong end. It is ridiculous to expect France to reduce her armaments when there is a mad dog in control on the other side of the Rhine, and it is flying in the face of providence to cloak arguments for the reduction of the British Navy...with a cloud of sentimental clap-trap when America and Japan seem...definitely committed to a competition in naval armaments which will shortly leave us quite out of the running.

But it must not be supposed that the only subscribers to the merchants of death myths were journalists in search of sensation, or socialists in quest of nationalization. The Covenant of the League of Nations, drawn up in 1918, 'recognize[d] that the maintenance of peace requires the reduction of national armaments to the lowest point consistent with national safety and the enforcement by common action of international obligations', and continued,

The Members of the League agree that the Manufacture by Private Enterprise of munitions and implements of war is open to grave objections. The Council shall advise on how the evil effects attendant upon such manufacture can be prevented, due regard being had to the necessities of those Members of the League which are not able to manufacture...implements of war necessary for their safety.

1. Minutes of Evidence, 138. Emphasis added. A very good example of their position-willing to wound, but afraid to strike-is the evidence of William Arnold-Foster of the National Peace Council to the Royal Commission, 22 May 1935. Minutes of Evidence 44 & passim.
3. Article 8, paragraph 5.
Even more popularly cited was the first Report of the Temporary Mixed Commission of the League of Nations (1921), described by one influential pacifist as 'of so sensational a nature that...the adjective hideous is mild'. Since the crucial passage remains contentious and is seldom quoted accurately, it is worth reproduction in extenso.

The Covenant recognises that the manufacture by private enterprise of munitions and implements of war is open to grave objections. What are these objections? They are not defined by the Covenant. It is, however, common knowledge that the public mind is strongly prejudiced against the uncontrolled private manufacture of munitions and implements of war, and that it is a common belief that wars are promoted by the competitive zeal of private armament firms, and would be rendered less frequent were the profit-making impulse brought under control or eliminated altogether. In general the objections that are raised to untrammelled private manufacture may be grouped under the following headings:

1. That armament firms have been active in fomenting war-scares and in persuading their own countries to adopt warlike policies and to increase their armaments.

2. That armament firms have attempted to bribe government officials, both at home and abroad.

3. That armament firms have disseminated false reports concerning the naval and military programmes of various countries, in order to stimulate armament expenditure.

4. That armament firms have sought to influence public opinion through the control of newspapers in their own and foreign countries.

5. That armament firms have organised international armament rings through which the armament race has been accentuated by playing off one country against another.

6. That armament firms have organized international armament trusts which have increased the price of armaments sold to governments.

Another objection of a somewhat different kind has been submitted to the Temporary Commission:

Some of the companies were not taking the requisite steps to provide for the amortization on a large scale of the cost of quite exceptional plant installed to meet the special requirements of the war, and were thus injuriously affecting the economic conditions of production, and impeding economic recovery.

The Sub-Committee...cannot at the present stage of its deliberations either recommend the abolition of private manufacture or advise upon the particular steps to be taken to control it...

(a) The Covenant seems only to refer to those evil effects attendant upon private manufacture which may affect international relations. Questions of internal policy involving domestic security are here excluded, as indeed elsewhere, in the Covenant. In other words, the provision in the Covenant seems to deal with private manufacture only in so far as it affects the growth of armaments and relations between States, but not in so far as it affects the domestic industrial system.

(b) As recommendations that private manufacture be abolished would doubtless be objectionable to States which do not produce all the munitions they need.

(c) As international law stands today, the supply of munitions... by a neutral Government to a belligerent Government would constitute a violation of neutrality. In time of war, therefore, a belligerent would have to depend upon its own production and upon what it could get from its Allies. This might mean that all Governments would feel themselves called upon to prepare for the eventualities of war by storing up large stocks of munitions and by equipping themselves with large munition plants.

(d) The abolition of private manufacture might result in the establishment of armament plants by the Governments of non-producing States. Such Governments could, of course, undertake to manufacture munitions to their own needs, there being no restriction on the import of iron and coal. In this way, non-producing States might become producers.

(e) Governments might - in some countries - find it more difficult than private firms to reduce their armament establishments on the cessation of war, owing to the Parliamentary pressure exerted by representatives of labour engaged in production of armaments.

(f) Few industrial enterprises work exclusively for the manufacture of war material. For the most part, the general armament firms are establishments of a composite nature, whose activity in normal times is chiefly directed to peace industries.
(g) It is difficult to define war industries. Optical and chemical industries are all important in war. Aviation is an industry at present distributed among a considerable number of different factories. How far, then, should State ownership extend? Does not the acceptance of the principle of State ownership of war industries lead logically to the State ownership of all industries?

(h) State arsenals for the complete manufacture of arms and munitions would have to include, in addition to a large number of mechanical workshops, a complete metallurgical plant and a factory for the chemical products required in the manufacture of explosives. It is doubtful whether States will face the expenditure involved. Nor would such a State arsenal ever attain to an output corresponding to its means of production.

The six objections to 'untrammelled private manufacture' were thereafter used as conclusive fact by those whom it suited, rather than as mere 'common belief', in the Report's own phrase whilst the eight later points are seldom mentioned or printed. H.A.L. Fisher (1865-1940), the Liberal politician who chaired the sub-committee which wrote the Report, recalled in 1935 'that the statements in the Report were propositions pro and con which had in fact been urged but did not represent any findings of the Committee as to their validity.'

No evidence was taken by the Committee, and there is no reason to rank propositions 1 to 6 higher than propositions (a) to (h).

2. Most recently by John Stanley & Maurice Pearton, The International Trade in Arms. London 1972, 4-5. Sampson admits the six points 'were put together... with remarkable casualness', but says they are part of pacifist faith and 'a devastating indictment of the arms companies' (Arms Bazaar, 70).
Noel-Baker argues that the six indictments were on a higher footing, because they were unanimously adopted, than the eight 'difficulties suggested by some members'—one of whom, he notes darkly, was a sometime director of Skoda. What follows is an examination of the propositions con private armouries.

Evils adduced in support of the six objections are strikingly repetitive. They have been re-worked many times. Col. H.H. Mulliner (1860/1-1924), managing director of Coventry Ordnance, who warned of increases in Krupps' productive capacity 1906-10, has been accused of fomenting war ever since. Otherwise there was the bribery of two Japanese admirals to get a battleship order to Barrow in 1913-14; or the fact that thirteen of the 234 Turkish guns used against the British at the Dardanelles in 1915 were British-made. What now seems remarkable is the paucity of material. If the abuses were as widespread as alleged, their secret was certainly kept tightly. Indeed it was not until the end of the 'twenties that any comparable incident became public and could be used against the armourers.

Noel-Baker and others used for all it was worth, and more besides, the case of William B. Shearer (1874-1958), an American who attended the Naval Conference at Geneva in 1927 as an agent for the Bethlehem Steel Corporation, the Newport News Shipbuilding & Dry Dock Company, and the American Brown-Boveri (electrical) Corporation.

4. Of the other 221 guns, six came from Hotchkiss, 102 from Krupps and the remaining 113 were probably also German. Minutes of Evidence, 618.
Shearer was the foe of the League of Nations, Great Britain, Judaism, pacifism, internationalism and communism. Playfully he described himself as an enemy of 'pink, yellow and red'. He was quick-tempered, given to name calling, inconsistent. He considered his adversaries intellectually incompetent, disloyal and dishonest.  

Shearer was paid $27,000 for six weeks' propaganda at Geneva against any agreement to restrict warship building, but in August 1929 filed a suit against the three companies, suing for $258,000 in unpaid lobbying fees. His career became public.

Lord Robert Cecil, a British delegate at Geneva, wrote that Shearer's 'tendentious telegrams' to the American press were unimportant, because the British Cabinet was thoroughly divided over the Geneva proposals; and a veteran commentator on naval policy noted 'how utterly powerless faked telegrams and faked facts would be in the face of men really animated by goodwill allied to wisdom'. The Economist regarded

L'affaire Shearer...as a cynically amusing addition to the gaiety of foreign correspondents. At a time of year when...the domestic political theatre still bears on its doors the unenteraining announcement 'Relache', Washington has vouchsafed us a first class scandal tricked out with all the trappings of melodrama—sinister Big Business, anonymous packages of 'secret' Blue Books, sub-rosa Admirals, all revolving around the 'super-patriotic' propagandist, Mr Shearer.

A point made insufficiently often is that observers of pacifist sympathies attended all the various disarmament discussions at Geneva and elsewhere. Their observations, reports home and discussions with officials were potentially neither more nor less influential than Shearer's. If some had more attractive personalities than Shearer, others were what a Vickers employee called 'peace cranks and Geneva gramophones'.

1. Wiltz, In Search of Peace, 8.
4. The Economist, 14 September 1929.
5. Livingston, Hot Air & Cold Blood, 279.
Why was their activity inherently righteous, but the activity of those wanting preparedness inherently mischievous? Since the events of the 'thirties vindicated the latter, and routed the former, it is surely time to abandon the idea that moral virtue attached to any one side. Even if the Shearer storm was 'a palpable fake', its repercussions were important. It led in 1934 to a Senate enquiry chaired by a progressive Republican, Gerald Nye (1892-1971), which by its Hearings and publication of correspondence between Vickers and the Electric Boat Company of New York, increased agitation in Britain, culminating in the Royal Commission on Private Manufacture and Trading in Arms. 2

Nye was an avid isolationist, even after Pearl Harbour, who ran purely 'a fishing enquiry'. 3 The British Embassy in Washington reported in 1935

There have been a number of sensational disclosures, which, Mr Nye as a journalist has seen, have received front-page publicity...The committee, however, rather overshot themselves in pursuit of the macabre, and a discreditable amount of loose talk was allowed, the names of prominent persons, both in the United States and foreign countries, being bandied about with incredible levity...Mr Nye is...undoubtedly on the make. 4

One typical example was a telegram of 1932, read aloud at the Hearings by a Senator, in which the Polish agent for Driggs Ordnance & Engineering Co. charged that King George V had asked the Polish Ambassador in London to prevent sales of Driggs' weaponry in Poland; and Louis Driggs told the Committee that the Prince of Wales had marketed British armaments in Argentina. 5

1. The Economist, 12 October 1929.
5. Munitions Hearings, 7 September 1934. pt 2, pp 495-6
6. Wiltz, In Search of Peace, 156-7
This silliness was repeated with suitable gravity in the press, and was repeated as recently as 1977 as if it were true. The methods of the Nye Committee would have done credit to Shearer himself. The historian of it concludes:

> The international munitions ring proved a myth...Nye's Committee, despite expectations, failed to find evidence that the world's munitions makers had combined to promote sale of armament by fair means or foul...Had the ring existed they would have found traces of it...Repeated disclosures, appearing in newspapers day after day, conveyed the impression that the Committee was having no difficulty in proving the case against munition makers. They obscured its failure to find adequate documentation for...the merchant-of-death thesis.\(^2\)

Yet in Britain the publicity surrounding Nye, and the campaigns surrounding the Disarmament Conference, had their effect. When the League of Nations Union held its famous Peace Ballot in the summer of 1935, the question 'Should the manufacture and sale of armaments for private profit be prohibited by international agreement?' was answered: **Yes:** 10,417,329; **No:** 775,415; **Doubtful:** 15,076; **Abstentions:** 351,345.\(^3\) But already, on 20 February 1935, the campaign in press and Parliament had been met by the appointment of a Royal Commission to consider the desirability and practicability of prohibiting private manufacture, and instituting a State monopoly, of armaments, either unilaterally or in conjunction with other countries. They were also to examine ways of minimizing the alleged evils of untrammelled private manufacture, and to report on export controls.

The chairman of the Royal Commission was Sir John Eldon Bankes (1854-1946), a retired Lord Justice of Appeal. Its other members were Sir Philip Gibbs (1877-1962), one of the greatest war correspondents of 1914-18; Dame Rachel Crowdy (1884-1964), the only woman to be head of an Administrative Section of the League of Nations (that of Social Questions and Opium Traffic); Sir Thomas Allen (1864-1943), a prominent figure in the Co-operative movement; Sir Kenneth Lee (1818-1967), a businessman who sat on Government committees regarding overseas trade; H.C. Gutteridge (1876-1953), Professor of Comparative Law at Cambridge; and J.A. Spender (1862-1942), the Liberal journalist. The Royal Commission sat during 1935-6, publicly examined a large number of witnesses and published unabridged minutes of all but a handful of its meetings, together with all written evidence submitted. Among other radical or pacifist organisations, it examined representatives of the League of Nations Union, the Union of Democratic Control, the Communist and Independent Labour parties, and the British Movement against War and Fascism. Witnesses were sent by the Admiralty, War Office, Air Ministry, Foreign Office, Board of Trade and Board of Customs and Excise. The painstaking research which backed the appearances by the Service Departments consumed time and effort which could have gone more wisely to preparing re-armament. The Society of British Aircraft Manufacturers were represented, as were Beardmore's, Hadfield's, Thomas Firth & John Brown, B.S.A. and the Soley Armament Company.

1. Allen also sat on the MacMillan Committee on Finance & Industry, before which Sir M Webster Jenkinson, Finance Director of Vickers, testified in 1931.
2. Lee had been a co-member with Sir H.A. Lawrence, Chairman of Vickers, of the Royal Commission on the Coal Industry, 1925.
Sir Harry McGowan (1874-1961; Lord McGowan 1937), Chairman of I.C.I. 1930-50, headed a team of eight from I.C.I.; Lawrence and Craven, of Vickers, led a team of six. Expert witnesses who testified about their munitions experience in 1914-18 included two successive Ministers of Munitions, David Lloyd George (1863-1945; Earl Lloyd George 1945) and Christopher Addison (1869-1951; Lord Addison 1937). Other witnesses included Sir Reginald Bacon (mentioned previously as a member of the McKinnon Wood Committee), Sir Eustace Tennyson d'Eyncourt (1868-1951), a former D.N.C. and director of the Armstrong naval yards and Sir Eric Geddes (1875-1937), the pushy businessman who had been First Lord of the Admiralty 1917-18.

None of these witnesses, however, equalled in importance Noel-Baker or Hankey. Philip Noel-Baker (b 1889; Lord Noel-Baker 1977) had served in the Friends' Ambulance Unit during the Great War, been among the British delegation to the Peace Conference of 1919, worked on the League of Nations Secretariat, was Professor of International Relations at London University 1924-9, and a Labour M.P. intermittently from 1929. In 1932-3 he had acted as principal assistant to the President of the Disarmament Conference, and was later a member of Attlee's Cabinet. Author of various books on disarmament and foreign affairs, his great study of the Private Manufacture of Armaments did not appear until after the Royal

1. Addison's successor as Minister of Munitions, Winston Churchill, was to have appeared before the Royal Commission on 9 October 1935; but this was postponed at short notice, and he finally did not testify. The Times 8 October 1935. E. Twentyman to Churchill, letter 12 October 1935. Churchill to Twentyman, telegram, 25 November 1935. Churchill papers 2/247, Chartwell trust. I am grateful to Mr. Martin Gilbert for supplying me with copies of Churchill's exchange with Twentyman.
Commission had reported in 1936. Noel-Baker's is the clearest and most conscientious statement of the case against the armourers, yet it was completely controverted by the testimony of Sir Maurice Hankey, Secretary of the Committee of Imperial Defence 1912-38, of the War Cabinet 1916, of the Imperial War Cabinet 1917-18, of the Cabinet 1919-38 and of the Privy Council 1923-38. Hankey surpassed even Noel-Baker in his comprehensiveness, submitting two lengthy Memoranda of Evidence (both with confidential supplements), plus a Statement as Secretary of the C.I.D. The suspension of the Commission's meetings during the Rhineland crisis in 1935 enabled Hankey to amplify and strengthen his evidence.

By and large, the Royal Commission, when it reported in the autumn of 1936, supported the status quo. It judged that international agreements to limit arms were 'the most effective available means' of reducing objections to arms, and rejected 'a universal system of state monopoly' as 'impracticable'. Other recommendations included 'the complete cessation of the private export trade in surplus and second-hand arms', the discontinuance of public officials taking jobs with armourers, except with ministerial approval, and the control of peace-time profits.

1. The march of the dictator's and onset of re-armament meant that the second projected volume of this study was withheld from publication. A typescript copy is now deposited in the United Nations Library, Geneva. Noel-Baker's publisher Sir Victor Gollancz himself wrote a bitter attack on armourers in Shall Our Children Live or Die? London 1942.
2. Cab 16/126.
3. Cab 21/392.
The Royal Commission meticulously scrutinised the six charges of the Temporary Mixed Commission. It reported

Very little evidence has been laid before us to support the positive statement that armament firms have endeavoured to stimulate a demand for their products by means of propaganda and the dissemination of false reports; the case presented has been founded mainly upon inferences which it is contended should be drawn from the nature of the trade. ¹

Certainly the idea that M.P.s connected with private armouries were peculiarly hazardous to peace did not withstand scrutiny. For years, before 1918, Sir Samuel Roberts (1852-1926), a Sheffield M.P. on the board of Cammell Laird, was the only armourer in the Commons.

Notoriously, representatives of Royal dockyard constituencies — from Devonport, the bellicose publicist Sir Clement Kinloch-Cooke and the ambitious Leslie Hore-Belisha; and from Portsmouth, Admiral Sir Roger Keyes and Sir Bertram Falle (Lord Portsea)—vied with one another in the brazenness with which they sought work for their constituents and were known to their opponents as 'the blue-funk school'.² The various members for Barrow were shy in comparison. Equally the successive M.P.s for Woolwich, the working-class Tory, Robert Gee V.C. (who disappeared to Australia), Kingsley Wood or Harry Snell, and even Brigadier Colvin, whose Essex constituency included the cordite factory at Waltham Abbey, frequently figure in Hansard seeking armament work for the Government arsenals to protect their constituents' jobs.³

2. H.C. Deb. vol 161, col 2868. Falle's favourite theme was that 'we have every single thing in this world that every other nation covets'. Navy Estimates, 22 March 1923. H.C.Deb. vol 161 col 2850.
3. Cf Wood's remarks during Army Estimates of 1923 why Woolwich welcomes die-hards. H.C Deb vol 161, col 2911. Snell's view that the corollary of a standing Army is a standing national arsenal ('as an integral part of the Army') is represented in H.C.Deb vol 161, col 2916; a typical call by Snell for preferential treatment of Woolwich over private firms is H.C. Deb. vol 171, cols 1018-9. There is a good account of Snell in the Dictionary of National Biography.
Speeches in the Commons, of course, were not the sole opportunity to lobby for work, but what evidence is available again suggests that those concerned with the state end of the sector led in lobbying. (When Wood became Secretary for Air in 1938, Craven and Birch of Vickers expected some of the work directed to the aviation firms to be redverted to the ROF). Certainly there are no suggestions that the parliamentary conduct of, say, Douglas Vickers, Burney or General Davidson was influenced by their connection with Vickers; nor that of Sir Walter Preston and Lord Sydenham by their ties to Armstrong. It is indeed unimaginable that Kinloch-Cooke or Falle, for instance, might have moved a debate on capital ships, as did the Glasgow M.P. who headed Beardmore's Ordnance Department, to speak of 'the iniquity of any competition...with the U.S.A.', to call for retrenchment and to deprecate 'most strongly' further battleship building. ¹ A dozen or so blue-funkers were of course exiguous compared with 379 supporters of the L.N.U., 46 members of the U.D.C. and 31 members of the No More War Movement elected to Parliament in 1929. ²

The Royal Commissioners discounted the suggestion that the British press was used by armourers to drum up 'a fear policy'--an idea that was ridiculed by the Chairman of the Newspaper Proprietors' Association in his evidence. A related accusation that armourers, by taking 'undue space' to advertise in technical journals, influenced editorial policy is not worth much. The accompanying tables show Vickers' & Vickers-Armstrongs' advertising expenditure during 1930-4.


Table 8 to show expenditure on armament advertising by Vickers-Armstrong Ltd 1930-4.

<table>
<thead>
<tr>
<th>Year</th>
<th>Home</th>
<th>Abroad</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>£</td>
<td>s d</td>
<td>£</td>
</tr>
<tr>
<td>1930</td>
<td>191</td>
<td>4 8</td>
<td>511</td>
</tr>
<tr>
<td>1931</td>
<td>407</td>
<td>10 4</td>
<td>483</td>
</tr>
<tr>
<td>1932</td>
<td>716</td>
<td>8 8</td>
<td>673</td>
</tr>
<tr>
<td>1933</td>
<td>524</td>
<td>19 6</td>
<td>342</td>
</tr>
<tr>
<td>1934</td>
<td>496</td>
<td>6 10</td>
<td>413</td>
</tr>
</tbody>
</table>

Totals: 2,336 10 0, 2,424 19 4, 4,761 9 4
Average: £952 5s 10d per annum

Source: unpublished evidence of Vickers-Armstrong to Royal Commission on Private Manufacture of Armament
Table 9 to show group advertising by Vickers Ltd. 1930-4.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Expenditure</th>
<th>Item</th>
<th>Cost of Individual Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>£</td>
<td>s</td>
<td>d</td>
</tr>
<tr>
<td>1930</td>
<td>521</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1931</td>
<td>466</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1932</td>
<td>1,474</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933</td>
<td>779</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1934</td>
<td>476</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


N.B: A note of the Works Commercial Cte. of Vickers-Armstrong, dated 21 Feb 1928 (microfilm R338) shows that Armstrongs Whitworth spent £25,000 on advertising in 1927 and Vickers £10,000 on advertising in 1927, both figures inclusive of non-armament work.
During those same five years the League of Nations Union had an annual income varying between £34,429 (1934) and £39,932 (1932), and an annual expenditure varying between £38,303 (1932) and £40,410 (1931). By 1934 it had a total membership of 1,011,603 in Britain. Once again the reality is rather different from the myth where merchants-of-death organised themselves with tame editors in their pockets to annihilate what Kingsley Martin called 'the small, independent, usually bankrupt society which sets out...to champion some great cause'.

It is noticeable that whilst such pacifist organisations as the L.N.U. or U.D.C. were generally admired as legitimate in their preaching of disarmament and legalistic frameworks for international affairs, other societies, which urged industrial preparedness and a strong military capacity to back foreign policy, were treated pejoratively. Noel-Baker refers to such organisations as the Air League of the British Empire, the National Aerial Defence Association, or the Navy League as 'Patriotic' Societies, and implied that they were funded by armourers to create a fear policy. In this connection, the independent historian of the Navy League of the United States should be quoted.

2. Kingsley Martin, Editor, 149. Buzan also uses this observation as his epigraph.

Claud Cockburn, formerly Diplomatic and Foreign Correspondent of The Worker in the thirties, contributes a gross caricature on this subject in The Devil's Decade. London 1973.
The conspiratorial theory of history is widely accepted. Many writers subscribe to it because they delight in exposing the nefarious and diabolical. The public cherishes it because of its plausibility and its macabre fulfillment of the propensity some men have for viewing life in its seamier aspects... when applied to the Navy League of the United States, it is sheer fantasy...
The League was neither the tool nor the mouthpiece of special economic interest groups. The allegations and insinuations have often stemmed from too little investigation and too much preconception. They have gained credence not because they were rooted in fact but from endless repetition. 1

Rappaport shows that the Navy League of the U.S.A. operated on less than $10,000 a year in the 1920s and early 1930s, whereas the Carnegie Endowment for Peace spent $613,881 for activities 1926-7, and the Federal Council of Churches for Peace spent $50,000 annually. 2 A concentrated drive by the Navy League for members in 1924 cost $1,000, but yielded only 42 new adherents and $126 in dues. 3 'No personal persuasion would be exerted upon legislators', for 'the League disavowed lobbying' and operated as a 'grass-roots pressure group' which provided 'verbal ammunition for debate', but 'never could create public opinion or alter a prevailing current of thought'. 4

1. Armin Rappaport, The Navy League of the United States, 205. One such historian with seamy propensities was George T. Davis: in A Navy Second to None (New York 1940), he wrote of the Navy League of the U.S.A. 'that it made use of secret manoeuvres and schemes cannot be doubted' (p 148; my italics); and that 'members have attested their patriotism in great annual banquets...but the aims of this economic interest group have fooled only the naive'(p 396).


In the absence of a detailed study of the British societies (many of which declined donations or subscriptions from companies), the conclusion may stand that, like their American equivalent, 'they were moved by patriotism freed from politics'. Their members thought, like Lawrence of Vickers, that pacifism was based on 'a wrong appreciation of the existing conditions of life'. It now remains to consider those other charges against 'untrammelled private manufacture', which are less trivial, and to which the answers are complicated. Under the heads of 'Bribery' and 'Armament Rings and Trusts', the gravamen, if any, will be found.


Bribery

One major allegation was of bribery, an activity which British armourers were thought to push with peculiar enthusiasm. That this was not the case will be shown, but first it is necessary to distinguish between practices in the U.K. and those in some foreign markets. The Royal Commission had this distinction drawn very forcibly for them by a memorandum submitted jointly by the three Fighting Services, which deserves quotation. Three possible objects in offering bribes are identifiable: (1) to induce a department to start a programme of purchasing armaments, which it would not otherwise undertake; (2) to buy stores from one firm, rather than another; and (3) to pay a higher price than justified.

As regards (1) general military policy with which any purchase programme must conform is laid down by the Staff. Subject to that policy, the responsibility for putting forward proposals for the purchase of armament rests with the responsible Military Member of the Board. But those proposals are subject to financial criticisms by the finance department which is under an entirely different member of the Board and when they have passed that criticism, they still have to find a place within the limited totals of the departmental estimates...it would hardly be possible for an unjustifiable programme to be launched through corrupt influence: every programme must be able to stand on its own merits the examination of more than one individual Member of the Board and must be accepted by the Board as a whole. As regards (2) when provision has been made in estimates for the purchase of armaments, or any other stores, the Military or requisitioning department concerned forwards details of its requirements to the Contract Department which is responsible for placing and administering Headquarters contracts. The Contracts Department is not under a Military Member of the Board, but under a Civil Member, who is also a Member of Parliament. There are thus departments, each responsible to a different Member of the Board concerned...the demanding Department and the Contract Department...If on receipt of tenders the lowest is not accepted, it is the practice to record the reasons for this action on the file which is open to inspection not only by the finance department but by the Exchequer and Audit Department. In important cases any proposal to pass over an apparently suitable lower offer would be submitted by the Directorate of Contracts for ministerial authority.1

At the War Office and Air Ministry, ministerial authority was necessary for the acceptance of any single tender worth above £500, and the authority of the Secretary of State was required for acceptance of a single tender over £20,000. Similarly, the prior approval of the Board was sought at the Admiralty; in all three departments, such single invitations to tender were usually of a technical nature. The joint memorandum added that costing and the normal safeguard of competition nullified any bribe to an official to pay a higher price than justified. Referring to the common belief that officials in charge of armament contracts were influenced by the lure of directorships after retirement, it was noted that in the 15 years since 1919, two Directors of Contracts, a Deputy Director and four Assistant Directors in charge of armament contracts had retired, but none had been offered a job on the board of an arms firm. In fact, recruitment from the service technical branches to arms firms was more common than recruitment from the contracts personnel who were skilled purchasers for whom the firms would have little use.\(^1\) Most important of all, in Britain and elsewhere, no bribe offered to a procurement officer 'could possibly offset the professional discredit which he would bring upon himself by deliberately imposing upon the service an inferior type of armament.'\(^2\)

It is equally certain that bribery occurred abroad, though its relevance to the nationalisation of private armourers is unclear. As Hankey noted, the cure rested with the foreign governments concerned, 'rather than by shutting down one of the many vast industries to which this evil must be an intolerable nuisance'.\(^3\) This was also the view taken at Vickers House: that where political life was unclean, business practice was unclean.

1. Examples include Sir Reginald Bacon, a Director of Naval Ordnance; Sir Eustace d'Eyncourt, Director of Naval Construction; General K.E. Haynes, an artillery designer.
2. P.R.O. Adm. 116/3339.
In many foreign markets, some degree of bribery was a prerequisite to getting a deal considered. Vickers were not more prone to it than any other company exporting to those markets; indeed, they found it tiresome, and wished it possible to dispense with. Thus, when their agent at Tientsin reported attempts to reduce corruption amongst Chinese officials, he was told,

What you say about 'squeeze' is very interesting. Just the same thing is happening in other countries where the men at the top have announced that there is to be no more, but when one really gets down to brass tacks it is almost impossible to do without it.

Vickers' agent in South America 1920-8 might write, 'In my numerous travels I have discovered that nearly everyone is amenable to reason if put forward in a practical way'; but when in 1928, Vickers received a letter from the British Military Attaché in Warsaw about a Polish Count who claimed he could 'ensure' the placing of a machine-gun contract with Vickers, an official at Vickers House minuted: 'No-one can ensure this; the matter is far too important'.

As Trebilcock has concluded,

where a pourboire...formed a convention of negotiation...it could do little to alter the direction or magnitude of a deal and it could not create an appetite where previously there had been none.

Tacit support of this position came from the Service Departments: when, in 1925, the War Office arranged for B.S.A. to become their foreign agents in surplus second-hand rifles and machine-guns, B.S.A. were allowed 5 per cent commission plus 5 per cent on proceeds of sale above the minimum price agreed between the War Office and B.S.A.

2. Livingston, Hot Air in Cold Blood 220.
3. Col. Charles Bridge, December 1928. V. microfilm R.309
5. See P.R.O. FO 371/10975 and FO 371/17181.
The Commission was to 'cover local payments which obviously should not appear in the War Office accounts', and the Secretary of the War Office told the Treasury, 'The pernicious system of "commission", which...is apparently inseparable from these deals... makes it impossible for us to carry out except through private firms'.  

Vickers' position on bribery is shown explicitly in the episode of Tom Connolly in China. The Connolly affair has been mentioned in other writings, but its circumstances have not been printed before: yet they have more than incidental interest. They were unearthed by two of the Royal Commissioners, who visited Vickers House to read freely all files relating to the Sino-Japanese market between September 1931 (when the Mukden incident provoked war) and April 1933 (the armistice was signed on 3 May 1933). In January 1936 Vickers-Armstrong had 273 files relating to armament enquiries, contracts and correspondence with China and Japan during those twenty months. From these they unearthed the Connolly case.

There was employed at Vickers' Chertsey works in 1931 a mechanic named Tom B.M. Connolly, whose hourly wage rate was 1s. 4d. He was selected to demonstrate Vickers-Carden-Loyd tanks in China, where he arrived in June 1931 with a prospect of six months' stay.

3. Duplicates of the Vickers papers concerning the affair are in T 181/82, T. 181/83 and T. 181/84. I have checked these with the originals.
Before his scheduled return, Vickers' agents in China, Jardine's, asked for help in placing on their staff a man with a general knowledge of armaments, and an ability to demonstrate Berthier machine-guns. Vickers suggested in January 1932, and Jardine's agreed in March, that although Connolly was not especially suitable, he would remain in China for another few months. Vickers paid his salary in China of £6-12s-6d., but shared equally with Jardine's his travelling and living expenses. It should be stressed that Connolly went to China as a tank demonstrator—a technical assistant to the sales team—but not as an agent of Vickers. He was altogether beneath the calibre which Vickers demanded of their agents. Their agent in Peking 1908-23 was Henry Beaumont Donaldson, a resourceful China hand; in 1929 they mooted the appointment as agent of Major Augustine Barker, D.S.O. (1887-1937), a former artillery officer who had settled there in 1919: 'one of the best known foreigners in China and has devoted time and spare cash on getting on intimate terms with the Chinese...a man of exceptional personality and address'. In 1931-2 they were represented in China by Lt. Gen Sir Edwin de Vere Atkinson (1867-1947), who was Master General of Ordnance in India until 1930.

Connolly was of another calibre, living on borrowed glamour and appearing to base his behaviour, ironically enough, on the popular misconception of the Zaharoff stereotype. In his case this became a self-fulfilling prophecy. In 1932 he told a Chertsey friend

5. Papers relating to Atkinson in China, including a diary of 1931-2, which he gave to General Birch, are in V.microfilm K.162
I returned from Nanking with a very large enquiry, runs into many millions... It is strange, but I am not a bit excited, as War Ministers and Generalissimos so often talk big and nothing happens but it may be that all my dreams will come true.  

Jardine's warned Vickers that these jaunty letters were 'over optimistic': he thought 'that all enquiries are orders'. A good picture of the market is provided by a letter from W. J. Keswick (1903- ; knighted 1972), of Jardine's Hongkong Office: 'The Chinese - besides being bankrupt - are perhaps the most unsatisfactory people in the world to deal with'; he wrote of Connolly, 'as a demonstrator he is first-class and with limitations he is a good mixer... a "gentleman" full of enthusiasm without much responsibility and therefore has to be ridden with a very light bit.'

Towards the end of 1932, in answer to an enquiry, Vickers offered to sell Jardine's (for immediate re-sale to the Cantonese Government) twelve tanks costing £3,115 each, twelve 75mm. anti-aircraft equipments, sets of predictor gear and 3,000 rounds of ammunition, worth in total £85,650. On 7 December Vickers received a direct telegram from the Cantonese Government asking for price reductions, but not stating the prices being sought by Jardine's. Vickers consulted Jardine's, who asked them to support their price—'no doubt appreciate large commission is responsible for high prices', they telegraphed. This Vickers did.

Vickers believed the deal was maturing normally until 3 February, when they received notification that Jardine would 'no longer be responsible for or recognise T.B.M. Connolly'.

This was amplified by letter. Jardine's

handed Connolly prices for the armament in question, lump sum £222,570. This lump sum contained 10% Profit for Jardine Engineering Corporation, 2½% Finance and Cables, 2% Compradore, 5% Commission and 5% Bargaining.

Connolly was asked to convey these prices to General Tao. He, on his own initiative...considered it necessary to add £54,000 commissions...We are now informed by Connolly that if we will sign the Contract he will disclose the details to us. But it would appear insane to put our names to a contract of £276,000 on a year's extended terms, without knowing full details of our commitments. The handing over of £54,000 of commission if we have been fortunate enough to collect all due payments a year hence...is a risk we cannot take without knowing...clearly full details and the channels through which to work...this commission is being handled by a tank mechanic we do not trust. This distrust is shared by every member of our staff and confirmed personally to me by the Consul General who has already officially requested him to remove the title of Lt. General from his Chinese business card. Connolly admits that he has purposely misled us and has not told the full truth...it is not necessary to infer that all the included commission is for his account in spite of his refusal to tell to whom it is to be given. 2

It further emerged that Connolly had attempted a manoeuvre to sell Hawker aircraft, and Vickers telegraphed to him to cease all activity and return home at once. On his refusal, they wired terminating his engagement, and had Jardines pay him £53 without prejudice—the amount due in salary plus return fare. He declined a passage to England, producing a doctor's certificate that he was unfit to travel, having sustained brain concussion after falling on his head from a pony.

On 23 March 1933 Jardines placed an order for the material for which Vickers had already quoted. There was no change in the prices as originally quoted: Vickers got £162,000 and Jardine's took £225,000 including freight, insurance, interest, profit etc.¹

As Craven of Vickers told the Royal Commission, he thought Connolly's was 'a splendid case' from their angle.² Although Connolly was usually employed by Vickers, Jardines were his principals in China where they were handling sales directly. The only other instance of Vickers having agents who sometimes acted as their principals was the Engelsche Handels Maatschaapij ('N.E.T.H.M.Y.') in the Netherlands. The Connolly case was therefore most unusual. In all but Dutch and Chinese cases, Vickers were represented by 'an agent pure and simple, a man who works on commission', who 'would have to hand in our actual quotations', and could not load Vickers' prices himself.³ As Craven readily agreed, 'any palm-greasing has to come out of his commission'.

How much grease did Vickers' agents commissions permit? General Atkinson had a commission of 1 per cent. on all orders, to a minimum of £1,000; and received £100 per month from Vickers whilst in China to cover subsistence and general expenses. Vickers also undertook to reimburse 'entertainment or other special payments by you' which 'have, wherever possible, been first approved by us'.⁴ To take another illustration, Brigadier W.C.E. Rudkin (1875-1930), an artillery officer who had been A.D.C. to George V, was Vickers' Ordnance representative for military artillery throughout the world 1920-3.

2. Craven, Q. 227 at meeting of Royal Commission, 7 May 1936. T 181/84.  
He was paid £2,000 per annum, plus the following commissions:

2% on selling price of military guns up to and including 4.7 calibre; 1% on military guns above 4.7 calibre; 4% on machine guns; 5% on technical fees paid by Spanish Government to Vickers. The General Manager in Bucarest of Vickers-Roumania Ltd, in the immediate post-war period received £1,500 per annum, in quarterly installments, towards personal expenses; his remuneration comprised percentages of yearly profits, derived from Vickers' standard rates of commission. The Argentine company retained as legal advisers on arms contracts in that country received commission of 3% on armour plate, $\frac{1}{2}$% on warship hulls, machinery and deck armour; $\frac{11}{2}$% on aircraft, machine-guns, submarines, armoured cars etc.

In summary, then, of the Conolly case, the finding of the Royal Commission's Report that 'A bribe of £50,000... was offered' is wrong. The evidence is that no offer of £50,000 — or £54,000 — was proposed to anyone. Within three days of hearing of Conolly's proposal, Vickers had ordered him home. They were prepared to connive with Jardine's over the inclusion of a moderate amount of bribe money in the purchase price, and they customarily let their agents understand that 'any palm-greasing has to come out of his commission'. But the really significant point is contained in another letter of W. J. Keswick.


2. Sir Francis Barker to E. D. Madge, letter 2 September 1919. Box of agreements MA.

In including such enormous commissions, which we would never consider in the ordinary way, we expose ourselves and you to grave danger, and which, if discovered, would have disastrous reactions not only on all our varied business activities here, but also against our joint reputation.¹

This in a nutshell was Vickers' attitude to bribery. They thought that sizeable subventions to foreigners would rebound on them very hard; *pourboires* might be used to secure an order against a competitor, but not to create orders. Such bribery did not have an appreciable effect on the world's supply of armaments, and if commercial practices were cleaned up, along with political life abroad, the armourers would have welcomed this with relief.

One final disclaimer should be added. It is erroneous to juxtapose, as Sampson and others have done, the practices of heavy armourers such as Vickers before 1939, with more recent conduct of the American aerospace-nucleons-electronics complex, such as Lockheed. As Benoit describes the American grouping which has arisen since 1945,

> this immense industrial empire has no normal civilian demand in prospect...and...has grown up in a permanent defence production environment...This is essentially a 'bespoke' business, in which the product is not made until after it is sold; hence, the firms engaged in it have often demonstrated an inadequate appreciation of and competence in the whole marketing side of business, which in many commercial lines becomes the dominant factor.²

This description, of course, is inapplicable to Vickers, more than half of whose production during the Disarmament period was in standard commercial items, and whose experience of foreign marketing was already more than half a century old.

1. W.J. Keswick to F.C. Yapp, letter 7 February 1933. Received 3 April 1933. T. 181/84.
It is equally incorrect to treat the expertise of a merchant prince like W.J. Keswick, who perceived 'grave danger' in giving 'enormous commissions', as on a par with the credulity of the Lockheed management who thought that the giving of large commissions was part of the great battle for the free world. ¹

The Americans, it may be thought, resemble Connolly in seeing the world too precisely through the myths fathered by the Radicals who spread the legends of Zaharoff; they have been living out a false imagery.

Armament rings

There are two senses in which accusations about 'armament rings' are levelled. One version is that a national or international combine of manufacturers can force Governments to pay inflated prices for weaponry. The second version alleges an international conspiracy of armourers to accentuate the arms race between different countries, or the fomentation of war-scares in the interest of profit. Although this second version is purely fantastic, it attained remarkable currency during the Disarmament period, and continues today to influence attitudes to military spending.

In Britain there certainly existed agreements between private firms supplying different classes of armament about the maintenance of prices on Government contracts. Notably, five firms comprised the armour-plate ring of suppliers, which agreed the prices quoted on Government contracts, but this was neither sinister nor arcane. The Admiralty negotiated with these five firms as a ring, because it was policy to keep all of them alive on orders, and so to ensure that there would be five sets of skilled staff and plant able to expand capacity in an emergency. Chapter 5 contains a section on the experiences of the armour-plate suppliers (1918-39), from which it will not seem that the Ring enjoyed excessive profits.

Space prevents a detailed discussion of every such ring, such as submarines, or cordite; and we are here limited to general comment.

1. **Arms and Explosives**, October 1913, was quoted above, page 5.
2. There is a reliable outline of the origins of the submarine Ring in Hugh Lyon, 'The relations between the Admiralty and private industry in the development of warships', essay in Bryan Ranft, ed., *Technical Change and British Naval Policy 1860-1939*, 56-7 & passim. Cf J. D. Scott, *Vickers*, 61-8. In this context, note however that two procurement officers closely associated with the early development of submarines later came down heavily against Vickers' monopoly: Rear Admiral Sueter (House of Commons, 4 June 1924; H.C. Deb. vol 174 col 494) and Sir Reginald Bacon (From 1900 Onwards, London 1940).
The gun-mounting Ring's operations during this period are typical. Under an agreement of 1903, the Admiralty had undertaken not to place orders for Vickers or Armstrongs designs other than with Woolwich or the two firms themselves. During the War the two firms agreed to the inclusion of Coventry Ordnance in their ring, but that newcomer left the armament business after the Armistice. Subsequently, the two firms agreed with the Admiralty, for the duration of the manufacture of mountings for the two post-Washington capital ships, to keep the whole of their gun-mounting plant available without extra charge, although only about one-third of their available plant was utilised in providing mountings for the two ships. In 1924 Beardmore's tried to interest the Admiralty in their designs for an 8" gun mounting; but the Director of Naval Ordnance wrote that the other two suppliers 'would certainly use the advent of a third firm as a further argument for a subsidy later, if orders fall short'. The Admiralty did not consent to widening the gun-mounting Ring in the belief that in the long-run the Ring was an economy.

Optical glass illustrates what happened in the absence of such rings. The Great War saw a multiplication of the military and naval uses to which this commodity was put—recognized by Vickers in their purchase of Cooke, Troughton and Simms—and the Service Departments wished to build up this new, essential and specialist industry. The Ministry of Munitions however structured their procurement in such a way as to avoid a ring of firms, depending on Government and export orders, with the result that by the end of the 'twenties, there was next to no capacity in optical glass at all.

Especially desperate measures were required, including a special sub-committee of the Supply organisation chaired by Sir Frank Smith (1879-1970). 1

The arrangement of supply through Rings dated from 1888, when the Service Departments had examined the capacities of the two private arsenals then existent (Armstrongs and Whitworths), and had found them lacking. They had therefore encouraged steel manufacturers (such as Vickers, Firth's and Cammell Laird) to enter armament work. The initiative for this expansion came from the Government, and it was the latter who determined the pace of business. The rings functioned for the Government's benefit, not the Government for the rings' profit, so that Armstrong warned Vickers (1917) that they must 'walk very warily', for 'any systematization...into combinations is at present to be deprecated'. 2

As Trebilcock writes,

In the market for weaponry, there is little prospect of suppliers indulging in speculative programmes of expansion; the individual armourer has scant chance--much less than his civilian counterpart--of predicting market trends and almost none of 'tuning' demand to his own requirements; rather, orders are set by Government in the light of military and political, not commercial, considerations and then hedged around with financial provisions enshrined in parliamentary estimates and extremely resistant to subsequent increases. Given the procedural and political checks...built into the procurement system, the customer is remarkably well-protected from any sales offensive on the part of the supplier and custom is effectively defined from one side of the market only. The most that the receptive entrepreneur can do...is to fulfil government's expressed requirements.

1. Smith was Director of Scientific Research at the Admiralty 1920-9 and Secretary of the Department of Scientific & Industrial Research 1929-39 and held several senior supply posts during the Second World War. Later joined board of B.S.A. His sub-committee reported in C.I.D. paper no 1095-B (also Paper no P.S.O.330), and its recommendations were approved November 1932. C.I.D Minutes, 257th meeting, item 2.

2. Falkner to Caillard, 4 December 1917. V microfilm R246

3. Vickers Brothers, 53-4. Emphasis in original. Trebilcock here under-estimates the capability of a manufacturer to launch a sales offensive with radically innovative weaponry. Thus J. D. Scott, writing of submarines in the early 1880s, noted 'Nordenfelt's first submarine was sold to Greece, and his second and third to Turkey'. (Vickers, 62).
Moreover, British procurement officers came down very hard on the rare occasions when they discovered a ring which they had not officially approved. Thus in 1930 the Air Ministry were considering production of twenty-two two-seater flight reconnaissance aeroplanes, the designs of which had been discussed since 1924. Hawker's, suppliers of the Hart, and A.V. Roe, suppliers of the Antelope, put in identical prices at competitive tender. At a second competition, Hawker's with their Hart and Fairey, with their Fleetwing, put in tenders on 20 May 1930 at the identical price of £3,500 per machine. The Director of Contracts at the Air Ministry wrote furiously to the Secretary of State about a bare-faced attempt by two prosperous and important firms who have done well out of the Royal Air Force to stifle competition in a peculiarly sheltered industry at the expense of its only large patron and foster parent.

He judged that the price should not exceed £3,100 per machine on an order for 22, and called the addition of £400 per machine 'indefensible'. Both tenders were declined, and it was agreed not to give Hawker the order under any circumstances, and secondly, to place the machine selected by single tender, liable to costing.

In a separate category to Government-designed Rings, but equally controversial, were the design and market agreements which Vickers and Armstrong concluded together. In 1902 these two firms had, partly as a result of pressure from the Service Departments, agreed to a free exchange of their designs for British work, with royalties waived. Consistent with the post-1888 policy of increasing the number of private arsenals, and of widening and simplifying supply lines, the substance of this agreement survived until the two firms merged in 1927.

It was paralleled by a series of agreements between Vickers and Armstrongs (1906-13) which divided world markets. The firms shared the same defensive intention of preventing unnecessarily keen competition at a time when the French and German presences were obtruding. If the purpose of exports, as described in Chapters 1 and 6, was to lengthen production runs, then it was certainly sensible for armourers to maximise the advantages of an orderly arrangement of foreign work. In almost every such agreement, Vickers bested Armstrongs with acute bargaining. Apart from such agreements as that of equal division of all work in Japan (1907), following the Balkan wars of 1913, they concluded a three-year agreement to develop business in all types of naval and military armament, with joint accounts on all orders except Maxim guns and aircraft, in Albania, Bulgaria, Greece, Montenegro, Roumania, Serbia and Turkey. A typical arrangement of this class was the maker to non-maker agreement between Vickers and Armstrong (1924). Terminable at six months' notice after 1926, this provided for collaboration over army and naval munitions in South America, Japan, China, Spain, Portugal, Greece and Turkey. This provided for each firm to inform the other of any enquiries before submitting offers, and for each firm to send separate designs and prices on an arranged basis of quotation (except when making joint proposals). Work was divided between firms as equally as possible, and when this was impracticable, the maker paid the non-maker 2 per cent on hulls, 2½ per cent on machinery, 5 per cent. on armour, guns, mountings, ammunition carriages etc.

1. Vickers Brothers, 95-7
2. Agreement of 31 December 1913 between Armstrongs and Vickers. Armstrong papers. It is worth noting that neither firm had done great business pre-1914 in the Balkan tinderbox. Germany and Austria took most Bulgarian, Serbian and Turkish business. See B. S. A. memorandum on Factory Extensions & Foreign Military Rifles, 29 April 1914. Warwick University mss. 19A/1/2/36.
Profits on powder and explosives were divided equally. Other material could be sold without these percentage obligations, or bought from outside sources (although special discounts could be arranged between the two makers). These included submarines, aircraft, mines, depth-charges, bombs, flares, machine-gun cartridges, pistols, revolvers, optical sights, fire control apparatus, director firing gear, paravanes, turbines, armoured cars and tanks.  

Again the intention of this maker to non-maker agreement was not the cheating of foreign governments: it was a device necessitated by the high establishment charges, and peculiarly fluctuating demands, which characterised armament work.

Another variety of this agreement was made in 1920 to meet post-war conditions. A mining and metallurgical firm, Starachowice, in the emergent state of Poland, wished to become the national arms factory. It therefore signed a contract for 'technical collaboration and material assistance' jointly with Schneiders and Vickers. The latter formed a 'Committee of Manufacturers' which supplied plans, working drawings, technical data etc. for a royalty of 5 per cent., in a fashion which was familiar from pre-1914 arsenal projects. The unusual feature of the Polish arrangement was that the foreign manufacturers were to supply most of the necessary machinery and tools from their own surplus capacities, created by recent war-time expansion. In short, Vickers and Schneider were collaborating to off-load their depreciation. Both firms had a desperate excess of plant left after the Armistice, which was a liability at home, but might be turned to some profit inside a Polish arsenal scheme.


Rather than lose some of the advantages of this opportunity in
fruitless competition, they reached an orderly accommodation of
one another. (Several years later, Vickers reached an arrangement to
off-load further depreciation to the Copsa-Mica factory in Roumania,
without bringing in Schneider; Schneider's influence duly wrecked the
initiative). The British Consul in Warsaw called Starachowice 'a
camouflage' for Vickers and Schneider, but it was one in which
the French were uppermost, and a new agreement was reached in
1926, with Schneider taking dominant participation.

After the eruption of propaganda against private armourers in
this period, Vickers became reluctant to enter such agreements.
Although in 1928 they sought the benefit of a technical alliance with
the Czechs, whose machine-gun development was causing anxiety,
their policy later changed. In 1935 they declined to buy a controlling
interest in the Austrian ordnance firm of Steyr, which could not
raise capital necessary for expansion. The reason given was the
controversy about international conspiracies. Similarly, in 1937,
Vickers were approached by Chantiers de la Loire (the only French
firm, apart from St Nazaire Penhoet, capable of building capital
ships) about collaborating in a technical aid agreement to build
capital ships for Russia. The Russians had suggested such collabora-
ration, and the idea was that the French would take hull work, and
Vickers the armament, with machinery and armour divided
proportionately. Vickers told the Admiralty that they were 'somewhat
reluctant to enter into any collaboration with a foreign firm' after
the outcry about 'International Rings'.

1. Frank Savery, Overseas Trade Despatch no. 312B of 7 October
1920. FO 371/5413.
2. Schneiders to Vickers, letter 22 January 1926. W.C.Symon,
director of Vickers, to Schneider, 27 January 1926. Vickers
papers, box of agreements BRO-BZ.
microfilm R.339.
The most conclusive proof of Vickers' policy on international armaments pools is provided in papers which describe their reactions when presented with precisely that proposition in 1928. On 2 August that year the Vickers board confirmed that General Birch, the director responsible for land armaments, should negotiate an arms contract with Turkey worth £2,056,250. This figure included establishment charges of £490,828 and 15 per cent. profit, viz. £260,944. Half of the contract price was to be payable in equal instalments during the three years taken to complete delivery, and the remaining 50 per cent. was to be paid in the three years after delivery. Birch had authority to reduce contract prices by an amount on profit, and it was known in advance that the Turks attached at least as much importance to the financial structuring of the package as to the differences in technical performance of the weaponry offered. The landing of this contract was especially important, because in 1928 the Turkish Army was 'at a turning point as regards its future armament', and it was 'very likely' that whatever type of ordnance was adopted will go on to be the standard armament of the Turkish Army for the next twenty years, as was practically the case with the Krupps guns before the War.

Vickers' reputation in Turkey was still suffering from continuing litigation about the warship Fatih, and other armament being built by British firms for Turkey which had been requisitioned by the Admiralty after the outbreak of war in 1914. In these circumstances, Birch believed that Vickers would have to take the contract at 5 per cent. profit, but before Birch had left for Turkey, Vickers received overtures, as a result of which Birch and Dawson attended a conference on 12 November at the Paris head office of Schneider.

3. The Admiralty had long before warned Armstrongs, John Brown's and Vickers of the likelihood of such requisition. See Ottley to d'Eyncourt, letter 3 November 1912. A.W. box 174.
Others present were the Marquis de St. Savour (a relation of Eugene Schneider), Major Rattelin and Captain de St. Guilhelm (representing the French), along with Raoul Nordling (1882-1962), Swedish Consul General in Paris, and Captain Ressle, Bofors' Chief artillery expert.

In Birch's words, Bofors and Schneider 'quite clearly' wished to reach an arrangement over the Turkish order.

Schneider having good orders and no special want of work, would not put forward claims for...a large share [of the Turkish order]. It appeared to General Birch that they would rather have money than the work.

St Savour said Schneider should have sixty per cent. of the Turkish order,

but he said that on a world deal, if and when his firm ever considered it, they should want much more, owing to their position in land armament. Bofors suggested 20% [for themselves], leaving Vickers-Armstrong 20%, General Birch said that this was perfectly ridiculous. After luncheon, the conversation, entirely academic [sic], wandered around percentages, and General Birch considers that Schneider 50%, Vickers-Armstrong 40% and Bofors 10% might get through, but Bofors would kick hard; Schneider would also kick.

St Savour envisaged prices fixed by arrangement, with losing firms compensated by percentage of orders—the rate of compensation was not discussed. The Conference adjourned on the understanding that it was 'perfectly useless to go any further until it was known whether Vickers-Armstrong wanted the combine or not'. When Birch said that pending a decision, Vickers reserved complete liberty of action on the Turkish order, 'this was accepted by all', but 'the two assistants of the Marquis de St Savour did not relish the idea from what they said apart to their Chairman, and Bofors' representatives pulled long faces'.

St Savour told Birch, in the latter's words, that 'it would be necessary to include Bofors in any combine... as they had the whole experience of Krupps behind them. He considered that 10% was quite enough for Bofors, a very natural remark as he was thinking of his own percentage... [but] useful if another conference occurred, as we might have Schneider's help in nailing Bofors down to 10%'.

Nordling told Birch that the Swedish Legation had told the French Government 'that a combine was in the air and the French Government was very pleased about it', but Birch added 'Nordling may have been merely trying to show what a grand personage he was'.

This was not the first approach to Vickers about Bofors and Schneider. In 1927 the War Office were told by Sir Henry Penson (1864-1955; knighted 1918), an economic historian with a Swedish wife, who had been Chairman of the War Trade Intelligence Department 1916-19, that Bofors were in negotiation with Schneider and Skoda, 'trying to get more money, as Bofors cannot compete with the many orders they are getting'. Sir Laming Worthington-Evans (1868-1931; baronet 1916), Secretary of State for War 1921-2 and 1924-9, 'wondered if Vickers would think it worthwhile getting in touch with Bofors', and told Birch, then still Master General of the Ordnance, to inform the Chairman of Vickers of Penson's information. Other evidence confirms that Bofors at this time was severely short of cash to finance expansion to meet current demand.

After this meeting broke up, Schneider's managing director chaffed Birch 'that really Vickers were entitled to no share of land armament as they have never been into the world market for it...Schneider's were established as the leading people and Bofors as the second'. The fact that Schneider's could say this even half-jokingly indicates the desuetude into which Vickers' armament side had declined since 1918.

Birch twice visited Zaharoff whilst in Paris. He found the latter was 'very anti-Turk, being...an ardent backer of Venizelos' the Greek nationalist.

Sir Basil said:
1. I do not trust Bofors. They will play all sorts of dishonest tricks in and on the combine. They will come into it. and then deal outside with Turkey.
2. Bofors will be bankrupt within a year.
3. Come to an arrangement with the others.
4. Skoda is certain to get the bulk of the orders owing to the affinity between the Turks and the Hungarians.
5. Above all—no hurry.

Birch and Dawson returned to London, and on 15 November, submitted their views to the London Executive Committee of the Vickers Board. Birch's memorandum on that occasion is the fullest statement of a British armament firm's real opinion of a proposed world arms pool that is likely to be found. He offered seven reasons for not continuing the discussions.

1. We have only just come into the field for land armament, and I think we ought to fight further for a good position before even considering any combine at all. Schneiders insist on having the 75 mm equipment [order] from Turkey, and that is the one field we want to defeat them over, and what is more, in a few months times, we shall have a 75 that will be very much more accurate than their famous one.

2. As far as the Turkish contract is concerned, Schneiders and Bofors have both put in prices [and Vickers had not], and so if we considered the combine over the Turkish order they would have to raise their prices. It would certainly militate against the secrecy of the combine.

3. To work the combine properly, even to the limited extent of the Turkish order, would mean 'trust your confederates'.

'I agree with Sir Basil about Bofors, and Schneiders will not think of entering into any agreement unless they are going to have the advantage over everybody.

4. I understand that the action of the French in Syria has not helped their chances in Turkey.

5. The mere fact of Schneider being anxious to come in and having their shops full, should make us harden our hearts to take risk. When I was out in Turkey I gathered Bofors chances were of the slenderest description. In any case Bofors cannot make much.

6. I do not believe in a great cutting of prices so far as Turkey is concerned. As they say in Turkey, 'There is always money for guns', and if they desire Vickers-Armstrong work I believe they will pay for it.

7. Eventually any combine must get out to our Government's ears. The same sympathy and help could not be extended to us when that moment arrives. They would rightly tell us, 'We cannot help a combine of European interests'.

'To sum up, if this had been a suggested combine of steel, linen or anything of that sort which had no connection with any Government, I would have gone for it. In armaments we deal entirely with Governments and so it behoves us to be wary of taking any step that might antagonise them, or in spite of temporary advantage, lead eventually to loss of trade.

'St Savour stressed over and over again the extreme necessity of secrecy concerning this deal over Turkey. I do not think for one moment that secrecy is possible, and so it is well to think over now what the attitude of the various governments will be when they hear of it, and particularly what effect it will have on our present excellent arrangements with the Foreign Office, Admiralty and War Office, and our reputation as straight and open dealers.
I have already spoken to the Turks about their financial conditions and tried to get them to alter them. This I know to be impossible and I do not think we can return to the charge in a combine.

I recommend that we should settle the Fatih case either in kind or in cash, as it is a claim we cannot resist, and that we should steel our hearts and stand on our own and take our chances over Turkey, and not accept the help of an inferior position to Schneider or anybody else. If Schneider want to come to terms with us later on we shall be in a better position to talk.

I consider it extremely unlikely that we shall get less than 40% of the orders in any case, and we want the work badly.

If we want to do anything with Bofors, I suggest that if it was thought necessary we take shares in it, provided that we are satisfied as to their financial stability.

If we join this combine and it comes to Turkish knowledge, it might have a very serious effect on future naval orders, and come to Turkish knowledge eventually it certainly will.

After all, this combine does not represent everybody. Terni, for example, may reap great benefit if the fact that there was a combine got abroad. Beardmore's must not be lost sight of, and it is well to remember that the Turks have all the drawings of the combine which they can send elsewhere.

I am quite clear in my own mind that we shall not get more than 40% if we go into this combine, and I doubt very much if we shall get that. 1

Accordingly, the London Executive Committee resolved on 15 November that Birch be told to decline the proposed arms pool with Schneider and Bofors. Before drawing conclusions from this episode, we should trace the subsequent development of this contract. Birch reached Angora in December 1928, and after discussions, 'came to the conclusion that it was not advisable to put in our lowest prices, in spite of the fact that our manufacturing expenses are great. Some allowance had to be made for the Turks' traditional love of bargaining'.

The Turkish General Staff had already decided that they would only consider artillery equipment with air pressure recoil and Bofors were relegated to a class beneath Vickers and Schneider in the technical investigations. The following prices (in U.S. million dollars) were handed in on 20 December for the mountain artillery contract:

<table>
<thead>
<tr>
<th></th>
<th>with air recuperators</th>
<th>with spring recuperators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nethmy</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>Schneider</td>
<td>4.65</td>
<td></td>
</tr>
<tr>
<td>Vickers</td>
<td>4.23</td>
<td>4.178</td>
</tr>
<tr>
<td>Bofors</td>
<td>3.757</td>
<td>4.2</td>
</tr>
<tr>
<td>Skoda</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Birch found Bofors' very low quotation 'disquieting'; other information made it doubly so. Ivar Kreuger (1880-1932), managing director (1908-13) and chairman (from 1930) of Kreuger & Toll, and managing director of the Swedish Match Company had offered a loan to the Turks in a package with the low Bofors tender—this loan carrying a stipulation regarding Swedish Match's monopoly in Turkey. Kreuger's man stayed in the same Angoran hotel as the Bofors entourage. Then Bofors reduced their offer at the request of the Turkish government, by another $150,000 U.S., and secured the contract. Birch wrote,

The fact that Bofors had again lowered their price was common knowledge in Angora on the evening of 25th December, the reason given (and this reason seemed to emanate from Government sources) was that Bofors was about to go into liquidation and that their Government or a Government had come to the rescue and subsidised the firm. This explanation seems poor as there was no reason why the successful competitor should drop another $150,000 U.S.A without some quid per quo. Can it have been a rearrangement of a loan?

1. See the remarkable obituary of Kreuger in The Economist, 19 March 1932: 'a man of great constructive intelligence and wide vision...A man of rare organising ability and gifted with a phenomenal memory...the financier of Governments...complementary to and comparable with...the Finance Committee of the League of Nations'.
Bofors took over all Krupps' designs after the Great War so that the idea of a German subsidy cannot be ruled out. Bofors' local agent is a German Jew.

It is of course quite impossible to contemplate a profit at the price quoted, which is about £90,000 below our minimum. Schneider's director, M. Dumaine, expressed a violent opinion as to the impossibility of this. 1

Kreuger, a fraudulent speculator who shot himself in 1932 when his world-wide operations were disintegrating, was involved in the funding of other armament contracts: in 1927 Bolivia received a private loan of £400,000 negotiated with Swedish Match, with the match monopoly of Bolivia as security, and this was used to pay Vickers part of the £1,870,000 due on a contract signed in October 1926. 2

The seven points of Birch's memorandum quoted above speak for themselves. The hub of the matter is contained in the underlined passages, which are a classic refutation of the conspiracy theories of the merchants-of-death genre. As Zaharoff wrote after reading The Secret International in 1932, '25% of the facts and 75% of the conclusions are incorrect, yet many of its allusions are correct'. 3

Whilst the radicals like Woodman identified correctly the shape of the problems confronting armourers, and often had access to relevant information, the lessons drawn are frequently trivial or untrue. They were correct in grasping that the rings were a vital device in coping with the peaks and troughs of armament orders, but they drew the wrong conclusions by treating the 'special relationship' involved as between plutocrats fixing high prices to charge the Government; whereas the 'special relationship', with all its interesting implications, was actually between the Government and the few firms which it had chosen to cultivate as suppliers.

1. Birch, memorandum on Turkish order, 28 December 1928. V. microfilm R.341.
2. Caillard to Lawrence, 27 February 1927. V. microfilm R.318.
Or again, the *Secret International* quotes a remark of the Chairman of Vickers addressing an Extraordinary General Meeting called in 1927 to consider the merger of Vickers and Armstrong.

Vickers and Armstrong depend very largely on armament orders to occupy their works on a profit-earning basis, but since the war, such orders have been insufficient to keep the plant of the two companies fully occupied, or to yield a satisfactory return to the shareholders. ¹

The authors of *Secret International* treat this as if it is a damning admission: members of the share-holding class own armament works which they want to keep on a profit-earning basis, and indeed, to achieve this, they are combining two great armament firms together. The reality of this remark is rather different. Two leading industrial firms have for ten years had insufficient work to keep their plant fully occupied, and have got into such difficulties in their attempts to find profitable new lines of work, that one of them is almost insolvent, and is being merged into the other in an atmosphere of crisis. Rather than great personal wealth being created by the sale of arms, two companies with capacity vital for national defence have been wasting away—one of them passing its dividend for three successive years. When in 1926 Commander Burney (who had close business ties with Vickers) interrupted a tirade in the Commons from Hugh Dalton about 'the intrigues, the corruption and the bribery of the armament firms', to observe that losses had recently forced Vickers to write off £12 millions of capital, Dalton's reply was to sneer that this 'only shows' Vickers had not secured Burney's services early enough.² Dalton's shallow irresponsibility is representative.

2. *House of Commons*, 11 March 1926. H.C. Deb. vol 192, col 2734. Dalton was one of the earliest Labour leaders to perceive the need to re-arm against Germany in 1933.
Another favorite radical trick is to list the commercial links of Vickers, and the other directorships held by members of the Vickers board, as if they were mysteriously sinister. Their true significance was that Vickers made great effort in 1919-21 to push into civilian manufacturing lines, and to reduce the proportionate importance of armaments within the group. The crucial insight to be got from Vickers' relations with other great companies in, say, structural engineering, rail stock, or boilers, with which they would collaborate in war-time supply, is not that there was a class of heavy industrialists who looked readily to war for increase of dividends: it is that the industrial mobilization of 1914-8 created a great number of industrialists with first-hand experience of war production, all of whom understood perfectly well (as did most officers who served at that time) that the concept of an armament group like Vickers was already obsolete by 1918, and that in the next war, the whole manufacturing capacity of the country would be an armaments grouping.

It is now more than forty years since the Royal Commission substantially accepted the defence of private armourers put by Hankey and Vickers themselves, and fifteen years since Wiltz dissected the cant of the Senate Munitions enquiry. This chapter is no different from their brunt, and may well have the same fate. Misrepresentation by the purblind like Thayer, who wrote in 1969 that Lawrence, Craven and the rest of Vickers declined 'any cooperation or assistance to the committees', and that the investigations 'unearthed an enormous number of unsavoury practices: bribery, collusive bidding, profiteering, the violation of arms embargoes, illegal financial transactions, the production of shoddy equipment and...sales to the enemy' has a life of its own.

CHAPTER THREE

The family firm of Vickers was among the leaders of the Sheffield steel industry by 1850, although it began its concerted assault on the armament market only in 1888. In the next quarter century technical leadership was provided by Colonel Tom Vickers (1833-1915), Chairman of Vickers 1873-1909, whilst commercial verve was provided by his brother Albert Vickers (1838-1919), Chairman 1909-18. Together they assembled an extraordinarily eclectic board of financial and scientific experts, merchant princes and retired officers. One gauge of their value is the amount of Commission paid by Vickers to its directors in 1914-15: £88,285.¹

The Board was distinguished by its capacity to meet pressures upon the firm, not with the all-too-familiar policies of retrenchment, but with consistently bold strokes of innovation or diversification and, equally important, a consistent emphasis upon technical leadership of the market, whether it was civilian or military.²

Market restraints were fought with product diversification and technical specialism and during their heyday of 1888-1914, 'the firm's reaction to external crisis or internal strain was...respond aggressively; select related high technology markets; innovate in process; diversify in product'.³ After 1897 this 'Cabinet of Talents', as Trebilcock calls them, turned their firm into the world's greatest armoury. If the arms race until 1914 was not 'the greatest transaction in the annals of commerce',⁴ then the war of 1914-18 certainly was; and Vickers was at the forefront.

1. The Times, 28 April 1915.
2. Vickers Brothers, 27.
<table>
<thead>
<tr>
<th>Year</th>
<th>Profits after deduction of tax £</th>
<th>Preference dividend £</th>
<th>Ordinary dividend £</th>
<th>Ordinary dividend %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1912</td>
<td>872,033</td>
<td>70,625</td>
<td>370,000</td>
<td>10</td>
</tr>
<tr>
<td>1913</td>
<td>911,996</td>
<td>70,625</td>
<td>555,000</td>
<td>12½</td>
</tr>
<tr>
<td>1914</td>
<td>1,019,035</td>
<td>69,219</td>
<td>693,750</td>
<td>12½</td>
</tr>
<tr>
<td>1915</td>
<td>1,099,678</td>
<td>65,055</td>
<td>693,750</td>
<td>12½</td>
</tr>
<tr>
<td>1916</td>
<td></td>
<td>58,217</td>
<td>693,750</td>
<td>12½</td>
</tr>
<tr>
<td>1917</td>
<td>4,493,726</td>
<td>56,250</td>
<td>723,982</td>
<td>12½</td>
</tr>
<tr>
<td>1918</td>
<td></td>
<td>53,484</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1919</td>
<td></td>
<td>395,247</td>
<td>1,292,431</td>
<td>11⅓</td>
</tr>
<tr>
<td>1920</td>
<td>541,260</td>
<td>395,985</td>
<td>nil</td>
<td></td>
</tr>
<tr>
<td>1921</td>
<td>708,103</td>
<td>395,707</td>
<td>431,042</td>
<td>5 less tax</td>
</tr>
<tr>
<td>1922</td>
<td>683,205</td>
<td>398,465</td>
<td>453,826</td>
<td>5 less tax</td>
</tr>
<tr>
<td>1923</td>
<td>499,555</td>
<td>400,827</td>
<td>nil</td>
<td></td>
</tr>
<tr>
<td>1924</td>
<td>403,224</td>
<td>401,315</td>
<td>nil</td>
<td></td>
</tr>
<tr>
<td>1925</td>
<td>420,973</td>
<td>402,698</td>
<td>nil</td>
<td></td>
</tr>
<tr>
<td>1926</td>
<td>562,283</td>
<td>418,190</td>
<td>nil</td>
<td></td>
</tr>
<tr>
<td>1927</td>
<td>992,985</td>
<td>418,190</td>
<td>262,730</td>
<td>8 less tax</td>
</tr>
<tr>
<td>1928</td>
<td>939,902</td>
<td>418,190</td>
<td>262,730</td>
<td>8 less tax</td>
</tr>
<tr>
<td>1929</td>
<td>941,971</td>
<td>418,190</td>
<td>262,731</td>
<td>8 less tax</td>
</tr>
<tr>
<td>1930</td>
<td>775,926</td>
<td>418,190</td>
<td>254,520</td>
<td>5 less tax</td>
</tr>
<tr>
<td>1931</td>
<td>574,493</td>
<td>418,190</td>
<td>153,944</td>
<td>4 less tax</td>
</tr>
<tr>
<td>1932</td>
<td>529,038</td>
<td>418,190</td>
<td>123,155</td>
<td>6 less tax</td>
</tr>
<tr>
<td>1933</td>
<td>552,864</td>
<td>418,190</td>
<td>190,890</td>
<td>8 less tax</td>
</tr>
<tr>
<td>1934</td>
<td>626,260</td>
<td>418,190</td>
<td>254,520</td>
<td>10 less tax</td>
</tr>
<tr>
<td>1935</td>
<td>941,494</td>
<td>418,190</td>
<td>469,528</td>
<td></td>
</tr>
<tr>
<td>1936</td>
<td>1,176,534</td>
<td>418,190</td>
<td>461,831</td>
<td></td>
</tr>
</tbody>
</table>

Source: J. D. Scott Vickers, 390-1
Graph 1 to show Vickers' Ordinary share values 1919-30
in shillings

The upper line represents the top share price in each month; the lower line the bottom.

Source: calculated from The Times
Graph 2 to show Vickers' Ordinary share values 1932-6 in shillings.

Source: Calculated from The Times
Though they might be faulted for not trying to predict future growth beyond the medium term, the Vickers board conspicuously beat those of its competitors: the Armstrong directorate was divided in factions and dominated by a capricious and jealous autocrat; both Cammell Laird and Coventry Ordnance fell foul of the Government, who halted orders until the boards were changed; whilst Birmingham Small Arms or Hotchkiss Ordnance had weak or elderly directors.¹

Although Albert Vickers was succeeded as Chairman in 1918 by Tom's son, Douglas Vickers (1861-1937), the Cabinet of Talents survived in tact to meet the post-war world. If it 'functioned as a general council and not as a hierarchy of individualists',² the board nevertheless had some of the failings attributed to the early leaders of the American motor-car industry by Alfred Sloan, the President of General Motors.

They were of a generation of what I might call personal types of industrialists; that is, they injected their personalities, their 'genius', so to speak, as a subjective factor into their operations without the discipline of management by method and objective facts.³

Whilst this style answered the needs of pre-war conditions adequately, its capacities were over-taxed by the very different exigencies of the post-1918 world. Vickers had then to cope with two entirely distinct transitions in the identity of the Company. This double challenge was so beyond what any organisation could meet, that it would have been surprising if the direction of Vickers had not stumbled in this period.

1. See the case of Admiral Sir Windham Hornby, chairman of Hotchkiss, who dropped dead at their annual general meeting in 1899 whilst explaining the dismissal of their managing director. He was aged 87 years.
2. Vickers Brothers, 90.
3. Sloan, My Years with General Motors 4. Sloan was President for 12 years and Chairman for 19 years of General Motors.
The first difficulties were specific to Vickers' position as an armourer in a period when the functions of specialist firms in industrial mobilization were being phased out. The other difficulties originated in an uneasy transition of managerial responsibilities from Sloan's personalised, subjective industrialists to more orthodox, salaried employees.

One transition was a question of market strategy. With their experience of the armaments downswing which had followed the Boer War, Vickers and the other armourers had no doubt as to their bad peace-time prospects. These were only hardened by the indications from McKinnon Wood and others that in future emergencies the whole of national industry would constitute armaments capacity. Vickers' search for alternative growth areas, conducted against the background of hectic war-time activity, led to electro-technology and railway engineering. As described later, personal elements paid a major part in this strategy, and it mis-carried. By 1927-9 the targets of the group were re-defined: the vertical combination in electro-technology and railway engineering was dismantled, and in conjunction with their long-standing competitor, Cammell Laird, Vickers led rationalisation in the steel industry. The magnitude of the task of converting to civilian lines an organisation geared almost wholly to munitions work is such that the transitional period of more than a decade was not excessive.

From market strategy we turn to managerial transition. In common with other industrial units of its size and generation, in 1918 Vickers was on the verge of turning from an entrepreneurial firm, in which its top administration was dominated by its owners, to a managerial firm, in which senior (as well as middle) management was undertaken by full-time salaried executives.1

The development of Vickers follows the pattern of 'the managerial revolution in American business' described by A.D. Chandler. His account of the methods of the founding entrepreneurs of American big business applies to Vickers in its heyday.

Where family members were no longer the chief executive or in other top management positions, close associates who had been personally selected by the family usually occupied these posts. The owner-managers prided themselves on their knowledge of a business they had done so much to build. They continued to be absorbed in the details of day-to-day operations. They personally reviewed the departmental reports and the statistical data. They had little or no staff to collect information... impressive, even brilliant business strategists...their moves were personal responses to new needs and opportunities. They did not plan systematically for the continuing growth...They rarely adopted formal capital appropriation procedures, rarely asked for budgets. In the more routine expansion of existing operations... they responded to ad hoc requests of middle managers.¹

Though by the middle of the Edwardian period, outside experts recruited by Tom and Albert Vickers out-numbered the family on the Board, management practices conformed to Chandler's model. If the Cabinet of the Talents was distinctive in its commercial success, it was also a hybrid of considerable originality in the evolution of business organisation. (It is notable that Cabinet-members had a comparatively small stake in the share capital of the Company: see Tables 11 and 12). More modern managerial methods superceded the old entrepreneurial style in America through the agency of mergers, and similarly, the Vickers Cabinet declined in power after the group had merged with sizeable interests in electro-technology and rolling-stock. The owners of the constituent companies of the mergers (especially Birmingham business interests led by a man called Docker), together with associated financiers, including purchasers of the new Vickers shares issued to fund re-organisation of the enlarged group, alike diminished the influence of the old Cabinet members.²

1. The Visible Hand, 414.
2. The Visible Hand, 415-6.
Table 11 to compare ownership of capital in ten selected major companies, 1929.

<table>
<thead>
<tr>
<th>Company</th>
<th>Column 2 total of shareholders</th>
<th>Column 3 number of shareholders each owning 10,000 or more</th>
<th>Column 4 % of total capital held by shareholders in column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial Tobacco</td>
<td>77,200</td>
<td>233</td>
<td>43.0</td>
</tr>
<tr>
<td>Courtaulds</td>
<td>28,200</td>
<td>57</td>
<td>26.2</td>
</tr>
<tr>
<td>Anglo Persian Oil</td>
<td>17,100</td>
<td>4</td>
<td>13.1</td>
</tr>
<tr>
<td>Brunner Mond</td>
<td>26,200</td>
<td>66</td>
<td>31.4</td>
</tr>
<tr>
<td>Vickers</td>
<td>46,400</td>
<td>30</td>
<td>4.8</td>
</tr>
<tr>
<td>Dunlop Rubber</td>
<td>51,600</td>
<td>162</td>
<td>20.3</td>
</tr>
<tr>
<td>Cunard</td>
<td>14,000</td>
<td>39</td>
<td>30.4</td>
</tr>
<tr>
<td>General Electric</td>
<td>10,100</td>
<td>11</td>
<td>10.3</td>
</tr>
<tr>
<td>Ebbw Vale Steel</td>
<td>7,800</td>
<td>15</td>
<td>29.8</td>
</tr>
<tr>
<td>Marconi's Wireless</td>
<td>24,600</td>
<td>7</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Source: The Economist, 30 March 1929.
Table 12 to illustrate percentage of Vickers family and directors' shareholdings in Vickers Ltd., 1898-1931.

<table>
<thead>
<tr>
<th></th>
<th>1898</th>
<th>1900</th>
<th>1901</th>
<th>1905(2)</th>
<th>1913</th>
<th>1920(3)</th>
<th>1926</th>
<th>1931</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ORDINARY SHARES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family holding</td>
<td>20.73</td>
<td>24.26</td>
<td>13.05</td>
<td>5.85</td>
<td>9.55</td>
<td>4.63</td>
<td>3.88</td>
<td>10.43</td>
</tr>
<tr>
<td>Family and management</td>
<td>21.65</td>
<td>25.83</td>
<td>15.17</td>
<td>15.65</td>
<td>10.74</td>
<td>6.38</td>
<td>4.23</td>
<td>12.07</td>
</tr>
<tr>
<td><strong>5% PREF. STOCK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family holding</td>
<td>23.68</td>
<td>19.0</td>
<td>18.97</td>
<td>12.13</td>
<td>-</td>
<td>9.96</td>
<td>8.79</td>
<td>-</td>
</tr>
<tr>
<td>Family &amp; management</td>
<td>23.74</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8.87</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>5% PREF. SHARES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family holding</td>
<td>-(1)</td>
<td>3.70</td>
<td>3.16</td>
<td>-</td>
<td>-</td>
<td>2.25</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Family &amp; management</td>
<td>-</td>
<td>3.77</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2.28</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>CUM. PREF. SHARES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family holding</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2.37</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Family &amp; management</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.72</td>
<td>3.28</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes:
1. Indicates either observation not available or zero holding, whichever is more likely from trend.
2. Untypical result for 1905, is due to temporary transfer of shares to Sir William Beardmore.
3. In May 1920, Vickers' share register showed 53,250 members registered, of whom about one-third were women. Of these holdings, fully 50,724 were of 500 shares or less. There were 115 holdings of 10,001 shares or more. *Vickers News*, 1 May 1920.

Source: books of Registrar of Companies, now deposited by Department of Trade & Industry at Hayes, Middlesex.
Vickers' history has deviations from the American experience, originating with the lag of British practice some years behind their trans-Atlantic counterparts. The outbreak of world war, unexpected by Vickers, delayed their great transitionary mergers until 1918-20; and as mentioned before, they were made in such disturbed conditions that their benefits were small. Chiefly because Vickers were gripped by a severe cash crisis, and because their owner-managers were stouter at resisting managerial evolution than the Americans, the consolidation of merged facilities did not begin until after a crisis in 1925. Thereafter Vickers largely conformed to Chandler's theory of firms, adopting closer accounting and statistical controls, more methodical long-term allocations of capital and personnel and a very deliberate search for quality in centralised management. All these developments occurred against the background of the Vickers group's return to steel as its mainstay. The chapter that follows is not a chronological history of the group during 1918-36, but gives a detailed account of Vickers' performance in surmounting this period of strategic and managerial transition.

What of the Cabinet which had to confront these problems? For our purpose, the most important was Sir Vincent Caillard (1856-1930), the Finance Director. Son of a judge and educated at Eton, scion of a family of French émigrés but related to Disraeli through the first Jew to practice at the British Bar, he had been commissioned in the Royal Engineers in 1875. After intelligence work for the War Office, a spell on the Montenegrin Frontier Commission and involvement in the Berlin Congress of 1880, he was appointed President of the Administrative Council of the Ottoman Public Debt in 1883.

Knighted in 1896 when only forty, he left Turkey in 1898 to join the Board of Vickers, and was Financial Director 1906-27. There were few parts of the firm in which his influence was not felt, and every important internal or external paper was marked 'Copy for Sir V.C.' An energetic supporter of Joseph Chamberlain's proposed tariff reforms, he was President of the Federation of British Industry in 1919. In private life he married his own stepsister, wrote a musical setting to Blake's Songs of Innocence and became a director of the Sir Thomas Beecham Opera Company. Austen Chamberlain wrote of him: 'He is one of those who does not know what is possible, fixes his heart on the impossible and then gives way to melancholy when he finds he cannot realise it'.

If, by 1914, systems of lending money for armaments to weak powers had 'been developed to the highest pitch of refinement by Creusot', Caillard had scarcely less ingenuity in international finance than the French, as he demonstrated in the Turkish negotiations of 1913-14. After 1918, however, the reflexes of an imperialist financier were inapposite to Vickers' needs: domestic conservatism and detailed slogging at accountancy were called for. Much of the nominal responsibility for Vickers' post-war reverses lies with Caillard. Whether anybody could have done better is arguable, but the fact is that Vickers' accounting system, in the words of Sir James Reid-Young (1889-1971), the chartered accountant who was Chairman of Vickers-Armstrong 1952-5, 'just went completely west during the war'. The Internal Audit Department did no accounts 1914-20, and although at the end of 1920, when Reid Young was 'pitchforked' into the job of Chief Accountant, Vickers House had an accounting staff of between 150 and 200, no accounts emerged until well into 1921.

2. The Economist, 25 July 1914.
Reid Young found no previous balances to work on, and his first action before starting to prepare accounts for 1919-20, was to sack half the accounting staff at Vickers House. In his own words, 'It was a dreadful mess and...financially they did not know where on earth they were'. The effects were profound: Vickers did not know what debts to collect, their diversification programme of 1919-20 had to be executed after the scantiest research of financial background, costing controls of new product lines were awry and by 1920 the firm was at least £8,000,000 short in investment needs. The responsibility for this confusion was Caillard's, and certainly it was aggravated by the owner-manager methods of the board: but the problem was one which required super-human powers. If the Ministry of Munitions temporarily lost some £39,000,000 in 1915-17 through confusion of records, and when its Finance Department had an average daily inflow of more than 1,300 files, minutes, memoranda and letters, the nightmare of the problem which defeated Caillard can be appreciated.

The other chief executive of Vickers was Sir Trevor Dawson (1866-1931), managing director of Vickers from 1906 until his sudden death. Son of a barrister, he was educated at the Royal Academy, Gosport, the Royal Navy Colleges at Greenwich and Portsmouth and the Royal Artillery College at Woolwich. He was an artillery experimenter at Woolwich 1892-6, after which he left the Navy to become Vickers' Superintendent of Ordnance.

1. Sir James Reid Young, text of interview with J. D. Scott 26 May 1959. Vickers file 61. In July 1921 the 'great dissatisfaction' among Vickers shareholders at the non-appearance of their accounts was the subject of a parliamentary question. H. C. Deb. vol 144 col 1310.
After joining their Board, he went to pains to familiarise himself with every aspect of their business, and mastered information about the daily running of each department. According to Douglas Vickers 'few people could have stood more than a few hours of his normal life', and Caillard called him 'without dispute one of the finest artillerists in the world'. He had a knack for encouraging the best in his subordinates, who sometimes responded with great personal devotion to him, and was on the best terms with the Service departments. An indefatigable traveller, on one occasion before 1914 he helped the Admiralty collect evidence about the German naval programme by skating round the Kiel dockyards, and seeing the ships under construction; other foreign trips in our period included an audience with the King of Spain in 1922, a tour of South East Europe in 1928, visits to Chile and Peru in 1929 and he was in Argentina and Portugal a few months before his death.

Another member of the Cabinet was Sir Francis Barker (1865-1922; knighted 1917), a member of an important Constantinople banking family. Originially an agent of the Parsons Turbine Foreign Patents Company, he married the daughter of Vickers' agent in Turkey (originally named Wir, later refined to de Vere), and became a director of Vickers in 1909.

1. Arms & Explosives, December 1909.
His running of the company's 'foreign ministry' was such that by 1912 a director of their competitor, Armstrong's, wrote 'everywhere we see Vickers ahead of us, whether at home or abroad, as far as push goes'. A fencing and highly subjective man, like quicksilver in negotiations, after 1914 he frequently deputised for Caillard in financial dealings, and during a critical moment of the rolling-stock merger of 1919, when Caillard was away on a rest cure, Barker was responsible for Vickers' high financial policy. By this time he was harassed and overworked. According to one account, Barker was now 'somewhat strange and not quite normal...often he was forgetting entirely what he said...even a few minutes ago...[and] changing a theme of conversation from business to any irrelevant thing'. In the summer of 1921 he became seriously ill, and after several operations, died at Cannes in January 1922.

Another member of the Cabinet appointed to the board in 1909, who deteriorated under the strain of war production demands, was Sir James McKechnie (1852-1931; knighted 1918). The fiery ship-builder in charge of the Barrow yards was Dawson's inferior as a technologist, and by 1918, had become a temperamental problem drinker. After a crisis at Barrow (recounted below) in 1923, he was replaced by a young protégé of Dawson. In 1913 the Vickers board had been augmented by William Clark (1854-1937), in charge of the Sheffield steelworks 1911-25, and in the same year, Herbert J. Morriss (18-1933), became a Special Director, gaining full board status in 1919. Morriss had joined Nordenfeld as a shorthand writer in 1886, and after that company had been absorbed by Vickers, worked his way up as a conscientious company servant.

A brusque man, 'he was a good employee but a poor director, as he did not rise to the situation'. In December 1921 illness brought his resignation from active managerial duties, but he did not retire as a director until 1926. Another Vickers official who joined their board shortly after the War, and left in 1926, was Colonel Walter C. Symon (1874-1949); an elegant and much decorated artilleryman who had joined Vickers in 1912. Seconded to the Ministry of Munitions during the war, after 1918 he was their 'bagman' in east European armament markets and managing director of two of their most unsuccessful post-war subsidiaries, Robert Boby machine-tools and Ioco Rubber.

Reference must also be made to Sir Basil Zaharoff (c.1850-1936; knighted 1918) who remains, with the Shavian character of Andrew Undershaft, the most famous arms salesman of all time. With the instincts of a bazaar trader, Zaharoff began selling arms for Nordenfeld in 1877, and is credited with selling the world's first submarines to Greece and Turkey. A mountebank with elaborate manners, although never a director of Vickers, his counsel was very influential until 1918, and his salesmanship as its zenith was greater than Barker's. On the other hand, he had remarkably slight technical understanding, and so little appreciated the nature of the post-war armaments recession (in which technological renewal and superiority of new types were essential for Vickers to hold their markets), that he recommended 'Vickers to stop their terrible expenditure in their various Drawing Offices' by shutting them,


2. See Richard Lewinsohn, The Man Behind the Scenes; the career of Zaharoff the Mystery Man of Europe. London 1929. Robert Neumann, Zaharoff the Armaments King. London 1935. Donald McCormick, Pedlar of Death. London 1965. I doubt the authenticity of correspondence attributed to Caillard and quoted by McCormick; and altogether, these sources should be used with caution.
conserving cash in preference to R & D. 1 His position has been grossly misunderstood by those who have taken him at his own valuation. 2 Certainly Zaharoff's great days with Vickers were over. In 1905 they disbursed to him £86,000. 3 His statement of expenses for 1919 came to £4,182. 4 In the same year his salary was fixed at £5,000 per annum, plus 0.75% of Vickers' profits, and by agreements over 1924-7, his remuneration was tied to the value of orders received by Vickers from Spain. 5 By 1918 he was settled in France, with his bodily powers beginning to fail, and tinkering with interests in the oil industry. 6 In October 1922 he visited Bucarest for Vickers, and put the finishing touches to a deal whereby Vickers became involved in the Roumanian industrial combine, Resita. 7 In 1925 Caillard described him to Austen Chamberlain, then Foreign Secretary, as 'our General Representative for business abroad', 8 but in 1926 the death of his wife made him dangerously ill, gout restricted his travelling, and he became 'very deaf'. 9

2. See the teasing references by Lord Inchcape, of the P & O. Line, in Vickers News, August 1931. vol 8, 48. Cf diary of Lord d'Abernon, British Ambassador to Berlin, 19 December 1923 (Quoted d'Abernon, Ambassador of Peace, London 3 vols 1929-31). This is of particular interest because d'Abernon was a predecessor of Caillard as President of the Ottoman Public Debt, and had employed Barker as his confidential secretary at Constantinople in the 1890s.
3. J.D. Scott, Vickers, 80.
6. The Times, 28 October 1920, reports his involvement with Anglo-Persian Oil to develop oil supplies to France.
7. See FO 371/13695 and F.O. 371/7698.
Though in 1925-6 he was in contact with the real eminence grise in Vickers' history, Dudley Docker, and the latter's confederate, Webster Jenkinson, who restructured the company, his subsequent interventions were limited. In 1927 the new Chairman of Vickers turned to Zaharoff to obtain the resignation of Caillard; in 1928 (as described in Chapter 2) he was consulted when Bofors and Schneider proposed a world armaments pool. But the old man who habitually told friends never to believe a report of his death until they heard it confirmed from his lips,¹ was an increasing embarrassment. The recent writer who called Zaharoff 'more English than the English', 'a brilliant...figure who had the power—which he never hesitated to use—to bring down governments, to promote arms races, to make or break kings...to start wars...a friend and confidant...of Hitler² is laughable.² Zaharoff undoubtedly greased the wheels which made the deals for Edwardian armourers, but one should not be duped by the farrago of nonsense written about him since 1918. It is a trivial way to understand the armament business.

After Albert Vickers' death in 1919, two members of the family remained on the Board. The less important was Vincent Cartwright Vickers (1879-1939), Albert's only surviving son, who joined the Board in November 1909. He was also a director of the Bank of England 1910-19 resigning 'solely because my health broke down',³ but never carrying much weight.⁴ He subsequently waged private campaigns against the Gold Standard, 'the International Oil Ring' by whose machinations Britain was 'imperilled', and against the City of London for believing 'Financiers, no matter what their

2. George Thayer, The War Business, 27. Thayer, in his foreword, acknowledges help from, inter alia, Senators Fulbright and Robert Kennedy and research material provided by The Sun newspaper of London.
nationality, must be first protected'. Of his time with the family firm he wrote

Vickers Limited, and, as the Bank of England knows only too well, Armstrong Whitworth & Company, and their respective shareholders, were half-ruined by the war of 1914-18 and its natural repurcussions. Those who regard Vickers-Armstrong as war profiteers either possess superficial intellects, or have no knowledge of the proven facts; and I, who write, have suffered, and I know.

He had little importance at any time within the Company, and although re-elected to the board after its reconstruction in May 1926, resigned on 26 June 1926.

In an altogether different class was his cousin, Douglas, the second son of Tom. He went straight from Marlborough into the Sheffield works aged seventeen, and became Manager there in 1887. Appointed a director in 1889, managing director of Sheffield in 1893, he was Chairman of Vickers 1918-26, honorifically President of Vickers 1926-7, and continued as an active director until his death in 1937. He sat on the Vickers Board for 48 years, worked in the company for 59, and his commitment is unquestionable. According to Zaharoff, 'Mr Douglas Vickers, although not producing a pleasant effect on first sight, is really sound, besides which he is a really first-class engineer, and an acknowledged authority on steel, and... the name of Vickers is worth something'.

3. At the time of his resignation he was holding a one-man exhibition in a Bond Street art gallery. This comprised dream pictures in the style of Persian illuminated manuscripts, depicting what he called Ha-Ha birds: the Gogo, Gadwot, Poggle, Whatnot, Lesser Noxkit and Soft-Nosed Wollop. Reviewed in The Times 24 June 1926. In this regard Vincent Vickers resembled Charles R. Cammell (1890- ), grandson of the founder of the firm later called Cammell Laird. C.R. Cammell eschewed business for satirical poetry, and was Vice-President of the Geneva branch of the Anti-Vivisection League 1927-31.
He enjoyed overseeing Vickers' Continental interests, and in the
decade after 1926, was the most active director in watching the
group's holdings in Italy and the Balkans. His personal reserve
was even more marked than his father's. He did not express
himself easily, and was probably the most silent member of the
Parliament of 1918-22. With few intimates in commercial life,
whatever his other qualities, he was not a leader of men. His wife
was a deep influence on him: she inherited a large castle in north
Scotland in 1917, which they extensively restored in the baronial
style in 1922, and to which they increasingly withdrew.

A fourth generation of the family entered the firm. George
Westlake Vickers (1884-?), the only son of Tom's eldest son,
James Vickers (b. 1856), was a manager at the Sheffield steelworks
until at least the 'thirties, and owned a substantial number of Vickers
shares until the late 'twenties. Of Tom's other sons, Edgar (b. 1863)
lived at Naples as an artist and Ronald (1869-1942) ran a preparatory
school in Surrey. Ronald's elder son, Anthony R. Vickers (1901-70),
also trained at the Sheffield works, before spending a year in the
office of the Japanese agents and representing Vickers in Canada.

1. Although Douglas Vickers' name appears regularly in the division
list, Hansard records no speech or oral question by him through­
out his four years in Parliament. His name does not appear among
those of the Conservative and Unionist M.P.s who attended the
meeting of 19 October 1922 at the Carlton Club which voted to kill
Lloyd George's Coalition Government. See Robert Rhodes James,

2. Mrs Douglas Vickers' brother Godfrey Chetwynd (1863-1936) was
a director of Vickers from 1904 until succeeding as 8th Viscount
Chetwynd in 1911. His highly independent behaviour as war-time
Director of the National Filling Factory at Chilwell, Nottinghamshire
was successful; but similar methods led to his dismissal in 1929
when Chairman-designate of Imperial Airways. On Chilwell being
'a monument to his genius', see History of Ministry of Munitions,
vol 3, pt 3, 84-5; vol 8, pt 1, 67; vol 8, pt 2, 160-61.
Cf Robin Higham, British Imperial Air Routes 1918-39. London
1960.
He left the family firm in the thirties, and later entered hydraulic engineering. Among Douglas' sons, Sholto Vickers (1902-39) was on the Montreal staff of Canadian Vickers in 1924-5 and worked at the Weybridge factory in 1926, but did not persevere with business. Of all this generation, the most promising was Douglas' eldest son, Oliver Vickers (1898-1928). In 1915 he was one of a group of Etonians on shift work at a Slough munitions factory. He left Eton at the age of seventeen to learn flying, and joined the R.F.C. on his eighteenth birthday. In June 1917 he was sent to France, where he proved a daring and skilful pilot, having accounted for eleven machines between June 6 and August 17, on the last day he and his observer...flew single-handed twelve miles over the German lines after a squadron of eleven machines, believed to be Richthofen's, accounting for five of the enemy machines, before managing to reach our lines with undercarriage shot away and the machine riddled with over 200 bullets. A few days later Captain Vickers was sent home to rest.

In 1919 he joined Vickers' Aviation Department, and was one of only three men who kept their jobs when that department was dismantled in 1920. In 1925 he became Special Director of Vickers for aviation, responsible for liaison with the R.A.F. and Martlesham Heath test centre particularly, and in 1926 he joined the reconstructed Armaments and Shipbuilding Board (see below, p 150). Although personally popular, he was even more exceptionally silent than his father, and his impact in management was limited by this. But for his sudden death of pneumonia, it is likely that he would have followed his father onto the main Vickers board.

1. The Times, 8 July 1915.

Outside our period, it may be noted that Vincent's only surviving son, Leonard H. Vickers, was apprenticed as an engineer pupil at Crayford in 1940, and after demobilization in 1946, returned to Crayford to complete his training.
Other relations of the Cabinet members joined the firm, with variable success. Caillard's son was a failure in the subsidiary, Wolseley Motors, and his brother Maurice was little more than decorative as Vickers' Paris agent. Barker's son, Vere, was responsible for setting up (1921) the troublesome Madrid Bus Company, which considerably damaged Vickers' name in Spain. Dawson's son, later Sir Hugh Trevor Dawson (1893-1976), joined Vickers from the Navy in 1919, and was appointed in 1922 to control their plywood interests. He left in 1930. Lady Dawson's brother, Percy Grant (1867-1936), after living for many years at Buenos Aires, joined Vickers in 1917 as London representative of the Sheffield Works. He was subsequently Special Director in charge of Commercial Sales (1921), Joint General Manager of the London Office 1922-6, and in 1928 took control of the train lighting department. But the greatest contribution of this sort came via Trevor Dawson's two daughters, who married brothers named Micklem: a third brother, Commander Robert Micklem (1891-1952; knighted 1946), left the Royal Navy to enter Vickers in 1919. He joined the board of Vickers-Armstrong in 1936, was managing director of the engineering works and shipyards from 1944 and Chairman of Vickers-Armstrong 1946-52.

A word should be added about the managerial organisation beneath board level. Vickers had instituted a system of Special Directors: managers with specialised expertise or responsibilities, available for consultation by the main board. Some Special Directors sat on sub-committees appointed by the main board; others did not. They included representatives of London central management; officials from the Sheffield works, such as J.H. Leslie (1858-1943) of the gun department, J.L. Bentall (1868-1947) the armour plate specialist, G.W. Vickers or David Anderson (1880-1955); or management from Barrow, such as John and George Barr.
Many of Vickers' subsidiaries were highly autonomous, and the degree of control exercised centrally from Vickers House, in London, was limited by inconsistent data-flow from the different works. With hindsight it seems that the group was too unsystematically organised for full consolidation of its facilities, and relied over much on the ability of top management to absorb information about the various sections of the group. Such methods, of course, had worked adequately in the recent past, and seemed likely to maximise flexibility and to encourage initiative. If the practice of Vickers' more advanced German and American competitors was more exact, they were not behind contemporary British practice.

The forgoing picture of the Vickers owner-managers shows a group of men who had conducted brilliant business in the past, but who had deteriorated physically or mentally under the production demands of the Great War. At a moment when their reflexes were tired, and their statistical controls never weaker, they had to reconvert to civilian markets and radicalise management procedures. Few of their heirs showed business aptitude: the new impetus had to be external.

The nexus of Vickers' post-war development was Dudley Docker (1862-1944), often called 'D.D.' Having started the Midlands varnish business of Docker Brothers in 1881, he became Chairman of Metropolitan, Carriage Wagon and Finance Company after it absorbed his family firm in 1907. About 45 per cent of the railway wagons running in Britain circa 1914 were privately owned, and manufacturers of rolling-stock would provide finance (often along hire-purchase lines) to mine-owners and others who wished to own private rolling-stock.

1. The Times, 1 May 1907.
M. C. W. F. was a leading firm of the sector, and Docker was strongly identified with its success. A long-serving Director of the Midland Bank, he was the founding President of the Federation of British Industry in 1916. Other Midlands engineering firms with which he was connected include B.S.A.: he was a director 1906-12 (and deputy chairman after their merger with Daimler in 1910), until replaced by Neville Chamberlain. His position in Birmingham business was such that in April 1915, when a Munitions committee was formed by Birmingham employers and unionists, Docker was selected to chair the Executive which organised the district. 1 Later in the war M.C.W.F. took over Taylor Brothers, manufacturers of tyres and axles in Leeds and Manchester, and competitors of M.C.W.F.'s subsidiary Patent Axleshaft Company. Docker was one of the leading businessmen of 'push and go' who got war experience of industrial mobilization. M.C.W.F.'s capacity was utilised for war work to the extent that it produced 80 per cent. of British tanks until 1918 (Docker was a founding Vice President of the Tank Association), and at one stage it was intended to turn their Birmingham works into a national Ordnance factory. M.C.W.F. had a partnership with B.S.A. for the manufacture of certain munitions, 2 and Docker was one of the industrialists (including Inchcape of P. & O., and Hichens of Cammell Laird) who sat on the Advisory Council, appointed in 1919 with Lord Salisbury as Chairman, on the liquidation of the Ministry of Munitions.

During the War Docker also found time to interest himself in electro-technology. This capital-intensive industry resembled the

funding of private wagons in its call upon Docker's ingenuity as a financier.¹ His attention centred on the British Westinghouse Company, a firm which one commentator noted 'has never achieved success adequate to the amount of capital sunk in it'. In 1914-18, when other electrical firms were making handsome profits from war-work, British Westinghouse wrote off £366,000 depreciation against profits earned, whilst its net additions to plant and fixed assets in the same period were £102,000—a deficit of £264,000.² After Docker had failed to interest the General Electric Company in buying British Westinghouse, he turned to Vickers. War production had transformed British manufacturers' view of electric power. 'For all efficient factories motive power means electricity', according to one contemporary;³ and Vickers welcomed an opportunity to enter this new growth area.⁴ In contrast to Vickers' other activities, electric power supply was one of the extremely few forms of industrial organisation promoted by the Government during war-time whose value did not diminish with the return of peace;⁵ and their contract of 1915 to supply turbo alternators to Philadelphia Power Station had shown their capacity to adapt their old skills to a new technology.⁶ In the summer of 1917 the British Westinghouse board set up a committee to study the possibility of collaboration with Vickers, and when it reported in October, Caillard and Barker were present at the British Westinghouse board meeting.⁷

1. Chandler notes that electrical manufacturers were the first American industrialists not connected with railways who had to go to the capital market for funds to build their initial enterprise. Visible Hand, 426.
2. The Statist, 17 May 1919, 904.
4. Vickers' conditions for participating with Docker in the Westinghouse and other electrical undertakings are contained in Caillard to MCWF, letter 23 February 1918. V. microfilm R.187.
6. The Times, 22 March 1915.
Barker joined British Westinghouse's board in 1918, and a new company, Electric Holdings, was formed to buy American Westinghouse's controlling interest in British Westinghouse for £1,200,000. The Docker-Vickers group did not pay for this in cash, but in the form of £1,151,602 in 5% Prior Lien debentures redeemable within ten years. Rather than putting up money immediately, they brought the American holding in instalments which were met annually out of the British firm's profits. The company was to be re-named Vickers Electrical, but at the shareholders' meeting in August 1918, the name of Metropolitan-Vickers was agreed instead.¹

Metrovic, as the firm was usually known, had an authorised and issued capital of £1,395,000 in the form of 750,000 Ordinary shares of £1 each and 610,000 Preference shares of £2 each. Electric Holdings controlled 50.6% of Metrovic shares, inclusive of the former American parent holding, but not the 75% majority. To obtain this, the Docker-Vickers group devised a scheme whereby they subscribed 110,000 new Preference shares at £2 and 500,000 deferred one shilling shares. The latter constituted a new class of capital and bore one vote per deferred share each, just like the £1 Ordinary and £2 Preference shares. This device gave the Docker-Vickers interests control of 76% of Metrovic's voting stock, and was manoeuvred through a Metrovic shareholders' meeting on the understanding that M.C.W.F. would supply debentures of £750,000. These debentures were never issued, although in the summer of 1919, the Docker-Vickers interests issued another £1,000,000 Ordinary shares in Metrovic.

¹ Correspondence relating to the Metrovic amalgamation, on which the following passage relies, is in V. microfilm R.273. The original directors of Electric Holdings comprised Barker of Vickers, and three representatives of Dudley Docker: his brother Ludford Docker (1860-1940), H. Walker and Sir E. Hiley. See V. microfilm R.195. Copies of the original Westinghouse agreements are in V. microfilm R.241.
of which they subscribed £900,000 and £100,000 was offered to Metrovic employees. At the same time, to the anger of the public who held Preference shares, the Preference dividend coupon was reduced from 15% to 8%, with Preference shareholders receiving an option to convert into Ordinary shares over a two-year period. The Preference dividend was made cumulative. Of the new capital raised in this latest sharp move, £700,000 was immediately loaned back to Vickers and M.C.W.F., and £300,000 lent to M.C.W.F.'s subsidiary, Taylor Brothers. The total capitalisation of Metrovic in 1919 was now £5,326,445 as compared with £1,395,000 in 1918.

Vickers at this time stated that their policy was for Metrovic to repeat 'the amazing growth of the Allgemeine Electricitats Gesellschaft' in Germany, 'an organisation possessing the strongest financial resources and widest ramifications'. Docker, too, claimed similar convictions.

But the establishment of Metrovic was only an initial stage of Docker's plans. Throughout 1918 he was in negotiation with Vickers about their purchase of M.C.W.F. At one stage these broke down, because Docker thought the relative values of the respective companies' shares could not be arrived at through auditors' examination of books, which was the method then proposed, because:
1. The value of land, buildings, plant etc. as shown in the respective companies' accounts was shown on very different systems,
2. War conditions were practically no guide.
3. Pre-war conditions would not serve as a useful guide for what might be the prospects of a big Company mainly engaged in pre-war times on the production of war material.

A particular trouble was that in the combined M.C.W.F. balance sheet, land, buildings and plant were shown at £1,690,000. But this figure was their value in 1902, all additions since having been written off to revenue; Docker argued that the figure was much too low. When discussions were resumed, it was suggested that instead of auditors' examination of books, the future earning power of M.C.W.F. should be calculated from the war-time Excess Profit Duty's standards of profit. The E.P.D. Standard of M.C.W.F. was £744,000, and this figure was used to value their works at £3,720,000. Caillard finally accepted the following figures as representing M.C.W.F.'s asset value:

<table>
<thead>
<tr>
<th></th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>fixed assets</td>
<td>3,720,000</td>
</tr>
<tr>
<td>investments</td>
<td>3,400,000</td>
</tr>
<tr>
<td>debtors</td>
<td>1,300,000</td>
</tr>
<tr>
<td>creditors</td>
<td>1,000,000</td>
</tr>
<tr>
<td>stock (approx. pre-war value)</td>
<td>1,700,000</td>
</tr>
<tr>
<td>cash</td>
<td>2,100,000</td>
</tr>
<tr>
<td></td>
<td>11,220,000</td>
</tr>
</tbody>
</table>

As to the fixed assets guessed to be worth about £3\(\frac{3}{4}\) million, Caillard wrote,

The machinery is perhaps not the last word in up-to-date types, but the methods... are thoroughly efficient, and what impresses one in a visit is the... vim which prevails throughout.

This vague optimism was supported by the report of the auditor sent by Caillard to investigate M.C.W.F.:

I was not able to verify the figures in any books, as they are not yet of course written up-to-date. I criticised their figures in every way I could, but they assured me they were satisfied as to their approximate correctness, and that their knowledge of the results of this year's trading supported the larger increases shown. I have no reason to doubt their statements. 1

---

M.C.W.F. had increased its capacity during the War by fully fifty per cent., and in recommending Vickers to buy the Company, this point was seized by Caillard. He wrote, all too sanguinely,

by working day and night shifts, the post-war output will be double the pre-war. In calculating the post-war revenue an increase of 75% will be assumed instead of 100%, in order to be on the safe side. This increased output will be achieved with scarcely any increase in overhead charges, as the increase of staff entailed would be negligible: thus the additional profit would be on a higher percentage on output than previously. There is no trouble whatever in securing orders, especially seeing the very large demands for rolling-stock, due to the cessation of production in all parts of the world during the war, for the next few years; and the very large and increasing demand for the products of Docker Brothers Ltd: the M.C.W.F., we are told, literally commands the market.

... The most attractive sides of the combination for Vickers Ltd lie in the acquisition at a reasonable price of a great Standard Peace Industry, and the very considerable accretion of financial strength. Vickers Ltd is a great armament firm laid out before and during the war almost entirely for the production of materials of war. Even if Peace Industries had already been found on a sufficient scale to fill the Works which could be entirely detached from armament work—which is far from being the case—it would still take at least a year to get them into full swing, while no inconsiderable portion of the works must, at any rate for some time, be kept available for the production of war material, and this portion, until orders to occupy it come forward—a period impossible to forecast—will form a somewhat heavy unproductive charge on the Company's resources. The Metropolitan Company is in exactly the reverse position... The financial advantage is so great that it need not be dwelt upon, 1

Caillard's memorandum, though showing how much Vickers' Cabinet had come to regret their near total commitment to the armament trade, certainly commits a solecism in expecting a 75-100% growth in revenue from railway technology; and in their eagerness to believe all this, the Vickers board went beyond the £11.2 million which Caillard calculated M.C.W.F. was worth.

Under the terms of the fusion, which took effect from March 1919, for each Ordinary share of £1 in M.C.W.F., shareholders were offered either 95 shillings cash, or $\frac{1}{2}$ Ordinary shares of £1 each and two new Preference shares of £1 each in Vickers. For each 'A' Preference share (worth £1 each and paying 5%) M.C.W.F. shareholders were offered either twenty shillings cash or one new Vickers Preference share of £1 each. For each M.C.W.F. 'B' Preference share (worth £1 and paying 6%), Vickers offered either 22½ shillings cash, or 1$\frac{1}{8}$ new Vickers Preference shares. In order to fund this purchase, Vickers raised their capitalisation to £26,500,000, issuing (with Treasury approval) some £5,100,000 Ordinary shares and 7,000,000 Cumulative Preference Shares.

This merger is a classic piece of over-capitalisation. It is doubtless significant that in March 1919, just after taking the further burden of the presidency of the Federation of British Industries (founded by Docker), Caillard became 'seriously ill', and underwent a long rest-cure. Barker, himself visibly exhausted, deputised for him. But indeed, the whole Board's judgement was at error. As the Statist commented in 1925, Vickers bought the Ordinary shares of M.C.W.F. 'at a premium of about 400 per cent.', and issued new capital amounting to £12,100,000 to pay for a company worth perhaps one-quarter that amount. (See Tables 13 & 14).

Vickers were not peculiarly reckless by the standards of 1919. One historian has described the capital market and merger booms of 1919-20 as being in a condition of 'meridian frenzy': the authorized capital of Lord Leverhulme's combine, Lever Brothers, mounted from £40,000,000 to £100,000,000 in 1919 alone, and in 1920, they signed an agreement to buy for more than £8,000,000 a company whose accounts they had not investigated at all.

2. The Statist 12 December 1925.
This subsidiary then transpired to be under immediate obligation to repay an overdraft of £2,000,000 to its bankers. In another 'very queer story', B.S.A. acquired control of the highly-reputed Aircraft Manufacturing Company (Airco) in 1920, only to find itself confronted with unexpected claims amounting to at least £1,340,141. The end of this extraordinary bubble very nearly bankrupted B.S.A. completely.

There is no doubt whose influence pervaded the M.C.W.F. merger. Colonel Terence Maxwell (1905- ), Director of Vickers 1934-75, has described how the deal meant that Docker personally received a vast sum of money in preference shares which were almost as good as cash to him. Docker's personal profit from the deal must have been enormous...Docker was a man of great force of character...with cosmopolitan interests and with a position in the Midland Bank which enabled him to raise millions of money at very short notice. He also had about him a number of men that he backed and brought into high finance, and these men moved in advance of the main army, softening up the enemy positions...Douglas Vickers and the Board of Vickers had been dazzled by Docker's ability, high-level salesmanship, vision and reputation into paying more for the shares than they should have done...This rather ill-prepared dash into unfamiliar territory was the basis of all the troubles.

2. The Economist, 6 November 1920.
3. See also The Economist, 7 January 1922. Dudley Docker's comments on B.S.A. are quoted in idem, 22 April 1922.
4. Col. A.T. Maxwell to J.D. Scott, interview 14 May 1959. Vickers file 269. One of the directors of M.C.W.F. whom Docker had backed and taken into high finance was Sir Philip Lloyd-Greame (after 1924, Cunliffe-Lister; 1884-1972; Lord Swinton 1935), appointed President of the Board of Trade in 1922, and later Secretary for Air 1935-8. Another director, Sir Edward Goulding M.P. (1862-1936; Lord Wargrave 1922) was the Chairman of Rolls-Royce of whom The Times wrote 'no back-bencher in the House of Commons had greater influence' (obituary notice, 18 July 1936). Another instance of Docker's political and commercial connection occurred in 1914 when Unionist Central Office arranged for the Globe newspaper to be acquired by Business Newspapers Ltd., a syndicate led by Dudley Docker. Under an intriguing arrangement, the young Max Aitken (later Lord Beaverbrook) paid Docker's group £10,000 to keep the Globe going for six months. See David G. Boyce, James Curran & Pauline Wingate, eds., Newspaper History. London & Beverley Hills 1978, 28. See also A.J.P. Taylor, Beaverbrook. London 1972, 79.
Table 13 to illustrate share capitalisation of M. C. W. F., 1917-20.

<table>
<thead>
<tr>
<th>Year (at 31st March)</th>
<th>Ordinary Authorized £</th>
<th>Ordinary Issued £</th>
<th>A Preference Authorized £</th>
<th>A Preference Issued £</th>
<th>B Preference Authorized £</th>
<th>B Preference Issued £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1917</td>
<td>2,000,000</td>
<td>1,424,712</td>
<td>400,000</td>
<td>248,132</td>
<td>275,000</td>
<td>235,000</td>
</tr>
<tr>
<td>1918</td>
<td>3,000,000</td>
<td>3,000,000</td>
<td>400,000</td>
<td>248,132</td>
<td>275,000</td>
<td>235,000</td>
</tr>
<tr>
<td>1919</td>
<td>10,000,000</td>
<td>3,000,000</td>
<td>400,000</td>
<td>248,132</td>
<td>275,000</td>
<td>235,000</td>
</tr>
<tr>
<td>1920</td>
<td>10,000,000</td>
<td>3,175,000</td>
<td>400,000</td>
<td>248,132</td>
<td>275,000</td>
<td>235,000</td>
</tr>
</tbody>
</table>

Source: Vickers papers.

Table 14 to show dividends paid by Metropolitan-Vickers 1920-8.

<table>
<thead>
<tr>
<th>Year</th>
<th>Dividend per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920</td>
<td>12</td>
</tr>
<tr>
<td>1921</td>
<td>12</td>
</tr>
<tr>
<td>1922</td>
<td>12½</td>
</tr>
<tr>
<td>1923</td>
<td>8</td>
</tr>
<tr>
<td>1924</td>
<td>8</td>
</tr>
<tr>
<td>1925</td>
<td>8</td>
</tr>
<tr>
<td>1926</td>
<td>8</td>
</tr>
<tr>
<td>1927</td>
<td>6</td>
</tr>
<tr>
<td>1928</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Vickers papers.
Docker joined the Vickers board in May 1919, together with three associates; and for the next decade Vickers cannot properly be understood except in the context of his wish to steer the group through a ramp of directors allied to him. Originally he sought to impose his views by direct personal influence over Douglas Vickers, but he was circumvented by several of the old Cabinet, notably Caillard and Barker, and resigned from the Board in 1920. His nominee directors kept him in close touch with Vickers policy, and his interventions remained decisive. In 1924 he represented Vickers in discussions with leaders of the motor-car industry about the merging of Vickers' subsidiary, Wolseley Motors, with the Austin and Morris Companies. In 1925 he was the central force in the reconstruction of Vickers: its board and capitalisation were drastically re-organised, and its structure was subsequently reformed by his protégé, Webster Jenkinson, who succeeded Caillard in 1927. He was also intimately concerned with Vickers' retreat from electro-technology and railway engineering, helping to divest the group in 1928 of the interests which he had persuaded them to buy, at such high cost, only ten years before. His conduct in 1928-9, however, proved less than frank, and he was not subsequently welcome in the inner councils of the Company.

Although it is impossible to calculate the exact amount, Docker owned through nominees a large investment in Vickers. He also nominated several directors, and had allies among senior management. Three supporters followed him onto the Vickers board in 1919.

Edward Hickman (1860-1941) was a Wolverhampton businessman and director of M.C.W.F. Sir Ernest Hiley (1868-1949; knighted 1918) was Town Clerk of Birmingham 1908-16, until becoming Deputy Director General of National Service, to which post he was called by Neville Chamberlain, the Director General, who had worked with him on Birmingham City Council.

Hiley was Unionist M.P. for a Birmingham constituency 1922-3, and was always associated with the interests of the Docker financial group. The third director was Lincoln Chandler, managing director of Metropolitan Carriage until December 1921. When Docker resigned with Hickman from the Vickers board in 1920, he asked that Hiley should succeed him on relevant board sub-committees. Another key member of the Docker ramp was Sir Edmund Wyldbole-Smith (1877-1938; knighted 1916), a director from June 1921 until May 1928. A devout Roman Catholic with courtly manners and scion of an old Dorset family, his career began in the consular service at Tangiers. He was Director of the International Commission for the Purchase of Supplies for the Allies, British representative of the Inter-Allied Commission on Belgian Reconstruction (1917) and leader of trade missions to Poland and Serbia in 1919. He left the civil service in 1919 to join the M.C.W.F. board, and was later director of the Pullman Car Company, the International Sleeping Car Company, Guardian Assurance, and the Suez Canal Company, and Chairman of Thomas Cook's, the travel firm. D.D.'s only son, Bernard Docker (1896-1978; knighted 1939) sat on the Vickers board for several years, until May 1928, but did not seem an important figure in his own right. He was at this time Chairman of the Birmingham Carriage & Wagon Works, and as described in Chapter four, was later instated by his father as Chairman of B. S. A. Other members of the Docker ramp on the Vickers board were Henry Walker, a director of Docker Brothers; and Alexander Spencer (1860/1-1936), a director of M.C.W.F. and railway engineer, who joined the Vickers board in August 1920, vice Docker. George Taylor

3. Docker was actively interested in the Pullman and International Sleeping Car companies, and indirectly concerned in the others. Wyldbole-Smith apparently owed all these directorships to Docker.
(1876-1965) and his brother T.L. Taylor (1878-1960), whose tyre and axle business had been absorbed by M.C.W.F. as mentioned before, also later served on the Vickers board. Indeed, George Taylor was the first deputy-chairman of Vickers-Armstrong, serving until December 1929; becoming in 1929 first head of the new combine which took over Vickers' steel interests, the English Steel Corporation. Also identifiable with the Docker ramp was General Sir Philip Nash (1875-1936; knighted 1918), Chairman of Metrovic 1922-33, and a Special Director of Vickers, whose career as a railway engineer had culminated with his appointment as Director General of Transportation to the B.E.F. in France, 1917.

It is important to have a clear sense of the division between the old owner-managers of Vickers, men of colour and verve, and the less individualistic body of the Docker ramp. The owner-managers had what might be called the tycoon mentality: they believed that if only their Board fought hard enough, always reacting boldly and decisively, promoting with more flair and pushing with more force, then sooner or later, they would surmount the obstacles which beat their competitors. As one very experienced observer wrote in 1919,

Two outstanding characteristics of the Vickers system of business stand out clear...The one is the systematic creation or acquisition of departments until every article manufactured is in one hands from the raw material to the finished condition. The other is the fearless exploration of untested lines of commerce and the cheerful acceptance of defeat should the eventuality happen to arise. 1

This had been a recipe for success during the heyday of Tom and Albert Vickers, but in the severity of post-war conditions, neither 'fearless exploration' nor 'cheerful acceptance of defeat' were appropriate. Money was too dear, and markets too disturbed.

1. Arms & Explosives, 1 August 1919.
The quick impulses of the owner-managers, once such an advantage, were now positively dangerous; and the story of Vickers in the 'twenties is of the descent on the Company of golfing Scottish accountants and administrators, such as Reid Young, Sim, Ballantine, Jamieson, Neilson, or Maclean.

One particular characteristic of the owner-managers' expansion policy should be identified. Vickers' proudest boast since 1897, when they had bought the Maxim-Nordenfeld ordnance company and the naval yards at Barrow, had been that 'the union of these three powerful undertakings' created a combine which was 'capable of creating from raw materials without aid from any outside source, such a complicated product as the present-day battleship, with all its munitions'.¹ This was first achieved with the battleship Vengeance, allocated to Barrow in 1897 as the first warship to be built there by Vickers, which on its completion in 1901 was the first ship of the Royal Navy ever built, engined, armoured and supplied with big guns by a single firm.² A measure of the technological virtuosity required is given by the Admiralty statement in 1936 'that the firms engaged in the different processes working up to the production of a warship would exceed one thousand spread all over the country'.³

After 1918, when they tried to break into electro-technology, Vickers repeated the formula which had been so successful with warships, acquiring subsidiary lines so that they had the capacity to create, from raw material to finished product, without help from outside the Vickers group, a complete and finished electric power

2. J.D. Scott, Vickers, 47.
station, such as they built at Portishead, near Bristol. According to Douglas Vickers in 1919, 'the changes brought about by the war' had created

the necessity of doing business on a scale hitherto not reached by British manufacturers, but left to German and American competitors... in the past British manufacturers had been handicapped by making in too small units...the great American steel trust before the war had an output of steel greater than all the English firms combined. The two German electrical firms, their American rivals, and the American Machine Tool Works were all on a stupendous scale and commanded reserves unapproached in this country...organisations such as these had been able to initiate and follow a well-defined and continuous policy impossible of attainment by a large number of firms working individually, even if the total output was the same...the proposals...were...for...a combination of various allied industries, each supplementary to the other, using each other's products, and forming a complete organisation capable of handling within itself practically all the elements necessary...The Sheffield...parent works would feed the others producing the finished article.²

In 1919, Vickers therefore absorbed the machine manufacturers, Robert Boby & Co., whose products included pneumatic plant for power stations and equipment for all classes of mills. Boby were intended to supply other parts of the Vickers combine in the same way that Sheffield fed steel, but instead, Boby were in constant financial difficulties, and heavily drained Vickers. Attempts to sell Boby in 1926-7, and again in 1935, led to the conclusion that they had become 'not a very saleable proposition'.³

After launching this ambitious programme of diversification, Vickers found they lacked finance power. Issued capital went up by £12 million in 1919, and £1 ½ million in 1920, but their cash needs in April 1920 were at least £8 million short.

1. The head agreement between Vickers and City of Bristol Corporation was dated 1 July 1927, and provided for a complete generating station at Portishead. Vickers' tender price was £605,522. The provisional price for building work was £128,700. This and subsidiary agreements of 1926-7 are in Vickers papers box of agreements BRA-BRI.
Caillard approached the Midland Bank for a loan—without, incidentally, telling Docker although he was a director of the Bank as well as Vickers. McKenna, the Bank's Chairman, reportedly replied that 'owing to present financial conditions—however sympathetic to Vickers' interests they might be', none of the banks 'could provide the money required for a fixed term...it was not a question of willingness but of impossibility. He recommended the realisation of investments and the issue, if possible, of debentures'. But the shortlist of realisable investments, prepared by Caillard, had book value of £382,486: the main body of investments were only marketable to special buyers, none of whom were in purchasing mood.

Rothschild's suggested to Vickers that £4,050,000 fresh cash could be raised by the New York finance house of Kuhn, Loeb purchasing some $20,000,000 of 7% or 7 1/2% Notes to be issued in the U.S.A., and convertible into Vickers Ordinary shares after July 1921 at 32/2d per share. Under this arrangement the Americans could take advantage of the exchange rate, and the probability of this righting itself in 1921-2. 'Seeing the extremely disturbed state of the industrial market, and the fact that...it will be impossible for a considerable time to come to issue industrial securities on the British market to any advantage', Caillard recommended that this scheme be pursued, although it would cost £450,000 per annum to service the notes. In the event, taxation complications prevented the implementation of this scheme, which is certainly fortunate for Vickers. If Americans had taken up $20 million of Notes, and started to convert them into Ordinary shares on British stock markets in the summer of 1921, it is almost certain that the 5% dividend paid for 1921 and 1922 would have been passed instead, making a non-payment of dividend for five years until 1926.

This would have reduced Vickers' share price to rock-bottom, and these difficulties would have been compounded by Americans wanting to convert their 7% Notes into Ordinary shares, but finding the latter were almost worthless. This conjunction would have crowded the capital reconstruction of 1925, bringing jeopardies which it is doubtful Vickers would have survived.

Another scheme of Caillard's was to transform the Electric Holdings Company set up after the Westinghouse merger, into a general industrial holding company by pooling the good, income-bearing investments of the Vickers group in Electric Holdings. In payment for these investments, Vickers were to receive Ordinary shares in Electric Holdings; whilst Electric Holdings would issue Debentures worth about £4,765,000, secured on the pooled investments. This would have provided £700,000 per annum, and would have required annual servicing of £380,000; and it was decided that this financial juggling was insufficient to meet the need of £8,000,000. In the event, Vickers authorised in 1920 some £4,000,000 7% seven-year Notes, of which £1,500,000 were issued.

Whilst part of the cash crisis which sabotaged Vickers' peacetime diversification originated with the over-capitalisation surrounding M.C.W.F., Vickers were bound to meet this trouble. The ambition to imitate German and American industrial trusts, 'a combination of various allied industries, each supplementary to the other', was only possible, as Douglas Vickers unwittingly said, if his firm 'commanded reserves unapproached in this country'.

2. Such short-term industrial notes enjoyed a vogue during 1920. Similar issues that year included £2.5 million 6½% twelve year notes from B.S.A., £3 million 8% seven year notes from Explosive Trades Ltd. (as Nobel Industries was temporarily known), £1 million 8% seven year notes from Beardmore, £1½ million 8% six year notes from Ebbw Vale Steel and £300,000 10% five year notes from English Electric (ex-Coventry Ordnance). See analysis in The Economist, 1 January 1921.
Such ambitions required the foundation of financial backing such as the German cartels received from the Great Banks,¹ and Vickers' failure illustrated the desperate truth of the conclusion reached in 1931 by the Macmillan Committee on Trade and Industry: 'we stand in need as never before of a definite national policy in our financial dispositions'. That Committee, of which Keynes was the animating force, warned that British industry might become 'stranded in a backwater', for want of financiers with intimate industrial understanding.² The orthodox explanation of Vickers' failures 1918-26 has been, as Jenkinson warned in 1922, that 'combinations or trusts can only be successful if confined to one trade or class of trade, that is to say one type of production or its subsidiaries';³ but that is only part of the story. Vickers' strategy also mis-carried because British institutional mechanisms were neither sufficiently powerful to get private savings into industrial investment, nor minded to provide the necessary financial power to create a great industrial combine. This analysis seems to have been in Dudley Docker's mind when he launched the Federation of British Industry and spoke of creating a national business policy. Douglas Vickers spoke to his shareholders in similar terms,⁴ and the problem was the constant companion of the Vickers directorate.

When Webster Jenkinson (by then Finance Director of Vickers) appeared before the Macmillan Committee in 1930, he advocated the formation of a financial trust with its capital invested in gilt-edged securities—if not to usurp the banks, at least to provide

5. See report of his speech to annual general meeting of Vickers in The Times, 20 July 1922.
capital for industry, and to furnish financiers with 'some active interest' in industrial management.

A company requiring further capital would then approach the Trust, and instead of the amount being actually advanced by the Trust, arrangements would be made for the loan to be granted by the Company's bankers, the Trust putting up some portion of its securities as collateral.

The banks in advancing the money would know that they were covered against loss, and as each concern was put on its feet, additional capital would be raised from the public in the form of shares or debentures as it is not the function of banks to provide the fixed capital required for the conduct of industry.

He also advocated the formation of Industrial Banks to encourage the rationalization of industry. As he said (and he must have been thinking of Vickers and the steel industry), the main problems of rationalization were

finding the necessary cash capital for the provision of the new plant required, and...dealing with bank overdrafts and debenture charges of the companies brought into the combine.

According to Jenkinson,

If the joint stock banks would agree to pool their existing loans so that the closing down of any one firm did not result in a loss at the expense of one bank to the benefit of other banks; if such loans were taken over by the 'Industrial Bank' at an assessed value in exchange for bonds; if the debentures of the constituent companies were similarly acquired on a valuation basis in exchange for bonds...then...all capital requirements would be dealt with through the 'Industrial Bank' which necessarily would have its representatives on the boards of the companies.

Both of Jenkinson's ideas represent the developments in industrial finance which would have eased the Vickers way of business. The facilities of a Financial Trust might have bridged over some of the difficult adjustments required of Vickers in 1918-20, just as the Bankers Industrial Development Company eventually helped to rationalise the steel industry.

Jenkinson's ideal institutional mechanisms should be remembered throughout what follows: if they had existed, the history of Vickers would have been very different.

Though Vickers might be vitiated by the institutional weaknesses of Britain, other troubles were of their own making. After Metrovic's formation, Vickers interested themselves in the Swiss electro-technical industry—the only one on the Continent which had resisted German domination. They took interests in two Genevan firms, Secheron and Picard-Pictet, and then approached the leading Swiss firm, Brown-Boveri. Not only were Brown-Boveri electrifying the Swiss railways, but they owned subsidiaries in France, Italy, Norway, Germany and Austria. Barker went to Switzerland, and in the autumn of 1919, when Brown-Boveri increased its capitalisation from 36 to 48 million francs, Vickers took 7 million new shares, thus obtaining the single biggest holding worth about £380,000. A loan was sought from a Swiss bank to carry out the purchase, and this caused Docker to complain.

The terms demanded by the Swiss bank were not such as a firm of the standing of Vickers should entertain for a moment, involving as they did the payment of a minimum of 6% interest, plus a commission of 4% quarterly, the issue of bills which might be put on circulation, a guarantee by Vickers and the deposit of security in the City of London. Such terms would have effectually prevented the raising of money in London at a reasonable rate and would not have been entertained at all if all negotiations with banks were left to one person who could form a judgement as to the effect that one operation would have on another.

This again indicates that Barker had lost his lucky touch although less onerous terms were eventually agreed.

1. Vickers' holding in Secheron was written down almost to nothing in 1923. See Memorandum on Electric Holdings of 22 February 1927 in V. microfilm R322.
2. At the board meeting of 26 September 1919, it was agreed that the Swiss Bankverein lent Vickers the necessary money at 1% above the Swiss bank rate.
Nevertheless Docker launched a general assault on the owner-managers' conduct of business. Referring to the mushrooming of subsidiaries in sundry trades, he complained to the Board:

> there is an impression among the general public that Vickers are inclined 'to take up anything'. Whether or not this idea is correct is immaterial; there is no question that the public hold this view, and discuss it, especially in the City of London. The very suggestion that a Company is pursuing 'a hit or miss policy' is damaging to credit.

> During the last six months I have noticed that proposals are brought up to the Board which have been imperfectly examined, and in several instances I fancy negotiations have proceeded a certain distance before the matter has been mentioned to the Board at all. In my judgement all schemes should be first examined by one person, then investigated by the Chairman before being submitted to...the Board.

He complained of general lack of co-ordination, mentioning his embarrassment at having 'to plead complete ignorance' to McKenna after Caillard has asked the Midland Bank for a loan; the antagonism of the Vickers Sales Department to representatives of newly allied companies, especially Metrovic; and ill-informed interference by Vickers House in the sales and manufacturing of the wagon business.

He ended:

> Some check must be made on the indiscriminate flotation of companies bearing Vickers' name. The constant announcement in the paper of a new Vickers company or the issue of a prospectus to which the public are invited to subscribe bearing the names of directors of Vickers or members of Vickers' staff causes comment in the City and has a bad effect on the public mind...I do not understand who authorises these companies...I regard it as fundamental that a complete and detailed financial statement should be prepared immediately setting out the assets and liabilities of Vickers Ltd and the associated and subsidiary companies.1

Docker's criticisms of Vickers are identical to those levelled by Sloane against the owner-managers of General Motors: rapid expansion after 1918 without an explicit management policy to control the different subsidiaries; rapid diversification so that owner-managers lacked adequate knowledge or control of individual operating divisions; and a highly confused product line. 1

A few months later, Docker determined to leave the Vickers board. The circumstances are telling. When the board met on 25 March 1920 to discuss the dividend to be declared for 1919, he proposed 10 per cent. That figure had been paid, free of tax, throughout 1908-12, and compared well with $12\frac{1}{2}$ per cent paid during 1913-18. With one dissentient, the Board agreed to his proposal. But only four days later, at a Board meeting on 29 March, at which neither Docker nor Hickman were present, the Board reversed this decision, and announced a dividend of $11\frac{1}{2}$ per cent, tax-free. Docker wrote to the Chairman that this episode was most unsatisfactory, for it has defeated the object which we all had in view, namely, to fix the dividend at a sum which could be maintained steadily year by year. The impression now created is that the Board have been unable to maintain the $12\frac{1}{2}$% and have strained to get as near to it as possible... The idea of an inauguration of a new conservative policy is not conveyed, while the same dislocation has been created on the share market as would have ensued if there had been a definite drop to 10%... it will be impossible to drop the dividend again next year without creating a bad impression as to the profit-earning capacity of the company—indeed the conservative policy which...we all accepted has been pushed on one side. 2

The shareholders' meeting on 22 April confirmed, inter alia, the $11\frac{1}{2}$ per cent dividend and Docker's election as a director, but two days later, he wrote to Douglas Vickers resigning his seat on the Board.

1. Sloane, _My Years with General Motors_, 26-7, 42.
Nevertheless, the number of the Docker ramp on the board remained four, and Docker's holdings in the group presumably remained large. The situation was primed for conflict between his nominees and the Edwardian armourers, the owner-managers whose responses had been shaped whilst 'The greatest development of private armaments manufacture took place in the long period of peace before the outbreak of war in 1914'. The characteristics expected of Barker or Caillard are suggested by Churchill's remark of 1915: 'At the beginning of this war megalomania was the only form of sanity'. Vickers were then admired for their 'fearless innovation' and 'cheerful acceptance of defeat'. But in 1918, the armament business faced a decade and a half of recession, and the touch of the Vickers' Cabinet was a jot less sure: praise of their fearlessness turned to complaint that they would 'take up anything'; instead of 'cheerful acceptance of defeat', their policy was called 'hit or miss'. What had been a reasonable business risk before 1914 was, after 1918, less reasonable; and the chief reason for this was the over-capitalisation of the Vickers group after the Docker mergers. Docker, although an acute judge of Vickers' internal weaknesses, helped to create the context which made them so perilous.

It is hard to define an over-capitalised company. A new Company, either freshly floated or created by the merger of existing businesses, might earn such higher profits after its formation as to pay dividends which justified its capital structure. Alternately, a Company which is reasonably capitalised in relation to assets may be accused of over-capitalisation after several bad years' trading.

The point to be emphasised is that over-capitalisation is not something quite definite, recognisable at any time, to which it is possible to attach a label, and...[find] a culprit...as over-capitalisation results from normal changes in value or in profits it is inherent in business and cannot be avoided.

1. Hankey in Minutes of Evidence, 721.
The results of over-capitalisation, according to one classic account, 'show themselves first on the minds and policy of the men who run the business', who

have not freedom in making new departures, in taking risks, in undertaking business which will absorb further working capital...[and] have not the confident self-reliance which success brings.

Managers cannot mitigate the effects of a temporary falling-off in demand by such expedients as making for stock or over-hauling plant; they cannot afford to try under-cutting to stimulate demand; they cannot afford to spread overhead costs over a larger output; and

it is not the least evil result of over-capitalisation that it tends to diminish the building up of reserves and so reduces the power of the Company to expand its business.1

This is just what happened to Vickers. In 1920 the amount required by Vickers to pay Debenture interest, Preference dividend, Ordinary dividend at 10 per cent., and to cover Corporation Tax, without provision for reserves, was £2,521,000.2 Reeling under the weight of such charges, the Vickers group failed to break into new and hostile markets.

Thus Douglas Vickers had to describe the year 1919-20 as

one of extreme difficulty, due to changes in trade, shortage of materials, reduction in working hours and repeated increases in wages. For a long time, customers held off, thinking that prices would go down...there was an almost universal restless spirit.

In 1922 he lamented

If we did not know that trade must recover in the end, and that every month brings us nearer to that revival, we should say that any recovery is as far off as ever.4

1. Idem, 180.
Space limitations preclude a comprehensive survey of the group's operations in this period. The three which will be discussed typify different aspects of their growth: the Barrow naval yards were a central strut of the company; Wolseley Motors had pioneered a new technology; whilst Beardmore's acquisition was one of the proudest moments of Albert Vickers' pre-war industrial diplomacy.

To take Barrow first, its position was always difficult. d'Eyncourt, successively D.N.C. and director of Armstrong's shipyards at Tyneside, claimed that he had 'often heard Vickers directors say that they had made a great mistake when they chose Barrow as their site'. He noted

The Barrow yard cannot undertake the largest ships and if it were possible to build one on the slip, there is not the necessary depth of water to berth a very big ship, nor to get down the channel to the sea... The Armstrong yard and Harland & Wolff at Belfast can tackle ships of the largest dimensions, then comes John Brown & Co, Cammell Laird and Fairfield, with... Barrow... 6th or 7th in capacity for big ships... Barrow... is isolated and therefore cannot discharge and re-engage men during the fluctuations of work in the same way as on the Tyne. 1

During 1914-18 Barrow built four battleships, four cruisers, four sets of machinery for cruisers, six auxiliary vessels, 53 submarines and 62 other vessels with total displacement of about 170,000 tons; also nine airships, about 16 million shell, over 2,000 completed gun equipments and about 1,000 limbers for gun mountings. 2 Its change to peace manufacturing was achieved with 'exceptional celerity', and by October 1919 'almost the last reminder of war in works covering 270 acres of land' were two 15-inch naval guns with their turrets standing in the Ordnance Department. 3 The major influx of civilian work came from the railways: 280 engines had been re-conditioned in Barrow shops by October 1919. Plans were prepared for production of 300 new locomotives per annum, but Vickers' prices were much higher than competitors longer established in such work, and they did not get orders.

1. d'Eyncourt to J. Frater Taylor, letter 30 September 1927. DEY/52.
2. Minutes of Evidence, 373.
3. The Times, 27 October 1919.
The expensive precision-technology of armaments was not easily convertible to less exacting civilian lines. Shops formerly producing heavy gun mountings were turned over to making gyratory machines for crushing rock and ore, but an anticipated big demand in this line did not materialise, and by 1925, Barrow had stopped quoting for any but the biggest crushers. Until 1920 they made large sales of centrifugal separators to Dunlop Rubber; but for naval products there was little work. The world's shipbuilding capacity had doubled 1914-20, so that Barrow could not have won many orders for cargo work, even if McKechnie continually insisted 'Barrow was better suited for Cunarders'. In 1919 Barrow kept 'extremely busy with ship-building', and in 1920 they 'felt the trade slump less than their competitors', but a deep downturn arrived in 1921. All British shipbuilders, in their eagerness to obtain work to keep the yards going, quoted prices which included no profit, and only a part of their charges, as well as accepting deferred payments. Barrow reached its nadir in 1922-3, with many staff working alternate fortnights, 'the birds were building their nests in the cranes', and the striking of the town hall clock was audible in the engine shops. Out of a population of 70,000 some 12,000 men were unemployed in Barrow in February 1923.

The national depression was aggravated at Barrow by local circumstances. McKechnie remained in overall command, but there

had been appointed as his deputy, a young submarine officer, Commander Charles Craven (1884-1944; knighted 1932; baronet 1942). Craven had been recruited to Vickers by Dawson in 1912, but now met the full antagonism of McKechnie. In the summer of 1923 the London board sent a two-man team to investigate Barrow. They reported

apart from the state of trade generally, affairs at Barrow are in a very serious condition; bitter personal animosity exists between some of the higher personnel; team-work is sadly lacking and... intrigue and counter-intrigue are rife... This state of things is blatantly obvious and utterly demoralising... matters are far, far worse than would appear from a cursory knowledge of the situation.

McKechnie, they reported, had deliberately played off personnel one against the other, and had blocked Craven from having the authority to rise above the squabbles: 'the immediate future will be full of anxieties and troubles; vigorous, inspiring leadership... is a vital necessity'.

Craven replaced McKechnie immediately. Gradual recovery followed. This was the period of post-Washington naval disarmament, but the Orient liner, Orama, was launched in May 1924, and this was followed by another Orient liner, Otranto, the Cunarder Carinthia and Barrow's first ship for the Furness Line, S.S. Newfoundland.

1. Report of Investigation at Barrow by Mark G. Atkinson and William Dallow, dated 9 July 1923. Vickers microfilm R.275. Dallow was at this time joint general manager (with Oliver Boden) of the Adderley Works, in Coventry, of Wolseley Motors. He was previously head of the Statistical Department at Vickers House, and was director and general manager of Vickers' subsidiary, British Timken Ltd., bearing manufacturers in Birmingham, 1927-39. Atkinson was born in Barrow, and joined Vickers after fighting in the Boer War with the Barrow Territorials. Transferred from Barrow to London in 1919, he became Director of the Johannesburg office of Vickers & of Metropolitan Carriage (S.A.) Ltd., in 1927, dying in South Africa in 1937.
Barrow 'made a considerable loss' in 1924-5 due to completion of the profitless tenders of 1922-3: indeed of the ten ships launched and delivered in the twelve months up to February 1925, none were taken on at profit prices.

In 1912 there had been a crisis in the management of Barrow, to which Vickers reacted swiftly and accurately; and if, in 1923, they took longer to realise the liability which McKechnie had become, their reaction in promoting Craven could not be bettered. Under Dawson's aegis, he emerged as a rationalising force on the Vickers board (especially after 1926); and following Dawson's death in 1931, he led the company, both in liaison with its old patron, the Admiralty, and towards new industrial targets. The auspicions of his Barrow reforms of 1923-5 were later repeated in other operations of the group.

Wolseley Motors had a less happy issue for Vickers. Wolseley's origins lay with a sheep-shearing machinery company formed in 1889 by a brother of Field Marshal Wolseley: an employee called Herbert Austin (1866-1941; knighted 1917; Baron 1936) designed a motor-car in 1895, and in 1901, Vickers formed their Wolseley motor-car subsidiary with a view to the future potential of armoured fighting vehicles. Austin was general manager of Wolseley until 1905, when he went into the motor-car business at Longbridge on his own account. The equally talented J.D. Siddeley (1866-1953; knighted 1932; Lord Kenilworth 1937) was general manager 1905-9, and it had a reasonable profit record until 1918. (See Table 15.). In 1919 the authorised Wolseley share capital was £1,800,000, comprising £300,000 7% Preference shares and 1,500,000 Ordinary shares, of which Vickers held all those issued, numbering 1,000,000.

In November 1919 Wolseley floated an additional £1,280,100 6\frac{1}{2} \text{p}{\text{i}}
\text{First Mortgage Debentures—the annual charge on the debentures stock thereafter amounting to £140,250 including redemption provision.}^{1}

In contrast to Albert Vickers' tight pre-war supervision of Wolseley, its board was now chaired by Sir V. Caillard. Both Dawson and Barker were directors, but the rest of the board was lighter material: Vincent Vickers, Albert Vickers' aristocratic son-in-law Colonel Stuart Pleydell-Bouverie (1877-1947), another Vickers cadet called Ward Grazebrook, and the Chairman's only son, Bernard L. P. Caillard (1882-1966).^{2} The senior management was restive: Ernest Hopwood and Arthur McCormick, joint managing directors since 1911, resigned in 1919 and November 1923 respectively, and were succeeded by Boden and Dallow.^{3} At Vickers House, young Caillard had charge of Wolseley, and was, in Reid Young's later opinion, 'quite incapable of running any business'. He built the lavish Wolseley House showroom in Piccadilly, opposite the Ritz, which could scarcely be used as the police objected to cars crossing the pavement.^{4}

1. *The Statist*, 8 November 1919
3. On Boden and Dallow, see note 1 on page 130, *ante*.
Table 15 to show Wolseley Motors' profitability 1913-18.

<table>
<thead>
<tr>
<th>Year</th>
<th>Profit in £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1913</td>
<td>162,968</td>
</tr>
<tr>
<td>1914</td>
<td>160,700</td>
</tr>
<tr>
<td>1915</td>
<td>172,893</td>
</tr>
<tr>
<td>1916</td>
<td>195,005</td>
</tr>
<tr>
<td>1917</td>
<td>214,329</td>
</tr>
<tr>
<td>1918</td>
<td>316,814</td>
</tr>
</tbody>
</table>

Source: the Statist, 8 November 1919.

Wolseley suffered with the pricking of the trade boom in 1920, from strikes, and in the 'bad year' of 1921-2 from 'depreciation of work in progress'. By December 1923 Vickers had guaranteed Wolseley's overdraft to £520,000: a huge sum surpassed only by their £824,000 guarantee of the Canadian-Vickers debenture issue of 1916. In April 1924, about the time Docker was discussing with Austin and Morris the merging of Wolseley with other British motor-car giants, a Committee of Management was appointed, chaired by Dewar, managing director of M.C.W.F., and comprising Bernard Caillard, Grazebrook and Dallow. At the end of the 'very bad year' of 1924-5, plant was so run down that an influx of orders early in 1925 could not be met. Losses on Wolseley 1923-5 totalled £841,000, and by the spring of 1926 its overdraft reached £650,000. In October 1926 it failed to pay its Debenture interest, and the Debenture holders put in a Receiver who (with Court approval) sold the business for £730,000 to William Morris (1877-1963; Lord

1. During 1914-8 Wolseley built about 4,000 aero-engines and spare parts for another 1,500; whilst the chassis testing shops became shell shops. Nixon, Wolseley, 93.
3. On Dewar see note 1, page 115, ante. He was trusted with another trouble-shooting job at this time: negotiations in Berlin over settlement of a controversial lawsuit concerning German fuse patents. (on the origins of this suit see P.R.O. MUN 7/127, MUN 7/137 and Ostrorog papers).
The policy of letting Wolseley operate as an autonomous unit, with central supervision exercised (somewhat inconsistently) by Caillard and Dawson, had proved fatal. With insufficient financial planning, and without comprehensive analysis of the cash needs and market priorities among Vickers' subsidiary operations, Wolseley had swiftly become an embarrassing liability to the whole group.

Finally, there remains Beardmore. Vickers had taken a large holding in this Glasgow firm in 1902, with the hope of limiting competition which declining demand, and the State's professed intention of widening supply, threatened to produce. Vickers intended a preventive annexation of Beardmore's excellent armour-making plant and projected artillery works... and by an agreement of 1907 Beardmore's agreed to surrender all artillery tenders to Vickers' sanction in exchange for technical guidance from Sheffield.

Beardmore was dominated by one man, William Beardmore (1856-1936; baronet 1913; Lord Invernairst 1921), a hard Scottish engineer with a highly autocratic management style. As early as 1907 Vickers were disquieted by Glasgow's managerial methods, and in 1909-10 they had to launch a financial and managerial rescue after 'extravagant and poorly administered extensions' had been made.

1. The winding-up order of Wolseley was dated 16 November 1926, and the holders of the first Debenture stock received settlement as the rate of only 9/6d in the £. Vickers file 434. See also Richard J. Overy, William Morris, Lord Nuffield. London 1974.


With this record, it is unsurprising that war expansion wrecked Beardmore. Their workforce increased in number from 11,080 in August 1914 to 42,500 in November 1918, and their total turnover in that period was £68,275,000. Production 1914-18 comprised 1,100,000 tons of steel inclusive of 17,700 tons of heavy armour plating, 24,000 tons of bullet-proof steel for armoured cars and tanks, and over 11,000 tons of forgings. Other war production included about 1,000 mines, some 11,500,000 shells of sizes ranging from 18-pdr to 15-inch, 1,170,000 shell fuzes (from the Anniesland factory), 4,607 complete guns of different calibres, fifty Mk. IV tanks, and about 2,000 spherical gun mountings for tanks. Their Dalmuir yards, on Clydeside, completed 73 vessels, including the battleships Benbow and Ramillies, and three light armoured cruisers—with a total displacement of 120,000 tons and with a total of 687,000 h.p. Dalmuir also overhauled or refitted twenty warships. Beardmore's aviation department produced 750 aeroplanes, of which the first was delivered on 8 March 1915; and three airships, culminating in the R.34 whose trans-Atlantic flight was Beardmore's apogee. Yet total profits (1915-20) were only £2,643,320, of which private work accounted for approximately £2,100,000. Profit on Government work (1915-20) amounted to about £543,000, representing under one per cent. of the total turnover of Government work in that period. Ordinary dividends for 1915-18 absorbed £306,000. Henceforth Beardmore went into a melancholy decline.

1. These production figures come from Sir W. Beardmore's speech to his shareholders at Glasgow, 26 May 1919. Text in The Statist, 31 May 1919. The three airships were R.24 (1916-17) R.27 (1917-18) and R.34 (1917-18). Cf. General E.M. Maitland, The Log of H.M. Airship R.34. London 1921. Maitland commanded the R.34 on its trans-Atlantic flight, but was killed when the R.38 disintegrated in the air near Hull, August 1921.

2. The Economist, 10 December 1921. See also idem, 16 September 1922; 4 October 1924; 27 June 1925; 17 December 1927; 20 October 1928; 27 July 1929; 19 July and 13 September 1930; 16 May 1931.
One of their general managers (1920-2) was J.C.W. Reith (1889-1971; Baron 1940), whose biographer writes of the firm having an over-extended product line, a demoralised work-force and 'directors who appeared quite content to let things drift, regardless of the business risks'.

Table 16 to show capital position of Beardmore's, 1921-6.

<table>
<thead>
<tr>
<th>Year</th>
<th>Brought</th>
<th>Net Profit</th>
<th>Service of Preference Dividend</th>
<th>Ordinary Dividend</th>
<th>Carried Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>711,909</td>
<td>127,288</td>
<td>86,400</td>
<td>nil</td>
<td>752,797</td>
</tr>
<tr>
<td>1922</td>
<td>752,797</td>
<td>96,167</td>
<td>86,400</td>
<td>nil</td>
<td>762,564</td>
</tr>
<tr>
<td>1923</td>
<td>762,564</td>
<td>-68,071</td>
<td>86,400</td>
<td>nil</td>
<td>608,093</td>
</tr>
<tr>
<td>1924</td>
<td>608,093</td>
<td>-503,094</td>
<td>45,876</td>
<td>nil</td>
<td>59,123</td>
</tr>
<tr>
<td>1925</td>
<td>—</td>
<td>-43,095</td>
<td>—</td>
<td>nil</td>
<td>—</td>
</tr>
<tr>
<td>1926</td>
<td>—</td>
<td>-540,012</td>
<td>—</td>
<td>nil</td>
<td>—</td>
</tr>
</tbody>
</table>

Source: The Economist, 1921-6.
Note: Figures underlined indicate losses.

The Beardmore board in this period had only four members, Inverness, Douglas Vickers, Trevor Dawson and the Marquess of Graham (1878-1954; 6th Duke of Montrose 1925), a dilettante marine engineer. Apart from the poor management traditionally associated with Beardmore, there were two other major causes for the Company's decline: the costs of war-time expansion and the aftermath of the Washington disarmament treaty.

2. See Duke of Montrose, My Ditty Box. 1952.

He took the first film ever shot of a total eclipse of the sun on a Royal Astrological Society expedition to India in 1899, was Secretary to Austen Chamberlain when Chancellor of the Exchequer (1905), and designed the first naval aircraft carrier. He was also sometime director of the Edinburgh Assurance Company, extraordinary director of the Bank of Scotland and honorary director of Scottish Provident.
During the Great War the Ministry of Munitions erected a steelworks at Moss-End on ground owned by Beardmore, and after protracted negotiations, in December 1920, the Company brought the steelworks, together with some howitzer plant at Dalmuir and Parkhead, for £841,325. The terms appeared good, Beardmore paying £15,250 for the Moss-End steel foundry (cost £61,000), £38,000 for the Moss-End plate mill (cost £115,000), only 40% of the total cost of the Moss-End section mill and only 25% of the cost of eight out of the sixteen furnaces at Moss-End, the remaining eight being handed over gratis. 1 Beardmore confidently expected to use Moss-End for steelwork, but by 1924 were describing the Moss-End acquisition as a disastrous bargain'.2 Whilst Beardmore's output 1911-13 was 396,993 tons, their output 1921-3 was only 310,305 tons, a decrease of 20% although their capacity had increased by approximately 100%. Beardmore had contracted to pay the Government £80,000 each half-year for Moss-End, but failed to meet the instalment due for June 1922 until December 1922, and thereafter failed to pay any of the principal owing. In 1924 Beardmore wrote that 'it would be a direct advantage to the Company if the Government would take [Moss-End] back'.3 It was a classic case of over-capacity after war-time expansion.

Equally Beardmore was felled by disarmament. Of British Government orders worth £4,184,602 received by November 1921, only £11,492 were actually executed, owing to Admiralty cancellations following the Washington naval disarmament conference which opened that month. The disappearance of this armament market 'seriously, if not fatally' affected Beardmores' profitability.

3. Idem.
As they lurched through the 'twenties, with Moss-End eventually shut, increasing their indebtedness to banks, Lord and Lady Invernairn put £883,224 of their own money into the Company (1920-7), such as by subscribing in cash for further shares, paying twenty shillings each, when the market value was four.\(^1\)

Caillard considered the sale of Vickers' holding in Beardmore as early as 1920,\(^2\) but after Vickers' reconstruction in 1925-6, disposal became imperative. In April 1926 Vickers sold their 845,000 Ordinary shares in the Company to Invernairn for £75,000, of which £10,000 was paid cash, and the balance interest-free within twelve months. This offer was conditional upon Invernairn retiring from the Vickers Board (where he had sat since 1902); which he did.\(^3\) Vickers also received £100,000 of 8% seven year Notes, guaranteed by Invernairn to £50,000.

Thus Vickers disengaged from Beardmore, but it is worth considering their subsequent policy towards their former ally. The Scottish firm steadily deteriorated. In 1927 the Accounts Department of Vickers reviewed their operations, noting that Beardmore's Aero-engine department was 'doing very well', but was the only section making a profit: 'the management of the concern, still being in the hands of the old régime, was very bad'.\(^4\) As to Beardmore's overseas organisations, the Foreign Office found their staff naive and vague: in 1927, after humiliations concerning the supply of railway material to Chile (in which Beardmore's agent

in Santiago complained to Glasgow, 'You have made my position as an Agent rather ridiculous...you do not answer my letters'), Sir Robert Vansittart wrote, 'Beardmore's are perfectly hopeless people and deserve very little support'. In 1928 an official of Vickers' steelworks reported of Beardmore,

Their plant, buildings and layout are not up-to-date and I cannot imagine a group of people who know their jobs buying this plant, with the exception of the shipyard, or to work it, unless they get it at a very low price...if the debts were all cleared off and Beardmore's were put right financially, it is only with very close supervision...that they will make ends meet as these Works will absorb a tremendous amount of money in working capital...a very depreciated value.

In 1929 Beardmore verged on complete liquidation, and Invernairn and his co-directors were replaced by nominees of creditors, approved by the Bank of England who became heavily involved in the rescue.

Vickers' subsequent attitude was consistent with their traditional policy towards Beardmore: when the latter was booming, they made a preventive annexation, and when it was depressed, they sought to prevent further competition. In 1927, when the Governor of the Bank of England asked the Chairman of Vickers if Beardmore might be incorporated into the imminent Vickers-Armstrong fusion, the latter answered that this 'would not be advisable'. In 1928 Vickers considered seeking an agreement with Beardmore 'whereby they agreed not to compete for our submarines and gun mountings...and...similar products where we could keep them off the grass',

and Craven commented 'a splendid thing. Mines also'. 1 Subsequently, when Vickers and Cammell Laird had united interests in the English Steel Corporation, Vickers' financial director noted that 'the Company promoting fraternity in the City', meaning the Austen Friars Trust of Clarence Hatry (1888-1965), were trying to re-aggregate the steel industry.

This possibility has given me furiously to think about Beardmore's. If they get hold of that concern...it might be very much to our detriment, and particularly for a few years. 2

He therefore floated a plan to bring Beardmore steel capacity into the E.S.C., but after Hatry's arrest for fraud, this did not prove necessary. 3

These three examples show Vickers best able to reform and revivify the operating divisions concerned with their traditional specialised technology. Tighter management controls were required by almost every subsidiary, but there was not sufficient senior personnel at Vickers House closely to encompass every department. Priority was correctly given to steel and ships, whilst newer lines of work, where their expertise was limited, were necessarily allowed to go to the wall.

As shown in Table 10, Vickers' profit-earning capacity steadily receded over 1920-5. The results for 1924 were the worst in the Company's history, and in 1925, when Ordinary dividend was passed for the third consecutive year, Douglas Vickers had no 'hopes of an immediate change for the better'. He again complained of 'high costs of manufacture and the unsuitability...of our fiscal and financial systems for meeting modern large-scale competition'.

3. Hatry spent nine years in prison, until 1938; and marked his release by publishing a study, Light Out of Darkness, addressed to stopping the arms race. This recommended a drastic re-distribution of world population.
He lamented,

When the manufacturers' costs are high he cannot quote low prices; when he cannot quote low prices he cannot fill his works; and when he cannot fill his works, his costs are higher; and so it goes from bad to worse.

It became obvious that if the Company continued 'from bad to worse', it would soon be absolutely ruined, and in June 1925, an Advisory Committee was appointed to consider the Company's crisis. This marked the public re-emergence of Docker in the running of the Company, since he sat on the Advisory Committee. Its other members were Sir William Plender (1861-1946; Lord Plender 1931), the accountant, and Reginald McKenna (1863-1943), Chairman of the Midland Bank since 1919 and previously a Cabinet Minister. McKenna was closely associated with Docker at the Midland Bank.

These three did not make detailed examinations, but relied heavily on Mark Webster Jenkinson (1878-1935; knighted 1926). The Advisory Committee's Report was substantially his work.

It is quite possible that Docker forced the appointment of this Committee with the weight of shares which he had 'warehoused' in Vickers (i.e. held through nominees). Thus, in November 1925, Zaharoff wrote drily that 'D.D., after studying the lists of shareholders, finds that the real large shareholding is in Birmingham-- and not in

2. McKenna had dealt with Vickers, especially Dawson, during his period as First Lord of the Admiralty 1908-11. He was Home Secretary 1911-15 & Chancellor of the Exchequer 1915-16. He was again offered the post of Chancellor of the Exchequer by Bonar Law in 1922, and by Baldwin in 1923. Lord Beaverbrook wrote of him in 1928: 'His abilities are brilliant and his logic remorseless. He is angular, emphatic and positive...if you run up against some projecting bump in his opinions you must merely nurse a bruise'. Politicians and the War. London 1928, 155.
3. At this time in 1925 Jenkinson was Secretary of the Electric and Railway Finance Corporation Ltd., a company which Docker had formed in 1921 and which he used as the vehicle for much international financial work. It was participating in 1925 with several Belgian electric or railway trusts, and with the South American electrical supply companies owned by Lord Cowdray's group, S. Pearson & Son Ltd.
Sheffield', and that D. D. was therefore seeking Douglas Vickers' resignation as Chairman. Another possibility is that Docker simply expressed City disquiet at the decline of Vickers to its directors, and the Advisory Committee was set up in response to this warning. Be that as it may, the Advisory Committee's effects were those of a coup by the Docker ramp against the owner-managers. Its report was an indictment of the administration and enterprise of 1920-5, and the ensuing reorganisation transformed Vickers, in A. D. Chandler's terms, from an entrepreneurial into a managerial firm.

The Report of 1925 also revised Vickers' commercial targets: instead of a vertical combine of various supplementary allied industries, Vickers returned to concentrating on steel and ships. If the Report underplayed the excessive amount paid (at the instigation of one of its signatories) for M. C.W. F., it was nevertheless an acute document.

The Report was published on 10 December 1925, and its major recommendation was to write down the Company's assets by £12,442,366. This was done, among other means, by reducing the


2. If the origins of the Advisory Committee seem obscure, it is worth noting that Craven did not know officially of the existence of the Committee at the end of November 1925. Douglas Vickers had not told him of it. Craven to Jenkinson letter 29 November 1925. V. microfilm R.315.

Vickers' Finance Committee had, since July 1924, comprised Caillard, Dawson, D. Vickers, Herbert Lawrence and Wyldbore-Smith. Of these, Wyldbore-Smith was an out-and-out member of the Docker ramp; Lawrence was a City banker, generally in agreement with Docker. Dawson's position is characteristically hard to assess, but he was certainly not as die-hard against Docker as Caillard.
issued Ordinary share capital from £12,315,483 to £4,105,161; and the total sum was utilised in writing down, inter alia, fixed assets by £4,254,994 and the book value of the Company's subsidiaries by £5,488,316. It commented of the peace-time diversification programme that the management had not the special experience required to direct and control so large and varied a body of industrial undertakings, particularly during a period of protracted and severe depression.

Vickers' future policy should be to concentrate on using to the best advantage its present facilities, which are great, and under good management, should be profitable; to dispense with all officials who have not justified their engagements; to cut down all salaries which are not fully merited; to eliminate waste in works management and production; to shut down plant and wind up all...affiliated enterprises which...are not likely to contribute to the earnings of the Company, but act...as a deadweight.1

A week later an extraordinary meeting of shareholders was held to approve the Report. According to Jenkinson, it was not a particularly happy meeting...At one time it looked as if a resolution for the adjournment of the meeting would be carried, but fortunately Mr McKenna stepped into the breach, and very cleverly turned the whole meeting so that finally the whole meeting was carried with only five dissentients. 2

It was not only Zaharoff who judged, 'If you were to leave what D.D. calls the Top Fancy Board as it is, the reduction of capital and re-organisation would come to nothing'.3 The old board had lost their reputation for success, and it was essential that the new plans should be implemented by fresh names. In the major Board re-shuffle that followed, the first-ranking change was the retirement of Douglas Vickers as Chairman. He was given the honorific title of President of Vickers in 1926, but dropped even that in 1927, and for the last ten years of his life remained as a director only.

2. Jenkinson to Zaharoff, letter 16 December 1925. V.microfilm R.315
The new Chairman was General Sir Herbert Lawrence (1861-1943). A younger son of Lord Lawrence of the Punjab, the Victorian soldier, he had been senior staff officer responsible for intelligence work during the Boer War, but left the Army in 1903 to enter the City. His father-in-law had been senior partner in Glyn, Mills, Currie & Co., and in 1907 he joined that Bank. Glyn, Mills were bankers both to the Army and to Vickers. Lawrence received a command after the outbreak of war in 1914, and he showed conspicuous ability during the Dardanelles campaign. He took over the intelligence branch at G.H.Q. in 1917, and in 1918 became Chief of General Staff to Haig. Although he returned to the City after the War, his name was canvassed in 1920 as next Viceroy of India; in 1922 he was considered as a possible successor to Sir Henry Wilson as C.I.G.S.; and in 1932 he was nearly promoted to the rank of Field Marshal. Amongst much other public work, he sat on the Royal Commission on the Coal Industry (1925).

Back in the City, Lawrence became a director of Vickers during the cash crisis in the summer of 1920, by virtue of his bank's business with the firm. As an outside financier brought in after the M.C.W.F. merger, he was another reminder that the owner-managers could not keep control for ever; but he was not one of the Docker ramp.

In Parliament, in Fleet Street, and in official circles, he was recognized as one of the first men in the City, whose sagacity behind the scenes was in constant demand...Lawrence combined the thrust of a lancer with the circumspection of a banker. 1

1. Article on Lawrence by Roger Fulford in Dictionary of National Biography. Fulford has also written a somewhat uninformative History of Glyn's. London 1953. Lawrence was one of the few intimates of Montagu Norman, Governor of the Bank of England 1920-44.
Major General Guy Dawnay (1878-1952), who served with Lawrence in action, 'then when he was Chief of Staff of the greatest Army ever deployed by the British Empire in one theatre of war', and finally at Vickers, wrote

He had in a very exceptional degree a mind capable of penetrating to essentials. His mental process seemed to strip any subject of non-essentials and irrelevancies... With this was combined a notable lucidity of expression, leaving no loophole for doubt or indecision. He had the forcefulness and determination, even... a measure of ruthlessness... his courage was as unflinching as his line of action, once determined, was unswerving. Underlying all was a great kindliness based on a very human understanding. Small follies stirred his dry humour; real foolishness his—generally silent—contempt; but anything really unworthy evoked his grim and icy disgust. He was singularly devoid of... self-seeking. 1

According to another colleague,

No-one could be in his presence for five minutes without realizing he was an honourable, straight-thinking man whose word could be relied upon absolutely... he was a man of good ability, but 'no genius'... very likeable, although rather formidable and aloof in appearance. 2

This man was to be Chairman of Vickers until 1937. 3


2. Sir Edward R. Peacock, interview with J.D. Scott, 29 January 1958. Vickers file 63. Peacock (1871-1962) was a director of the Bank of England 1926-46 and director of Vickers-Armstrong 1927-9. Cf the obituarist in The Times (29 January 1943) that Lawrence 'had indeed certain prejudices, which he was too virile a mortal to conceal', but 'any of us with children had hopes of our children growing up like him'.

3. The letter from Duff Cooper, Secretary for War, conveying his Department's thanks to Lawrence, on the latter's retirement, dated 2 March 1937, is in V. microfilm R.276.
There were other Board changes. Clark retired in December 1925, and he was followed by five other directors in the early months of 1926: Chandler, Invernairn, Morris, Spencer and Symon. Vincent Vickers, although re-elected director in April, resigned in June 1926. 

Alfred Cartwright (18 -1933), the Company Secretary, was elected to the Board in 1926 (but retired in 1927); and another recruit was George Gall Sim (1878-1930), who became Secretary of Vickers in July 1926 and Deputy Chairman of Vickers in November 1929.

Educated at Aberdeen and Oxford universities, Sim had entered the Indian Civil Service in 1901, working in its Finance Department, culminating as Financial Commissioner of the Indian Railways 1923-6.

G.G. Sim was a candid and dry-humoured Scot, who worked well with Lawrence, and was making a great impact at Vickers House before his sudden death. Sim's low-key manner typified the approach which Lawrence brought to Vickers: if the owner-managers were admired as 'disciplined predators' capable of taking large views, the secret of success under Lawrence was 'enthusiastic obstinacy to hedge around facts'. In this category, too, comes Archibald Jamieson (1884-1959; knighted 1946), an old Wykehamist accountant, of Scottish birth, who was a director of the merchant bankers, Robert Fleming, and succeeded Wyldbore-Smith as a director of Vickers in 1928. Following Lawrence's retirement, Jamieson was Chairman of Vickers 1937-49. The recruitment of another director, General Birch, in 1927, to take charge of land armaments, is discussed in chapter five.

1. The Times, 8 April and 23 June 1926.
2. Sim died very suddenly, whilst holidaying in Scotland in August 1930, of pneumonia complicated by malaria he had contracted in India.
4. Vickers News, December 1929. This was the characteristic attributed to Reid Young, who succeeded his fellow Scot, Sim, as Secretary of Vickers in November 1929.
Two financial heavyweights also joined the Vickers board in 1926. Sir David Yule (1858-1928; baronet 1922), working from a 'frugally furnished office in Finsbury Circus...invariably in his shirtsleeves', was senior partner in the great Culcutta firm of Yule, Catto. Yule was perhaps 'the wealthiest man in the country' and lived in complete absorption in business and an almost hermit-like retirement...For many years before his marriage he lived a bachelor life over his business premises, and there were many prominent businessmen and officials in Culcutta who had never seen him...His absorption in business had its own reward in the remarkable success of almost everything in merchandise and Indian industrial enterprise to which he put his hand...There was something...to account for his solitary life, and that was an incurable shyness and diffidence.  

Yule gave considerable time to the reconstruction of Vickers in 1926, refusing to draw any fees until the Company resumed payment of Ordinary dividend; but the closest financial direction came from Webster Jenkinson, who at last joined the Vickers board in 1926. Jenkinson had served in the Ministry of Munitions, where his responsibilities included the Audit of all the National Factories, the design of the accounting system of all National Factories, contract negotiations and liquidation of post-war contracts. His war-time experiences left him convinced 'that it would be detrimental to national interests for Government stores to be wholly produced in Government factories'. His report on Vickers in the winter of 1921-2 has already been mentioned; he also served on Lawrence's Committee on Army Administration in 1925, and was in 1931 a signatory of the fateful Majority Report of Sir G. May's Economy Committee.

2. Yule was Docker's co-director of the Midlank Bank. His junior partner Catto was Financial Adviser to the Chancellor of the Exchequer 1940-4 and Governor of the Bank of England (in succession to M. Norman), 1944-9.
3. The Times, 4 July 1928.
5. See above, p. 118. By 1922, he had settled in London, from Sheffield, and was employed by an investment company in which Docker was the leading force. See above, p 141, note 3.
His favourite dictum was 'Fortunately there are homes where the Victorian spirit, Victorian living and genuine Victorian cooking still exist-- and there one finds comfort'.\(^1\) He was a compulsive worker—indeed died of heart disease, despite warnings about overwork from several colleagues—and was very much the Sheffield accountant in outlook.

Of accounts, Jenkinson believed 'their object is to show up the truth, and act as a historical record of the transactions'.\(^2\) He urged that every public Company should be compelled to appoint a finance director whose duties would comprise detailed explanation and comment of balance sheets in a form understandable by those who had not an accountancy training; and wanted legal prohibition of any Public Company having more than one-third of its Directors over 60 years of age.\(^3\) He also believed that the ideal administration of rationalised companies would have two boards of directors, 'control' and 'executive': the evolution of business organisation necessitated the divorce of control and management. Whilst the general controlling board would be mostly outsiders, the executive board would comprise operating managers from the different divisions of the group. The shape of these ideas can be discerned in the subsequent development of Vickers. Jenkinson, then, was a man with the full confidence of Docker and Lawrence, whose scientific accounting and controls of financial data offered an opportunity for Vickers to break away from some bad habits of the owner-managers, such as the 'very antiquated' and 'unreliable' accounting system at the Sheffield steelworks.\(^4\)

1. Quoted in The Times obituary, 5 November 1935.
3. The Times, 1 March 1932.
From an early stage both Docker and Lawrence must have envisaged Jenkinson succeeding Caillard. Not only did Caillard bear some responsibility for the mis-carriage of Vickers during 1918-25, but in 1926, he was aged seventy and had been Financial Director for twenty years. He epitomized Vickers' owner-managers more than anyone else, and (unlike Dawson, who was ten years younger) no longer had the smell of success about him. It is remarkable that Caillard survived 1925-6 as Financial Director: Lawrence and Jenkinson both wanted to remove him. Finally, with Lawrence's approval, Jenkinson sought Zaharoff's help, explaining to him 'there is no-one better able to handle such a delicate matter, without hurting, as yourself'.

In August 1927 Caillard was in Paris and on the sixteenth, he met Zaharoff, who proceeded to say that he was acting on behalf of Jenkinson, and offered Caillard, in return for his resignation from Vickers, twenty thousand pounds cash and four thousand pounds per annum for life... The meeting between two such old friends was... very painful.

Caillard did not immediately accept, but three days later, on the nineteenth, his sister died, and when Caillard telephoned Zaharoff to say that he would be returning to England from Paris for her funeral, Zaharoff read him a new offer of £20,000 cash and £4,500 per annum for life, freshly received from Jenkinson, 'word for word over the telephone and he... agreed to same unreservedly'. In this way Caillard relinquished power at Vickers.

1. Jenkinson to Zaharoff, letter 16 August 1927. V. microfilm R. 333
2. Zaharoff to Jenkinson, letter 16 August 1927. V. microfilm R. 333
4. Caillard excised all mention of Vickers from his entry in Who's Who, which perhaps suggests bitterness. He remained a director of M.C.W.F. (despite suggestions to replace him) until, in March 1930, he died in Paris of pneumonia after an operation.
These changes at Board level ushered in new policies at Vickers House. A new Board structure, conceived by Jenkinson and adopted from the Advisory Committee's report, is shown diagramatically.

(The control board)  
Vickers board  

(Management boards)  
Armaments & Shipbuilding Board  
Industrial Management Board  
Finance Management Board  

rolling stock  
electrical miscellaneous

Other economies were effected by disposing of the many subsidiary interests acquired during the peace-time diversification programme, but J.D. Scott and others are wrong to treat Vickers' merger with Armstrongs (1927) as the main feature of the next fifteen years. It was in their concentration on becoming a leading steel combine, and their withdrawal from electro-technology and rolling stock, that the most essential changes occurred: this will be the theme of the rest of this chapter.

1. Members appointed to the Armaments Shipbuilding Board in 1926 were Buckham, Craven, Dawson, Oliver Vickers, George Taylor and Jenkinson. The Industrial Management Board was formed in 1926 comprising Dewar, Bernard Docker, Sadler (the general manager of Vickers, who soon retired through illness), Nash of Metrovic, T.L. Taylor of Taylor Brothers, Wyldbore-Smith, Yule and Jenkinson. Dudley Docker was an honorary member. (Wyldbore-Smith and Jenkinson sat on the rolling-stock sub-committee; Yule and Jenkinson sat on the electrical sub-committee). The Finance Management board originally appointed in 1926 comprised Caillard, Cartwright, Vincent Vickers, Yule and Webster Jenkinson. The first three of these left the Vickers board in 1926-7, and were replaced by Sim and Lawrence.
The circumstances whereby the armaments and shipbuilding capacities of Vickers and Armstrong's were amalgamated in a new Company, Vickers-Armstrongs, are related in Chapter four. This merger delayed, but did not answer, profound questions about the future of the group. As posed by Sir George Buckham (1863-1928), a Vickers director and tank designer, the questions were 'whether Vickers-Armstrong in the future are going to be considered an Armament Firm or an Industrial firm', and 'Are armaments dead?'. Opinions differed as to the answer. Buckham himself believed if all we read is correct, then they are certainly dying, but...the only way to prevent war is to be ready for war, and if this is true, then armaments will always be required. He doubted peace was yet 'so universal that Vickers-Armstrongs will be Industrialists instead of Armament makers', and expected 'much business will accrue from the mechanization of land armies'.

Buckham's colleague, Birch, the director in charge of land armaments, took an opposite view that it will be impossible to pay a reasonable dividend to the shareholders if we continue to make armaments our principal source of revenue. Even naval orders, owing to aircraft competition, may slacken. We should therefore aim at getting an increasing portion of our revenue from industrial and commercial sales, and should look to military armaments in the usual way only to cover working expenses; any exceptional receipts we may get owing to war or to the revision of military programmes should be looked upon as windfalls.

A third artillery expert advised his Vickers-Armstrong co-directors, the Admiralty is in every way our best customer, and we should do all we can to keep the Admiralty connection as close as possible...Our Works should be arranged principally for the production of Admiralty and Naval orders.

2. Birch to Lawrence, 10 February 1928. V.microfilm R.286.
The opinion of a Special Director at Sheffield was

we must look less and less towards Guns and Armour as the main source of our Profits, and turn our energies...towards commercial products, and preferably those requiring large quantities of steel...such as vessels required by the chemical industry, boiler drums, heavy forgings for marine work, etc. 1

Certainly, there was no quarrel that Vickers must never return to its Edwardian specialism: between 89 and 98 per cent. of Sheffield profits in 1909-14, and 86 per cent. of Barrow's turnover 1908-12, came from armaments, whilst armaments turnover 1930-4 had been reduced to an average of 46 per cent. 2 If Vickers recognised their duty to remain an armaments nucleus—'the only organization of its kind in the British Empire', 3 as Lawrence told Hankey—they also sought steadier foundations.

At the end of 1927, it was clear that these aims had three prerequisites. The first was the disposal of Metrovic, which Lawrence's board thought it 'impossible' for them to run. 4 Though it had made a firm return of eight per cent. dividends throughout the 'twenties, Vickers found that managerial responsibility for it over-extended their organisation: it was an asset which they would like to trade for cash. The second object was to limit the liability represented by Vickers' interest in rolling-stock; and the third was to exploit the position, evident for several years, 'that the reconstruction of most of our leading iron and steel companies was inevitable'. 5 All this was accomplished during 1928.

2. Vickers Brothers, 21; J.D. Scott, Vickers, 189.
4. Docker to Lawrence, letter 8 February 1928. V.microfilm R.276
5. Investors Chronicle, 18 December 1926.
Metrovic will be considered first. As early as 1921, Gerard Swope (1872-1957), President of General Electric of America from 1922, had discussed with Docker and McKenna the acquisition by his Company of British subsidiaries. In 1926 he mooted another scheme for uniting British electro-technology under his firm's ownership, and Vickers' Advisory Committee members, Docker and McKenna, must immediately have thought of him when it was decided to sell Metrovic. Certainly, by January 1928, Vickers had entered negotiations with Docker to sell control of Metrovic to American General Electric. Yule, Lawrence and Jenkinson handled negotiations, and from an early stage knew that Swope's plan was for American G.E.C. also to take eventual control of British Thomson Houston, General Electric of Britain and English Electric. Lawrence adopted a characteristically ruthless position when he realised the magnitude of Swope's plans: he sought 'a definite undertaking' from Swope that Vickers would have an option to take up 500,000 shares in any new Company formed after 'amalgamation...between the three firms we have in mind'. On 13 February Docker accepted terms which Lawrence had offered on 1 February: £1,299,905 for 375,370 cumulative preference shares, 265,300 Ordinary shares and 500,000 deferred shares. He added,

As Mr Swope is anxious to get back to America, would it be troubling you to arrange for the transfer of the shares to be made out sometime tomorrow, leaving the Purchaser's name in blank and I will arrange to hand over the money in exchange for the completed transfers and share certificates.

1. Jones and Marriott, Anatomy of a Merger, 94-5. Swope was not the first American with such ambitions. The financier, Henry Villard, associated with the Deutsche Bank of Berlin, Siemens-Halske and American Westinghouse had long before wanted to create 'a world cartel'. Chandler, Visible Hand, 427.
2. Lawrence to Docker, letter 13 February 1928. V. microfilm R.276
3. Docker to Lawrence, letter 8 February 1928. V. microfilm R.276
4. Docker to Lawrence, letter 13 February 1928. V. microfilm R.276
Swope also gave a written guarantee to Vickers of 'an option to
purchase 500,000 shares on ground-floor terms in any new
amalgamation', although Vickers later accepted £25,000 instead of
this option. Vickers retained 100,000 Ordinary and 25,000
cumulative preference shares in Metrovic, on which American G.E.C.
or its nominees had first option. At this stage Docker also told
Lawrence

The deal has been arranged through me as an intermediary but
Messrs Vickers are not paying me any Commission nor am I
their agent for the sale...the sale is now being effected at the
net price to an independent purchaser.

It is worth following this story through later developments, for
the light thrown on both Docker and Vickers. The subsequent
conduct of Swope and Docker afforded Vickers considerable
embarrassment, and the judgement of both Lawrence and Jenkinson
turned against him. Although, as we will see later, the possibility
of Docker also taking M.C.W.F. off Vickers' hands was mooted in
the same months of 1928, the sale of Metrovic proved to be the last
intervention by Docker in Vickers' policy, and presaged the breaking-up
of his ramp.

In the month following Vickers' sale of shares to G.E. of
America, Lawrence was puzzled by continuing press reports that
Docker had bought control of Metrovic, and on 14 March he
telegraphed to Swope 'may I assume that arrangement with you is
unchanged?'. Next day Swope replied, 'Control transferred to Docker

1. Swope to Lawrence, letter 14 February 1928. V.microfilm R.276.
2. Sim to Swope, letter 15 February 1928. Swope to Sim, letter
15 February 1928. V. microfilm R.276.
5. A similar account to what follows (apparently based on papers
of Metrovic and the merchant bankers, Morgan Grenfell) is in
Jones & Marriott, Anatomy of a Merger, 98-127.
6. The Times, (22 February 1928) stated it had been 'officially
informed that Mr Dudley Docker has acquired from Vickers Ltd
the control of Metropolitan-Vickers'.
7. Lawrence to Swope, telegram 14 March 1928. V.microfilm R.276.
with whom we are working in cordial co-operation to stabilize industry'.

At the same time Docker sent an enigmatic message to Lawrence
that if he doubts any statements that he has seen I have made in
the Papers, he might save himself expense and Mr Swope
trouble by consulting the Register of the shareholders of Metropolitan-Vickers. 2

This fiction was further supported by General Nash, Metrovic's
Chairman, in his speech to the A.G.M. He told his shareholders that
whilst G.E. of America had bought control of his Company from
Vickers, 'Dudley Docker came into the transaction and the control
now lies in his hands'. 3 Lawrence can have believed none of this,
and it may be imagined that he viewed Docker's behaviour with what
General Dawnay called 'his grim and icy disgust'. 4 George Taylor,
now Lawrence's Deputy Chairman, but once a close associate of Docker,
held him responsible for 'the unfortunate state of affairs', and was
particularly annoyed by Docker saying, 'Wyldbore-Smith was the only
Vickers director who opposed the sale to Swope'. According to Taylor,
'Wyldbore-Smith strongly advocated the sale of Metropolitan-Vickers
to Swope...and added that if it were not, "it would be a calamity"'. 5

It is surely not coincidental that a few weeks later both Wyldbore-Smith
and Bernard Docker resigned from the Vickers board.

Metrovic's name was altered in December 1928 to Associated
Electrical Industries Ltd., and in 1929, with the fiction of control
being owned by Docker and associates, bought three other British
electrical firms.

1. Swope (in Chicago) to Lawrence, telegram 15 March 1928.
V.microfilm. Jones & Marriott (p 99) attribute to Swope a
telegram of similar meaning but different wording—presumably
a version received by Morgan Grenfell.
2. D. Docker to G.R.T. Taylor, letter 15 March 1928. V.microfilm
R.276.
3. The Times, 17 March 1928. In fact G.E. of America kept all but
40,000 Ordinary shares, worth £50,500, which were passed to
Docker as payment for his help of the American firm. Jones &
Marriott, 98.
Lawrence considered this a private letter, whose despatch he
should not stop, but judged such recrimination to be idle.
V. microfilm R. 276.
In December 1929 Jenkinson indicated to the Americans that Vickers were interested in helping G.E. of America to take over English Electric: an overture which makes sense when it is recalled that English Electric was the re-constructed Coventry Ordnance Works, and part-owned by Cammell Laird, with whom Vickers had just entered a steel and rolling-stock combine. Vickers continued to hold about 14 per cent. in A.E.I., compared with G.E.'s 56 per cent., but after the failure of an attempt (1929-30) by G.E. to get control of Lord Hirst's G.E.C., Swope's high-handed scheming became increasingly erratic. In 1933 Jenkinson discussed with McKenna whether, with Hirst's co-operation, Swope could be persuaded to sell control of A.E.I. Jenkinson told Lawrence, 'McKenna thoroughly agrees with me that the control of the A.E.I. in American hands is a menace to the electrical industry of this country'. In September 1934, when Swope sold control of A.E.I. to a British group, Jenkinson told the new owners 'that we welcome the deal and that though we want to reduce our holding, we would do nothing for the present towards selling and interfering with their market'.

The other parts of the Vickers group which were re-structured were not as easy to separate from the organisation as Metrovic. M.C.W.F. was even more associated with Docker than Metrovic, and was appreciably less profitable to Vickers. According to Jenkinson's calculations in 1928, the net purchase price of M.C.W.F. in 1919 worked out at £13,955,630, of which £5,199,387 represented the price of goodwill—the excess which Vickers paid for. Dividends received by Vickers from M.C.W.F. over 1919-27 totalled £4,010,153, averaging £456,390 per annum, or 3.54% of the purchase price. Dividends paid by Vickers on the capital issued to buy M.C.W.F. shares totalled £5,434,697, representing on average £603,300 per annum, or 4.66% of their purchase price.

1. Jenkinson to Lawrence, letter 23 August 1933. V.microfilm R.323
3. Jenkinson's figures include the cost of raising the capital to support the M.C.W.F. purchase, notably the interest. This accounts for the discrepancy between his figures and those given ante, p 111.
Jenkinson therefore submitted that the actual cost to Vickers of M.C.W.F. was the market value of the capital raised, plus expenses incurred, viz. £16,533,400. 1 As to M.C.W.F.'s prospects in 1928, the construction and expansion of railways throughout the world (except in a few countries) has...passed the peak, and...the future...will be mainly concerned with the improvement of existing methods and equipment, possibly by electrification and standardisation. 2

Lawrence had written as early as September 1927, 'I would prefer to get a good Carriage and W. merger thro' to the Armstrong deal', 3 and had asked Docker to seek this. It soon emerged that opportunities for the future of the rolling-stock group coincided with Vickers' needs in another direction.

As Birch told Craven, 'steel is the foundation of the armament business', 4 and the state of Vickers' steel plant was proving inadequate. George Vickers visited Bethlehem and other U.S.A. steel plants in 1926; and George Taylor inspected the plant of German and Belgian competitors. Their reports were not encouraging, and Taylor (who had been given overall responsibility for the Sheffield works) emerged as an opponent of Vickers' role as an armurer. He wrote,

the plant at the River Don Works (which is mostly laid out for the production of armaments) is not generally suitable for commercial work, and...it would be difficult (although not impossible) to alter the plant so that profits could be made on this class of work.

4. Birch to Craven, letter 16 November 1931. V.microfilm K.162. Cf Winston Churchill, memorandum of 1 November 1918. 'The foundation of the munitions budget is tonnage; the ground floor is steel; and the limiting factor in the construction is labour'. Quoted Hist. of Ministry of Munitions, vol 2, pt 1, 95.
At the River Don Works at present we are making:
1. Crank axles, straight axles, tyres and springs.
2. Drop forgings for motor-car and aeroplanes engines and special Duralumin forgings.
3. Special alloy steel for highspeed Twist drills and other tools.
4. Special Electric Steel castings.
5. Steel Tubes, bars and billets.
6. Steel pressings and chassis frames.
7. Magnets etc.

none of which can carry the heavy on-costs and at the same time show substantial profits...unless commercial work of heavy weights is introduced in very large quantities...this...work...will not be a considerable help to the profits.

According to Taylor, Krupps and the two Czech firms, Vitkovice and Skoda, could deliver marine engines at Barrow at two-thirds of Sheffield's cost price; whilst Bethlehem and Mid-Vale in America could cast ingots of 200 tons, whilst Vickers' maximum weight of 160 tons could be achieved only with difficulty. He thought that the improvements necessary at the River Don works would cost £1,000,000 at least, but recommended that Vickers erect a completely new steel-works. Buckham broadly agreed with Taylor. Discounting the importance of 'longer hours and lower wages' in other countries, he wrote

in America, Germany and other countries, before the War and since the War, much greater efforts have been made to develop and modernise their plants than have ever been attempted in this country...the main reason why we fail must be put down to inferior plant and inferior methods...the prices of our guns, mountings, etc., compare very unfavourably with either Schneider's, Skoda's, Bofors', Ansaldo's or Terni's, and something must be done...either a new or modernised factory is essential. 2

It was against this background that Docker entered discussion, in 1927, with Cammell Laird, whose interests in shipbuilding, armaments, rolling-stock and electro-technology all competed with Vickers.
Vickers attached particular importance, initially, to limiting the role of M.C.W.F. In disposing of it, as Lawrence wrote,

the object which we have in view is threefold:

(1) To release to Vickers the major part of the cash and securities amounting to £5½ million pounds.

(2) To make our investments in the trading assets more liquid, so that we could sell if necessary.

(3) By amalgamation to increase the trading profits. 1

Early in February 1928, when Docker's negotiations over Metrovic were hanging fire, Vickers notified him that they would leave the Cammell Laird merger negotiations in his hands for another three months; but three weeks later, when the Metrovic deal had been concluded, McKenna approached Jenkinson with a remarkable proposal. Jenkinson told Lawrence that McKenna's plan was that Docker take over from Vickers our interests in the M.C.W.F. Mr McKenna pointed out that he was only interesting himself in the matter as a friend of both parties, and with a desire to help Vickers ultimately to realise in cash the value at which our holding stood in our books, and he feared that should Mr Docker sever his connection with the control of the Metropolitan Company, the profits earned in the past would be seriously diminished.

McKenna's idea was that Vickers would receive £3,000,000 in cash, would be issued with bonds to the value of £4,000,000 and that a loan of £2,000,000 due by Vickers would be cancelled. McKenna suggested Vickers should sell to nominees of Mr Docker, whose interest in the matter would not be disclosed...under this scheme Mr Docker would not find any capital and if the business were successful, would acquire the shares without any payment...I suggested that if the shareholders were aware of this transaction they would criticise the Board, but his view is that the transaction, being carried out in the name of nominees, would never become public. 2

McKenna explained 'my lever with F.D.D. would be his desire to help B.D. [Bernard Docker], whose ambition it is to make a success of the Wagon Company'. 3

1. Jenkinson to Lawrence, letter 12 September 1927. V.microfilm R.323.
The piquancy of this suggestion is remarkable. Only nine years before Docker had made 'enormous' personal profit by Vickers' unwise purchase of M. C. W. F. Now a deal was proposed—surely with his tacit approval—in which he would take back that company on truly bargain terms. Unfortunately for him, the repercussions of his arrangement with Swope were just beginning to be felt at Vickers House, and on 8 March, Lawrence's board rejected the proposed Docker initiative. A few days later George Taylor had an angry meeting with Docker, the upshot of which was that the latter 'decided not to take any steps to bring about the fusion between Metropolitan Carriage and Cammell Lairds, and that Vickers could take any steps they liked, as [he] did not propose to take any further interest in the Company'.

The main object of Vickers, in the negotiations with Cammell Laird and M. C. W. F. which followed, was to obtain facilities to operate as industrial steel producers. George Taylor was convinced that Vickers were confronted by the choice 'of throwing our entire weight into the industrial arena, or going out of business entirely'. and thought both Vickers' steel plant, and Armstrongs' steel works at Openshaw, Manchester, were 'very much out of date'. Cammell Laird looked like the remedy: it is significant that in the agreement concluded, with effect from 1 January 1929, shipbuilding and armaments (but not armour plate) were excluded. The English Steel Corporation, of which Taylor took charge, was to manufacture industrial steel at Sheffield, Manchester, Penistone and Elswick.

3. G. R. T. Taylor to Docker, letter 14 March 1928. Repeating the message from Docker which he had passed orally to Lawrence. V. microfilm R.276.

The new steel corporation had a capital of £8,000,000, divided into £2,000,000 7% cumulative preference and £6,000,000 Ordinary shares. In return for assets acquired, shares were allotted on the following basis: to Vickers-Armstrong (for works at Sheffield, Manchester and Elswick) 1,285,815 preference and 3,272,031 ordinary; to Vickers (for the shares in Taylor Brothers, Manchester) 95,975 preference and 404,946 ordinary; to Cammell Laird (for works at Sheffield and Penistone) 599,539 preference and 2,033,149 ordinary.

The Ordinary shares allotted represented the value of fixed assets, and preference shares were allotted in respect of liquid assets. Thus Cammell Laird contributed 35.6% of the fixed and 30.25% of the liquid assets, with Vickers having ultimate control. As The Economist commented

Cammell Laird and the old Vickers indulged in truly manifold activities, and happened to cover a great deal of the same ground. Suppose that at any time direct junction of the two throughout had been possible. That would have achieved bigness and a certain avoidance of duplication. But the dangers to which vertical combines of every sort are liable have been learnt since the war, and that is exactly what our supposition would have brought into existence, an immense vertical combine that contained a whole medley of unlikes. What is actually resulting is the splitting up of many-purposed businesses into single-purposed ones. The bigness of the vertical combine...was intended to strengthen financial power. That is not enough. It might be if productive and distributive efficiency could be obtained by every nice-looking mechanical scheme. As they depend ultimately on the extent of knowledge and foresight that individual men can show, and on their absolute cooperation, bits that appear to fit together on paper do not necessarily grow together in life. The present scheme is designed to overcome the danger of diffusion of effort which is always present in great industrial agglomerations. 1

1. The Economist, 22 December 1928.
Cammell Laird's Accounts for 1927 and 1928 showed a loss of £112,046 and £80,694 respectively, and it needed strengthening no less than the steel industry: under this scheme its heterogeneous bulk was broken into three compact industries, two of which were strengthened by alliance with other factories doing like work.

No deal had such a profound meaning for Vickers since they had bought Maxim-Nordenfeld and the Barrow yards in 1897, for the very reason that it reversed one of the primary points of the 1897 mergers. After the creation of the E.S.C., the supply of raw material and forgings passed out of Vickers' immediate control, and they could no longer boast that they supplied armaments made from raw material to finished product 'without aid from any outside source'.1 If, under George Taylor's leadership, the E.S.C. was beneficial to the rationalization of industry, its inception had drawbacks for Vickers. Birch soon detected 'more than a tendency on the part of the English Steel Corporation to break away from the Vickers group', and claimed in 1929 'none of the Allied companies have any faith in the prices quoted by the English Steel Corporation, nor do they deal entirely with them, as they certainly should'.2

Table 17 to show Vickers' Sheffield sales, 1929-32.

<table>
<thead>
<tr>
<th>Year</th>
<th>Value of Vickers' Sheffield Sales (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929</td>
<td>6,157,000</td>
</tr>
<tr>
<td>1930</td>
<td>2,657,000</td>
</tr>
<tr>
<td>1931</td>
<td>1,843,000</td>
</tr>
<tr>
<td>1932</td>
<td>1,392,000</td>
</tr>
</tbody>
</table>

Note: The figure for 1932 is estimated. Sales for first six months of 1932 were £696,000.


Table 18 to show output of ingots at Vickers' Sheffield works and Armstrongs' Openshaw works, 1923-7.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sheffield</th>
<th>Openshaw</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>67,866</td>
<td>22,076</td>
<td>89,942</td>
</tr>
<tr>
<td>1924</td>
<td>65,320</td>
<td>12,852</td>
<td>78,172</td>
</tr>
<tr>
<td>1925</td>
<td>66,265</td>
<td>10,290</td>
<td>76,555</td>
</tr>
<tr>
<td>1927</td>
<td>86,886</td>
<td>14,665</td>
<td>101,551</td>
</tr>
</tbody>
</table>


Note: 1926 omitted because of disruption caused by General Strike.

Among the new executive management drawn into Vickers at this time was Colonel J. Beaumont Neilson (1885-1957), who became a director of the E.S.C. in 1929, and Deputy Chairman of the group on Sim's death in 1930. Typical of the successors of the owner-managers, with his war-time D.S.O. and C.M.G., he had been severely gassed whilst commanding a Highlands infantry regiment, and was notorious among co-directors for his constitutional pessimism. 'Like most of his colleagues in the organisation, he comes from across the border, and was born at Glasgow and educated at Harrow';¹ he made his career in industrial finance, and his other directorships included the steel manufacturers, Baldwin's.²

2. In 1930, Baldwins amalgamated their heavy steel interests with those of Guest-Keen-Nettlefold, forming the British (Guest Keen-Baldwins) Iron & Steel Company.
It was a bitter irony that new régime of Taylor and Neilson, with all its hopes of modernising capacity, coincided with the onset of the Great Depression in 1929. Business fell away, and Jenkinson wrote that E.S.C's results (1930) 'have given me a nasty shock, for bad as I expected the figures to be, I did not anticipate anything quite so dreadful'. Taylor's intention to finance renewals of plant through sales of obsolete and depreciated stock were dashed by the Depression, and two directors of Vickers-Armstrong reported on E.S.C's works development (1931),

there is undoubtedly a considerable starving of maintenance, with lack of effective renewals. There has been little development in Plant, and renewals have been carried out piecemeal and not in accordance with any general plan. Birch wrote to Craven in the same month

I cannot lay my hand on my heart and...say to anybody that our steel is going to be beyond approach in the future. I have had so many shocks...There is something infernally wrong somewhere.

With effect from January 1932, E.S.C's capital was written down by £5,372,820—which represented a capital loss to Vickers-Armstrong of £2,830,000—and later in that year, Craven went to Sheffield as managing director. Subsequently Craven supervised the expenditure of some £1,500,000 in renewals and modernisation of lay-out, so that if world conditions had made the early years of E.S.C. disappointing to Vickers, its stabilization was nevertheless a cause for satisfaction. An undoubted source of its strength was that Vickers-Armstrong (unlike many of its competitors in steel) carried no debenture charges whatsoever. The policy of Lawrence and Jenkinson to put the group in a very strong cash position—it was the only large steel-maker able to make a distribution to its Preference shareholders in 1931—

1. Jenkinson to Neilson letter 3 March 1930. V.microfilm R.344
succeeded after 1933, and in the years before the outbreak of war E.S.C. secured a notable reputation in its sector. (In 1933 they produced the largest ingot ever made in Britain, of 175 tons; and in 1938, successfully cast an ingot of 230 tons). ¹

Whilst George Taylor was responsible for the E.S.C., his brother Tom became the first Chairman of Metropolitan-Cammell. His task was more hopeless, for the group was saddled with over-capacity. Its General Manager noted (1929) that, at best, their six factories would obtain orders for two-thirds of their capacity—say 600 coaches, 4,000 four-wheeled wagons and 3,000 bogie wagons—and that two factories should be sold. ² This was duly done at Nottingham and Leeds, but rolling-stock so far from justified the optimistic forecasts of 1919, that in 1934 Metropolitan-Cammell's value was again written down, to only about £1,000,000.

So much for the purchase which Docker persuaded Caillard had 'financial advantages so great that it need not be dwelt upon'. ³ Certainly Vickers' association with Docker proved expensive, not just in £16½ million which Jenkinson calculated that M.C.W.F. had cost Vickers, but also in the opportunity cost. If Vickers had combined after the Armistice with Cammell Laird, or a similar firm, and thus have led the rationalization of British steel manufacturing a decade earlier, not only Vickers' history, but the socio-economy of Britain

might have been very different. The opportunities for an integrated steel firm, unhindered by Debenture charges, were great in the 'twenties, and would unquestionably have changed the basis on which the nationalization of steel was argued after 1945. The possibilities can be argued endlessly. What is more certain is the contrast between Vickers in the last years of the owner-managers, and the reconstructed Vickers of Lawrence and Jenkinson. In the first period, entrepreneurs who sensed that their role as national armourers was defunct, launched a hectic post-war expansion, without either explicit management policy or sufficient financial data to control each specific division. Without adequate centralised pooling of information, it was impossible to control individual operations. Although the Depression that began in 1920 demanded the highest managerial co-ordination, the owner-managers could only offer the intuitive judgements which had worked so well before 1914. They still sought to master every operating division of the group among themselves, but their vague demarcation of responsibilities led to inconsistent allocation of resources, and an increasingly confused and unprofitable product line. Vickers became a rather formless aggregation, a sort of general engineering stores, always chronically short of cash to cover operating needs. The later Vickers, with its Scots and ex-Servicemen, was a very different enterprise, notably by its Board being kept intelligently informed with systematized data. Vickers House knew how much was being contributed to profitability by each division of the group, and with these aids to review and control efficiency, the prosecution of each of the group's operations might safely be left to management in situ. The medium for these changes was Docker. Whatever peace-time merger Vickers had made in 1919, the addition of civilian industry would have introduced outside financiers and professional managers to supercede the owners, but Docker brought particular influences to bear.
Although his resignation in 1920 at first suggested that the owner-managers had not lost their skill in repelling unwelcome interlopers, the subsequent failure of their policies inevitably put the Docker ramp into ascendancy.

The owners of the steel and armaments firm of Vickers would have been astonished in 1918 to be told that in 1936 they would still be a steel and armaments firm, and would have been incredulous that their intended diversifications had come to so little. The transitions of Vickers during the era of Disarmament are a salutary reminder that capitalism is about individual men taking risks.
CHAPTER FOUR

If at times in the preceding chapter it seemed that Vickers were stumbling from one disappointment to another, they nevertheless showed some consistent virtues, and kept well short of catastrophe. They re-iterated the impression they had given before 1914 of possessing a capacity for responding effectively to sharp self-appraisal, and they continued to recruit to their board and senior management some extremely good businessmen. Although their transfer to civilian work was critically difficult, Vickers survived to lead the rationalisation of British industry and the re-armament of British Forces. In all this they did better than other firms in the armament sector. This chapter will recount the vicissitudes and ruin suffered by Birmingham Small Arms and by Vickers' main rival, Armstrongs, against which the performance of Vickers can be judged. In both cases new product development was aborted by serious managerial failure, prompting the conclusion that Edwardian armourers passed a poisoned chalice to their successors. The uncommercial pattern and peculiar demands of the armament business were a poor training for successful diversification into civilian manufacturing.

B.S.A. had been founded in 1861 by J.D. Goodman (1816-1900), who had started business in Birmingham in 1831 and had in 1855 led promotion of the Parliamentary Act establishing the Birmingham Proof House. Goodman was at the heart of Birmingham commerce and of the small-arms business, but despite almost forty years as Chairman of B.S.A., did little to fortify its Board. Its directorate was drawn from a small and geographically localised circle of businessmen, of whom Herbert Chamberlain, younger brother of the Unionist politician Joseph Chamberlain, was Chairman 1900-4.

In 1904 the board was joined by Sir Hallewell Rogers (1864-1931), the retiring Lord Mayor of Birmingham who also sat on the Birmingham board of Barclays Bank, and in 1906 he became Chairman. Rogers 'was not...a vigorous and constructive Chairman', and reputedly owed his position to that ubiquitous Birmingham financier, Dudley Docker, who had long taken 'a warm interest' in his career. 1 Certainly, in the early years of Rogers' chairmanship, company policy was supervised by Docker, who joined the Board in 1906, at a time when the armaments business was in deep recession, and as deputy-chairman (1909-12) master-minded B.S.A's merger with the Daimler Motor Company (1910). His protégé, Lincoln Chandler, a member of the ramp on the Vickers board (1921-6), was a director of B.S.A. 1907-14, but their co-directors were largely unimpressive. Typically, when B.S.A. finally recruited a Government technologist supposedly equivalent to Vickers' Dawson, they chose the mediocre figure of Sir Capel Holden (1856-1937), Superintendent of the Royal Gun and Carriage Factory at Woolwich Arsenal 1899-1912. In 1912 Docker retired from B.S.A. in favour of another Birmingham Unionist businessman, Neville Chamberlain (1869-1940), although he retained close connections with various directors, including Edward Manville (1862-1933; knighted 1923), the new deputy chairman, a senior Daimler official who was a pioneer of motoring and electro-technology. 2

After the Armistice, B.S.A. expected the trade in government armament to disappear, and began a policy of peace-time diversification. They bought two Sheffield fine steel firms (William Jessup & Sons costing about £1.4 million and Burton, Griffiths).


2. Manville and Dudley Docker were co-directors of the Metropolitan Railway Company. Jenkinson to Lawrence, 20 September 1929. V. microfilm R. 329.
B.S.A intended to expand their production of bicycles, motor-cycles and machine-tools, whilst retaining 'an organisation by which they could respond at any moment to a call for military arms should the Government again have need of fresh supplies'. As Rogers stated:

Our five years' war production of Lewis guns and military rifles gave us an exceptional experience in the obvious methods of reducing costs. We framed our 1919 policy, therefore...to make the smallest possible range of products on the largest possible scale. 2

But it was in their final choice of innovative diversification that great trouble came. In 1919, with their subsidiary Daimler Company, they established the Daimler Hire Car Company with about 250 cars, and it was as a complement to this that B.S.A. made its fatal decision to buy the bubble Air Transport & Travel Company (AirCo) from its promoter, the publicist George Holt-Thomas (1869-1929). Airco's Chief Pilot and Aerodrome Manager, Captain 'Jerry' Shaw (1892-1977), had made the first commercial charter flight in the world (from Hendon to Le Bourget) on 15 July 1919, and B.S.A.'s intention was to develop Airco's charter business parallel to the Daimler Hire organisation. Their arithmetic was absolutely inadequate. 4

Holt-Thomas owned the entire Ordinary share capital of Airco, which was never publicly issued; although during war-time expansion, £350,000 Preference shares and £250,000 7 per cent Notes had been taken by the public, these did not carry voting rights.

1. The Economist, 11 October 1919. The words are those of Sir H. Rogers.
2. The Economist, 29 April 1922.
3. On Shaw, see The Times obituary notice, 4 October 1977. Holt Thomas published two serialised articles, entitled 'A Years Commercial Flying', recounting the London-Paris air service, in The Times, April 1920. Under the Post Office vote for 1920, £75,000 appeared for the conveyance of mail by air, and the Post Office charged 2½ shillings per letter forwarded airmail. The Paris Air Mail, under B.S.A. auspices, was Britain's first. Airco's chief designer at this time was Captain Geoffrey de Havilland (1882-1965; knighted 1944).
4. B.S.A. received most evasive advice from their accountant, who was later characterised by a Chancery Judge as 'untruthful and dishonest... unsavoury and discreditable'. For Thomas' method in tricking one B.S.A. director into making an offer which his reluctant colleagues felt 'under moral obligations' to maintain, see P. Martin, memorandum on Airco, 20 January 1920. Warwick University mss 19A/1/2/42. The Times Law Report, 13 February 1925.
Thomas 'was something of a Napoleon in business, conceiving and carrying out great financial schemes to complete a chain that would circle the whole industry of aviation', but abruptly sold his controlling interest to B.S.A., taking payment in B.S.A. shares and joining the B.S.A. board at the end of 1919. In March 1920 B.S.A. were confronted by an unexpected Airco bank overdraft of £660,000 (at which point Holt-Thomas left the B.S.A. board), and ultimately, B.S.A.'s liabilities on Airco reached above £1.3 million, with Sir William Peat appointed Liquidator. If the B.S.A. board was negligent and gullible, Thomas' conduct was more problematical.

Although the Airco mis-investment weighed on B.S.A.'s profitability during the twenties as heavily as Vickers' mesalliance with M.C.W.F., it did not result in comparable re-assessment and reform of managerial practice and Board membership. Of the two Sheffield men who became directors when their firms was absorbed in 1919, E.M. Griffiths resigned in 1921 and Sir Albert Hobson (Chairman of Jessups) died in 1923, so the Board retained its narrow base and its ties with Birmingham Unionism. (Both Manville and Rogers were elected to Parliament in the general election of 1918).

As an attempted strengthening, it was joined in 1923 by Arthur Hungerford Pollen (1866-1937), the son of an art historian noted as Cardinal Newman's confidante, and himself a naval propagandist and businessman who was (according to his friend Hilaire Belloc) 'remarkable for the rapidity and exactitude of his judgement.'

1. The Economist, 7 January 1922.
2. The Economist, 6 November 1920.
3. Neville Chamberlain left the board of B.S.A. in 1922 to enter the Government, but retained the closest contacts with several B.S.A. directors, notably A.H.E. Wood, a director from 1907.
Pollen had invented an automatic fire control system for the Navy before 1914, but had subsequently entered an unedifying public disagreement about patent rights, and been removed from the list of Admiralty contractors. In 1924 the Board was joined by Patrick Hannon, a former Secretary of the Navy League, who had become Unionist M.P. for Rogers' Birmingham constituency on the latter's political retirement (1921), and acted as Director of the Federation of British Industry's parliamentary lobby organisation, the British Commonwealth Union (with Docker as President and Rogers as Chairman). Hannon became the director responsible for liaison with Whitehall and foreign governments.

During most of the Disarmament period, B.S.A. was totally converted to civilian production, and its main function for the War Office was as agent through which surplus guns and rifles were sold in the Baltic. The Company which in the Great War had produced 1,310,000 rifle components weekly, involving over 15,000,000 machinery operations weekly, had shut its rifle and machine-gun sections for almost all of our period. The formation in 1926 of B.S.A. Radios Ltd, in conjunction with Standard Telephone & Cables, ushered in a new line; but as shown in table 19, B.S.A. did not prosper.

1. Hannon also successfully urged Sir Ernest Hiley, a member of the Docker ramp on the Vickers board 1919-21, to become a Unionist parliamentary candidate in Birmingham. Hannon, diary 20 January 1921. Docker was a Unionist, but would have preferred 'to run country on Board of Directors' plan with big businessmen—nonpoliticians'. Diary of Hannon, 26 January 1921: Cf Lord Kilmuir, Political Adventure. London 1962, 19.


2. Dewar, Munitions Feat, 81-2; Minutes of Evidence, 493.
There was ill-definition of responsibilities among the management and poor communication attributable to the attitude of Percy Martin, managing director of B.S.A. 1907-34, who resented any suggestion that the Board should supervise medium-term planning. Martin's conduct frustrated four successive Chairmen, and it is surprising that it was so long tolerated.

Table 19 to illustrate the fortunes of B.S.A., 1914-32.

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Profit £</th>
<th>Rate of Dividend per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1914</td>
<td>190,429</td>
<td>15</td>
</tr>
<tr>
<td>1915</td>
<td>408,455</td>
<td>20</td>
</tr>
<tr>
<td>1917(a)</td>
<td>427,976</td>
<td>20</td>
</tr>
<tr>
<td>1918</td>
<td>435,207</td>
<td>20</td>
</tr>
<tr>
<td>1919</td>
<td>373,091</td>
<td>10</td>
</tr>
<tr>
<td>1920-1(b)</td>
<td>566,881</td>
<td>5</td>
</tr>
<tr>
<td>1921-2</td>
<td>469,168 (c)</td>
<td>nil</td>
</tr>
<tr>
<td>1922-3</td>
<td>166,671</td>
<td>nil</td>
</tr>
<tr>
<td>1923-4</td>
<td>125,060</td>
<td>nil</td>
</tr>
<tr>
<td>1924-5</td>
<td>179,382</td>
<td>5</td>
</tr>
<tr>
<td>1925-6</td>
<td>184,885</td>
<td>6</td>
</tr>
<tr>
<td>1926-7</td>
<td>111,883</td>
<td>nil</td>
</tr>
<tr>
<td>1927-8</td>
<td>72,063</td>
<td>nil</td>
</tr>
<tr>
<td>1928-9</td>
<td>216,188</td>
<td>3</td>
</tr>
<tr>
<td>1929</td>
<td>168,188 (d)</td>
<td>6</td>
</tr>
<tr>
<td>1930</td>
<td>148,026</td>
<td>5</td>
</tr>
<tr>
<td>1931</td>
<td>204,194</td>
<td>nil</td>
</tr>
<tr>
<td>1932</td>
<td>797,928</td>
<td>nil</td>
</tr>
</tbody>
</table>

Source: The Economist.

Notes: a) no data for 1916; (b) for 18 months ending 31 January 1921; c) figures underlined indicate deficit; (d) for 6 months ending 31 July 1929. From 1929, B.S.A.'s financial year closed on 31 July instead of 31 January.
Having passed Ordinary share dividends (1921-4) in the wake of the Airco losses B.S.A. also passed payment (1926-8) as their other diversifications failed to bring returns. Manville replaced Rogers as Chairman in 1928, but with little effect; and the marketing difficulties of the Daimler division brought a crisis in 1931, when a net loss of £204,194 was sustained. As E.M. Griffiths told Martin, the old style of Board of Directors is out of date; it has had its trial since the War and has been found wanting. The unfortunate system of appointing Directors having no knowledge of the business has been tolerated too long in this country, and Directors serving on multiple companies are a great source of weakness to companies. 1

Manville obtained the resignation of Rogers and Holden as Directors in 1931, 2 but this was unimportant by itself. The meeting of the B.S.A. board on 8 July 1932, faced with a net loss in the last year's trading of £797,928, decided that Pollen should succeed Manville as Chairman, and further, that every Director should place a letter of resignation in Pollen's hands, to be used if and when he saw fit. Pollen was initially 'reluctant' to accept, because it entailed relinquishing the Chairmanship of Linotype & Machinery Ltd. which he had held since 1927; 3 and in the light of subsequent developments, it does not seem that the appointment of Pollen had been carefully considered. One of Pollen's aims was to remove the current executive Directors (Martin, W.L. Bayley and R.A. Rotherham) from the Board, and this predictably brought him into confrontation with Martin. By October 1932 Hannon was complaining of Pollen's 'impulsive and dictatorial methods', and Manville was left in tears at the end of a Board meeting. 4 By the beginning of December,

2. Manville to Hannon, 10 April 1931. H31/1. Rogers was greatly depressed by this forced retirement, and died a few months later. See Hannon to Martin, 13 May 1931, H 31/1.
3. The Chairmanship of the Linotype Co. carried with it a Company house, and a salary of over £6,000 per annum. Pollen to Hannon letter, 7 December 1932. H31/1. Pollen had married the only child of Sir Joseph Lawrence, founding Chairman of the Linotype Co.
Pollen had so isolated himself that Martin felt strong enough to announce that he could no longer co-operate with Pollen as Chairman, and at the board meeting on 6 December, he asked the Board to call for Pollen's resignation. A highly critical resolution was passed by the Board, the wording of which has not survived, since Pollen made his resignation conditional on it not being entered in B.S.A's books; but which rendered him 'terribly overwrought', and induced him to submit his resignation as Chairman. This was accepted, and Sir Alexander Roger (1878-1961) was announced as B.S.A.'s fourth Chairman in five years. An Aberdonian who had been Director General of Trench Warfare Supplies in the Ministry of Munitions, he was co-director with Dudley Docker of the Midland Bank, and the subsequent internal reforms recommended by Hannon and Roger were explicitly drawn up with Docker's help. His behind-the-scenes role was decisive at this time, as indicated by Hannon later describing himself as 'a liaison between the Board and Mr Docker in the difficult days when Mr Docker came to save the Company from...the brink of extinction'.

3. Sir Alexander Roger, memorandum on organisation, 13 December 1932. Hannon memorandum on organisation, 13 December 1933. Both in H31/1. Apart from Docker's activities at Vickers in 1925-8 described in Chapter three, he had maintained other connections. He was leader of the British group participating in the vast international tramways and electrical supply combine, Sofina, based in Belgium and run by Dannie Heineman (1872-1962). Docker spearheaded their attempts to win the Aswan dam hydro-electric project in Egypt, 1927-33. He was also 'behind the... amalgamation of Thomas Cook's and the International Sleeping Car Company' of Belgium, in whose interests he was active until the German invasion of Belgium. See J. Murray to Sir Austen Chamberlain, 13 February 1928. FO 371/12365. According to hearsay, indeed, Docker was working to get control of Sofina himself. Jenkinson to Lawrence, 20 September 1929. V microfilm R. 329.
Whether this was by virtue of holdings in B.S.A., his role as personal mentor to several of its more important directors or because of his general reputation as a Midlands financier is unclear.

Though Rogers' chairmanship began auspiciously, he was soon confronted with domineering and inflexible behaviour by the managing director. Hannon wrote in December of 'divided counsels and individual hostile feeling' on the directorate: the two executives from the motor-car division of the Company, Turrell and Commander Herbert, felt that Martin was undermining their position and inhibiting 'full expression of their views at Board Meetings'; whilst Martin complained that his work had become 'practically impossible' because of 'continuous communication' between Roger, Turrell and Herbert which 'undermined' his knowledge of operations. With Docker's prompting, Hannon set to the 'strenuous work' of reconciling Roger and Martin, and in December 1933, achieved 'a definite understanding' whereby

Martin is to be treated on his proper footing as Managing Director and...is to respond by dealing directly with every communication received from Roger without the usual sloppy way of handling them over to somebody else or making no reply at all.

It was nevertheless evident that after 27 years as managing director, Martin's supersession was overdue; at Docker's suggestion, G.D. Burton, who had been notably successful as General Manager of M.C.W.F. when Docker was still associated with Vickers, succeeded Martin in 1934. The methods of Roger and Burton brought some success to B.S.A. in the late 'thirties, but the influence of Dudley Docker remained important. Not only did his nephew Noel become a

5. See above, p. 165, note 2.
director in 1937, but when Sir A. Roger was made Chairman of the Tank Board (1940), Bernard Docker succeeded him as Chairman of B.S.A., and also acted as managing director (1940-4) whilst Burton was seconded to the Ministry of Supply. Though Dudley Docker's long preference was to act through nominees, he himself joined the B.S.A. board and sought to secure his son's industrial future. In 1944, as Hannon recorded a few days before the elder Docker's death, Burton was summoned to spend two nights at Amersham with D. D. and was told quite plainly that he had to go. Only reason given was Bernard should be Managing Director of entire group... Have agreed that no animus... should be shown [by Burton] towards the Docker family. Asked me definitely whether he could trust Bernard, and I said 'Yes'.

Whether the implication of D. D.'s untrustworthiness is correct or not, his success in arranging, in the last weeks of his life, that his son would be managing director, as well as Chairman, of post-war B.S.A. did not benefit British industry. Sir Bernard Docker's mountingly imperious conduct of B.S.A. culminated in a board meeting of May 1956 when, after his proposal to make his brother-in-law a director of B.S.A. was defeated by five votes to four, he declared it passed by his casting vote and abused the directors who voted against him. His subsequent removal from the Board by his co-directors and very unfavourable publicity (1956-8) were the inheritance of the pre-war B.S.A. board which suffered so long before removing Percy Martin. Similarly, the reconstruction of the B.S.A. board in 1957, when new blood was appointed averaging 62 years of age, resembled the indifferent personnel and expertise of the Goodman, Rogers and Manville years.

1. Hannon, aide-memoire of lunch with Geoffrey Burton, 30 June 1944. H36/4. Dudley Docker died on 8 July 1944 at his Amersham house. Cf J.C.C. Davidson, Chairman of Unionist Party, to Cunliffe-Lister, 11 February 1929, asking that the latter 'quickly' suggest to Stanley Baldwin and N Chamberlain 'that DD should receive a peerage...he is willing and...it might be useful in the Midlands... Vansittart knows all about it'. SWIN 2/14.

2. Including Sir James Reid Young of Vickers.
If Vickers' successes against the odds (1956-77) have their roots in historic traditions, so did the collapse of B.S.A. after twenty-five years of 'irrelevant structural re-organisation', and its transformation into the Meriden Co-operative. Whilst Vickers, in a crisis, could produce and recognise leadership of Lawrence's or Craven's quality, B.S.A. was satisfied for a quarter-decade with Sir H.Roger's softness, and then threw themselves into 'baffling negotiations with an impossible personality' such as Pollen. The difference meant everything.

Similar conclusions are shown by the decline and ruin of Vickers' main armaments competitor, the Newcastle firm of Armstrongs (after the absorption of the Whitworth armour factory at Openshaw, Manchester in 1897, known as Sir W.G. Armstrong, Whitworth & Company). Along with Vickers and Krupps, they were the largest armourers in the Edwardian world: by 1913 they had built, armed and launched 135 warships, displacing almost 600,000 tons, for sixteen different Navies, and had also armed 243 vessels built elsewhere. Already by 1901 Vickers thought Armstrongs were 'too old and too rich', but until 1907 their 'financial record was unequivocally good', and as late as 1918, they were considered 'among our leading and most stable industrial investments...being of a more solid character even than...Vickers'.

5. Quoted Vickers Brothers 31.
6. Irving, 151
Their managerial organisation, however, was always inferior to Vickers'. Lord Armstrong (1810-1900) built up his great firm with a team which included Andrew Noble (1831-1915; baronet 1902), a ballisticsian, and the three Rendel brothers, George, Hamilton and Stuart. After Armstrong's death, Noble became Chairman and the group suffered a great declension. The jealous bully controlled the firm as his personal fief. Board meetings were farcical, with Noble shouting down any Director who 'interfered with his monopoly of the conversation', and with-holding the most elementary information from the Board. In 1907, for example, he brought almost to finality a deal for a substantial exchange of shares and directors between Armstrongs and the Sheffield steelworks of Hadfield, without telling his co-directors of any negotiations. He blocked board status for any of the senior management of the firm, and his 'over-centralised caucus management' encouraged jealousy and sniping between the different departments. One Elswick employee seeking promotion noted ruefully, 'it is influence that does it'; whilst another complained that, with over-staffing, 'all individual effort was discouraged'. Noble appointed as joint managing directors two of his sons, Saxton Noble (1863-1942; 3rd baronet 1937) and John Noble (1865-1938; baronet 1923), together with his former personal secretary, John Meade Falkner (1858-1932). Without board consent, he appointed as

3. Vickers Brothers, 146. For one such squabble, see Ordnance Department to Elswick Shipyard, memorandum of 8 September 1904 on electrical work. Memorandum of Shipyard Department on relations between Electrical and Ordnance departments, 20 September 1904. Memorandum by Ordnance Department on electric lighting work, 23 September 1904. Memorandum by d'Eyncourt on Ordnance Departments' electrical work, 26 September 1904. All in DEY 5.
4. W.S. Dunlop to Earl Percy, 6 April 1908. DEY 5.
Company Secretary his charming but indolent son-in-law Alfred Cochrane (1865-1948), who himself confessed that he often failed to catch, amidst the hubbub, the decisions of Board meetings. ¹

The other directors were mostly timorous septuagenarians, and the only concerted opposition to Noble's autocracy came from three directors. These were Henry Whitehead (1842-1921), of the torpedo manufacturing family, Stuart Rendel (1834-1913; Lord Rendel 1894), who (after the deaths of his brothers in 1902-3) owned by far the largest bloc of shares, ² and Rendel's son-in-law, Henry Gladstone (1852-1935; Lord Gladstone of Hawarden 1932). Rendel particularly complained that Andrew Noble and his sons, as Armstrongs' representatives in Government negotiations, were 'absolutely disastrous and the sole cause of our being displaced by Vickers'; ³ that all the Nobles lacked marketing judgement, and used the Board as 'a mere convenience to them for disposing of bad business when it cannot be longer hushed up'. ⁴

A particular crisis occurred in 1910 when Rendel uncovered that for the last ten or fifteen years, Andrew Noble had been drawing large salaries, not just as the Manager of the Ordnance Department, but as Manager of the Steelworks, the Newcastle shipyard and foreign subsidiaries. Moreover, as these salaries were drawn on a percentage of profits, he had doctored departmental profit figures; and had also, unbeknown to other directors, similarly increased the emoluments of his sons, Falkner and another director, Smith Carington. ⁵


² In 1911 the Rendel family held 310,479 shares in Armstrongs, compared with 216,598 held by the Nobles. Bankers accounted for 198,969 shares; whilst two other Newcastle families (the Swans and Mitchells) owned together about 252,000 shares. Figures from Armstrong Whitworth papers.

³ Rendel to Whitehead, 29 July 1911. A.W. box 163.

⁴ Rendel to John Noble, 16 April 1908. A.W. box 167.

⁵ H.H. Smith Carington (1851-1917) was at this time resident Director in Manchester, where the Openshaw armour works were situated.
In 1909, for example, these five directors had taken £60,000 in such emoluments, which comprised about 18 per cent. of the net profit of £330,151. This 'grievously irregular' procedure explained the Nobel family's opposition to appointing younger blood to the Board, or to the promotion of management—both of which might have led to subdivision of their remuneration, 'or extend[ing] the knowledge of it to new men'. Rendel believed the arrangement was deliberately deceptive, and seized his opportunity to attack the Nobles who garrisoned 'the citadel of accounts'.

Deafness had rendered Andrew Noble unequal to his work as early as 1908; now, after a struggle, he agreed to retire from executive duties in 1911, although remaining Chairman. Rendel had also long believed that Armstrongs should imitate Krupps, and become 'a semi-Governmental enterprise', with Whitehall officials on its Board. In 1908 he sounded out Lord Milner, the Imperial administrator, on succeeding Noble as Chairman; and another possibility mooted was Lord Kitchener. Although supported by Gladstone, Whitehead and Carington, Rendel made little progress.

1908-11: Andrew Noble did not want a successor, since he believed that he would die as soon as he stopped working; his sons supported their father; whilst Falkner prevaricated, knowing that neither Rendel nor Andrew Noble would live long, and planning that there would be no rival to prevent his succession as Chairman.

2. Rendel to Falkner, 4 September 1910. A.W. Box 163.
3. Rendel to Sir George Murray, 15 February 1913. A.W. Box 163.
4. Rendel to Saxton Noble, 18 September 1909. A.W. Box 163.
6. Rendel to Lewis Harcourt, Secretary of State for the Colonies, letter 12 July 1912. A.W.Box 163.
7. Rendel to Sir A. Noble, 7 January 1909. A.W. Box 163.
Nevertheless, distinguished outside directors were eventually recruited. These included Sir George Murray (1849-1936), who was head of the Treasury 1903-11, and had previously been private secretary to Gladstone and Rosebery during their premierships. Once seriously considered for the Viceroyalty of India, he was one of those consulted by George V's Secretary in 1923 when Bonar Law resigned as Prime Minister. Clear-headed, 'red-tapy' and unimaginative, he was 'a great Civil Servant of the old school'. Murray joined the Finance Committee of the board, and soon took it over from John Noble, whose previous direction of it suggested either 'very thick-skinned audacity or very great incompetence'.

Another recruit was Sir Charles Ottley (1858-1932), an admiral afflicted by seasickness, inventor of the Ottley submarine mine, Director of Naval Intelligence 1905-7 and Secretary of the Committee of Imperial Defence (1907-11) before joining Armstrongs' board. Ottley was appointed to the London office, which had been Saxton Noble's purview as his physique was too weak for Elswick work, and also assumed Falkner's burden of 'bagman' travelling abroad. The third such director was Sir Percy Girouard (1867-1932), a protegé of Kitchener and former Governor of East Africa, who took charge of Elswick in 1912. Falkner considered Girouard a threat to his ambition to take over Armstrongs. Following a suggestion by Ottley to Hankey, Girouard was made Director General of Munitions Supply in 1915, but was dismissed by Lloyd George a few months later, largely on grounds of a difficult temperament.

3. Rendel to Gladstone, 7 October 1911. A.W. Box 163.
4. Murray to Rendel, 6 March 1912. A.W. Box 166.
5. Falkner to Rendel, 27 April 1901. A.W. Box 170.
Girouard then returned to Elswick, retiring from Armstrongs' board in 1923. A fourth recruit was Lord Sydenham (1848-1933), who as Sir George Clarke was Secretary of the Committee of Imperial Defence from its formation in 1904, before serving as a contentious Governor of Bombay 1907-13. A member of the Air Board (1916-17) Sydenham was 'the uncompromising exponent of the most extreme Conservative views'. An inveterate writer of letters to the press, he was a die-hard opponent of Irish independence, Indian self-government, and the Jews; a fierce and gloomy old man who hated 'the new outlook brought by the War'. Finally, Sir Philip Watts (1846-1926), Armstrongs' naval architect 1885-1901 and Director of Naval Construction at the Admiralty 1901-12, returned to his old firm, achieving the directorship which old Noble had long prevented.

It was to this reconstructed Board that Falkner succeeded as Chairman on Andrew Noble's death in 1915. A former Oxford don and enormously overweight, Falkner wrote Betjemanesque poetry and gothic novels, was an authority on demonology, old church music and missals, and lived next door to Durham Cathedral, whose Librarian he eventually became. After marrying the second Lord Armstrong's sister-in-law, he joined the Armstrong board in 1901, and was Andrew Noble's severest critic during the years of decline. Thrilled by the technology and power of the Elswick business—'It is to me hunting, fishing, shooting and everything else all in one'

1. The Times, 8 February 1933.
4. Armstrong's and Falkner's father-in-law, General Adye, had been Director of Artillery 1870-5; Governor of the Royal Military Academy at Woolwich 1875-80; Surveyor General of Ordnance 1880-2; and finally Colonel Commandant of the Royal Artillery until 1900.
he affected pessimism on most subjects, and believed that since it was impossible to overthrow Andrew Noble, it was inevitable that Armstrongs would eventually be beaten and consumed by Vickers' superior methods. As Rendel wrote, 'Falkner's judgement is... his weakest point. He is brilliant, romantic and picturesque, but not... so sagacious as he is clever... an always invaluable colleague, but... a reckless and ruinous master'. 1 Though in many respects a shrewd businessman, he was not an ideal successor to Andrew Noble and especially failed to strengthen his Board. Among those recruited to it were Cochrane, its ineffectual Secretary, and George Hadcock (1861-1936; knighted 1918), a ballistics who had joined Armstrongs as personal assistant to Andrew Noble (1889), and was at Elswick successively proof officer, head of the inspection department, manager of the gun shops and eventually managing director, in succession to Girouard. Falkner wrote:

His reputation is European. But Hadcock has no great directorial capacity. His outlook is too narrow, his antecedents have not made for broad and dignified views. He is apt to seize hold of meticulous points. He has an idea that everyone is trying to outwit him, and he is too jealous. 2

It was with this history of chronically bad Board co-ordination, thoroughly inadequate financial information, intrigue, marketing misjudgements and financial inexperience that Armstrongs faced the world-still, substantially, a Newcastle-based, rather than a London, firm. Although the Board had been restructured with a view to possessing sufficient prestige to treat with Governments in Britain and abroad, the upshot was that the Armstrong directors were men either with no commercial experience, or men who had spent their adult lives bending to the will of an autocrat. With some exceptions,

1. Rendel to Whitehead, 1 September 1909. A.W. Box 163.
they were palms without the dust of the industrial arena, and lacked the specialist talents of the Vickers directorate which they sought to imitate. They were also much older. Of the Armstrongs directorate in what proved to be the crucial year of 1926, Watts was aged 80, Sydenham was 78, Murray was 77, Ottley and Falkner were both 68, whilst Cochrane, Haddock and the two Noble brothers were all between 60 and 65. In the event these men proved two of Webster Jenkinson's dicta: that no public company should have more than one-third of its directors aged above 60, and that

So long as boards of directors are constituted without regard to the qualifications of those selected, so long as shareholders prefer a man 'with a name' to a man 'with a future'—so long will the other nations continue to beat us. 1

During 1914-18 Armstrong supplied twelve armoured ships, eleven cruisers, eight sloops, eleven submarines, two floating power stations, one self-propelling floating crane capable of lifting 250 tons, two train-ferry ice-breakers, two train-ferry steamers, 97 torpedo tubes, 4,000 naval guns (including 18" guns weighing 152 tons apiece with projectiles of 3,320 lbs), 9,000 Army guns (including all the 6-pdrs for tanks, 1,413 60-pounders and 2,661 18-pdrs), 14\(\frac{1}{2}\) million shells, 21 million cases, 100 Mk IV tanks, three airships, over 1,000 aeroplanes (production rising from six in 1914 to 423 in 1918), together with bombs, grenades and armour-plate. At Elswick artillery ranges, 48,510 rounds of ammunition were fired in 1918 alone for proof of material and experimental purposes. 2

As Falkner told shareholders,

Our works...had grown to vast dimensions during the war: with the Armistice came not only the sudden cancellation of substantial contracts but also, what was more serious...no immediate likelihood of a continuance of armament orders. We had to launch out immediately on new and unfamiliar lines...we have no choice before us in these days of progress, except to develop and develop again. This is essentially an age of big things, and particularly

1. The Times, 5 November 1935.
2. Dewar, Munitions Feat, 25 passim.
of big industrial combinations. 1

The man who took charge of guiding Armstrongs during this age of big things was Sir Glyn West (1877-1946). An old Armstrongs' man, he had been taken into the Ministry of Munitions by his superior at Elswick, Girouard, in 1915, and had risen to a senior position. According to Reid Young of Vickers, West was an over-ambitious and opinionated man, with Andrew Noble's bullying manner, 'who shot up from shops manager overnight'. West joined the Armstrong board on release from the Ministry of Munitions in 1918, 'saw his chance of taking control', and after West succeeded Falkner as Chairman in 1920, 'the whole concern was run as Glyn West saw fit'. West had little financial understanding, and no wish to depend on anyone else's expertise: indeed, according to Reid Young, 'There was nobody worth a damn in the place from the financial point of view', and West himself behaved 'like a maniac'. 2 For West to have forced his way to the Chair of Armstrongs in his early forties, certainly suggests that he carried force with the Board. In our period, probably the only Armstrong director with enough character and commercial experience to stand up to West was Sir Eustace d'Eyncourt, who retired as Director of Naval Construction in 1924 to return to manage the Tyneside yards.

Armstrongs' peace-time policy was very much fashioned by West who expected Armstrongs' future to lie as civil engineers. Whilst Vickers had ambitions in capital-intensive electro-technology, Armstrongs tried to enter a business in which a maxim of success is to spread one's hopes of profit across as wide a range of contracts as possible. The thinking behind West's plan is obscure.

1. Speech of J. Meade Falkner, 22 November 1919. Armstrong papers, C11. See The Times, 23 November 1919. In 1918 Armstrongs' ordinary shares were quoted at over 50 shillings, and had returned annual dividends of 12½ per cent since 1911. It had issued capital of £11,012,500, together with mortgage debenture stock of £2,500,000. In March 1918 the Bank of England (with whom they opened an account 1857) extended their overdraft past their previous limit of £2,500,000.

2. Sir James Reid Young, interview with J.D. Scott 22 May 1959. V file 61.
One guess is that he was influenced by his early mentor, Girouard, whose career had begun as an engineer to various British Imperial projects. It is a characteristic of the schemes which West now inaugurated that they were financially ill-considered, and it does seem strange that such an orthodox Victorian Treasury official as Murray (who chaired Armstrongs' Finance Committee) found them acceptable. If Murray, in his inexperience, thought such long risks were normal business practice, he was wrong.

Other characteristics of West's methods at Armstrongs were secretiveness of financial information, and obscurity of accounts. The difficulties at Vickers in the early twenties caused by lack of data were not deliberate: Caillard allowed them to accumulate through pressure of other work, Docker and Jenkinson criticised them and Reid Young was set to work remedying them. But the impression given by Armstrongs is quite different. All West's instincts were against financial disclosure, and he muddied the waters into which Armstrongs sailed. Even by the relaxed standards of the time, Armstrongs' accounts were thought excessively and distinctively opaque. One City comment on the combined accounts for 1916-20 was that they were 'a rather unsatisfactory document, because the details are of a most shadowy character'. Accounts for 1921, typically, did not show the proportionate division between Ordinary and Preference shares, whilst investment in, and advances to, subsidiary companies, which previously had been shown separately, were included under the heading 'Property'. Later balance sheets lumped together the total amounts paid to ordinary and preference shareholders, and did not give a separate profit and loss account.

1. Investors Review, 9 September 1920.
2. The Economist, 29 November 1919 and 14 October 1922.
In such conduct, West resembled the elder Noble. Back in 1911 Rendel had predicted that 'the evils of Sir A Noble's autocracy at Elswick' would not end with his death unless power was decentralized from Elswick. Otherwise

it means, in Sir Andrew's absence, another Sir Andrew, more or less... Elswick minus Sir Andrew is in many bad respects Elswick still, unless we succeed in substituting for Sir Andrew a real Board and a local Board [at Elswick] and [move central management to] a real London Office.1

Once again, Rendel's prescience was to be vindicated.

The diversification which Armstrong's now attempted everywhere bore the impress of West. Their most successful purchase was in a line of which they had considerable pre-war experience: motor-cars. The Siddeley-Deasy works in Coventry, covering 25 acres, were bought (1919), with the entire capital of Armstrong-Siddeley Motors taken by a holding company, Armstrong-Whitworth Developments. J.D. Siddeley enjoyed more autonomy than any other departmental chief at Armstrongs during West's chairmanship, and the Siddeley company's profits (aggregating £655,851 in 1921-5) 'were almost entirely due to his management'.2 Their other new branches ranged from failure to outright calamity. In February 1920, they took £860,000 Ordinary shares in Pearson & Knowles Iron and Steel Company (founded 1874), which had bought the wire-works of Ryland Brothers (1906) and built the only completely new iron and steel works in Britain before 1914, Partington's.3

2. Sir Gilbert Garnsey to E.R.Peacock, 24 November 1926. A.W. box C.21 Siddeley had previously been general manager of Vickers' subsidiary Wolseley Motors—see above p 128. By 1925 the issued capital of Armstrong-Siddeley motors was £89,750, with profits as follows 1921: £88,218; 1922: £33,787; 1923: £122,571; 1924: £184,748; 1925: £226,527.  
3. Partington's plant near Warrington, on the Manchester ship canal, was capitalized at £700,000 and intended to provide Pearson & Knowles and Ryland Brothers with semis for its wire rod, hoop and strip. Plans were drawn up 1910, and complete production reached 1914. Carr & Taplin, British Steel Industry, 271-2.
West immediately became Chairman of Pearson & Knowles, and although its published figures (1921-5) indicated profits of £74,553, this sum was 'swelled by purely hypothetical profits in the shape of commissions and interest on internal transactions', and masked 'a perilous financial position'. Pearson & Knowles' fixed debt (1925) was £1,150,000, plus investments and advances to associated companies totalling £2,232,393. Partington had become 'a serious incubus', absorbing capital expenditure of £2,021,000 in 1920-3, but verging on 'insolvency' by 1925 when it lost £168,554 and had a bank overdraft of £1,288,557 guaranteed by Armstrongs and Pearson & Knowles up to £1,300,000.² The same board meeting of 26 February 1920 agreed to launch a civil engineering department, following which works in Glasgow were bought to supply structural material for erection by the new Armstrong Whitworth Construction Company, whose capital of £200,000 was wholly owned by its parent. The head of the civil engineering department, G. F. Sandiford, was West's cypher, and it suffered for lacking 'an experienced principal' of board status. Although its quality of work was 'very creditable', its organisation was 'most unfortunate and the financial results deplorable'.³

In feebler imitation of Vickers and Coventry Ordnance, Armstrongs also turned to electrical work. One subsidiary, Twiss Electric Transmissions Ltd., lost £54,975 in 1919-25, whilst another, Crompton, made profits (1921-5) of £116,963. In 1922 they entered partnership with British Thomson-Houston and Babcock & Wilcox to buy the engineering consultancy of Balfour, Beatty and with its managerial skill, formed the Power Securities Corporation which ultimately became the largest holding company in the electrical supply industry.⁴ It was hoped that Power Securities would generate much

work for Armstrong Whitworth Construction, but instead, it
devoured capital without returning profits. A big contract of May
1923 was to erect and run Fuerza Electricitas, a Spanish hydro-
electric project at Valencia, but by March 1926, in the face of a
demand to spend £100,000 to finish the project, they had to sell
their Fuerzas holding for £57,500.

An even more expensive failure contrived by West was under
a contract of April 1924, whereby Armstrong Whitworth Construction
erected a paper-mill near Gravesend for Bowaters worth about
£400,000. This was conditional on Bowaters making part payment
in 7 per cent Second Debentures up to £175,000, with an annual
sinking fund of 1½ per cent. Armstrongs were also to receive a
bonus settlement of £50,000. West also told his board that
Armstrong Whitworth Developments in advance had underwritten
one-third of Bowaters' proposed debentures of £300,000. West
stated that the Development Company's holding would be disposed of
either before or after the public issue, but the issue was never made,
and Armstrongs were left holding £100,000 Debentures, without
having received the part payments contracted. Bowaters were
themselves almost insolvent, and it was feared that they would fail
if Armstrongs pressed a suit. An agreed settlement at £600,000
in September 1926 failed because Bowaters had not the money, but
was re-settled in December 1926. ¹ In these circumstances, the
performance of another post-war acquisition, the paper-making
machinery manufacturers of Charles Walmsley, should be re-
appraised. ² With profits (1923-5) of £222,406, Walmsley was
considered almost Siddeley's equal in success, but it is now evident
that these figures cover many internal transactions within the
Armstrong group, involving such injurious contracts as the Bowater mill.

1. The accounts of the Valencia hydro-electric project and the
Bowaters contract are taken from scattered correspondence
in Armstrong boxes C.29 and C.47.
2. Armstrongs held the entire Ordinary share capital of £156,135 in
Walmsley, and guaranteed their 7 per cent. Debentures to
£178,440.
The nadir of West's judgement came in Canadian paper-milling. In November 1921 Saxton Noble reported to Armstrongs' Finance Committee on negotiations to raise £3,000,000 to build a Newfoundland mill able to produce 400 tons of paper daily. The Trade Facilities Committee provided £2,000,000 at maximum interest of 5½ per cent, and the Newfoundland Government £1,000,000, both making their assistance conditional on Armstrongs controlling the proposed Company. This was accepted in July 1922. The scheme united West's hopes of civil engineering and public utilities in the Newfoundland Power & Paper Company: the west coast of Newfoundland was to be provided with a new port town at Cornerbrook, a hydro-electric power station, warehouses, a hospital, ships and other services. West visited the site in August 1923, but communicated little grasp of the plan to his Board, and mis-understood purposes with various Newfoundland subordinates. The site took longer to be cleared than expected, and the Union politics involved in labour recruitment, together with the sub-Artic winter, were ill-appreciated in Britain.

In the original plan of 1923, no provision was made for housing several thousand construction workers, and the eventual cost of housing and feeding the labourers was great. The plan of Cornerbrook had to be modified after building had started, by placing the mills on the seaboard, and it became clear that construction would take longer than was originally estimated. In order to keep to contract time, work was pushed on 'somewhat regardless of cost'.

10 million more than necessary was spent on hydro-electric work alone, in the view of the man who eventually righted the company.

1. Speech of Lord Southborough, chm. of Armstrong Whitworth, annual general meeting, June 1926.
In order to fund the indebtedness incurred, Armstrong's issued Mortgage Debentures worth £3,000,000 secured on specific land and works in England. This was a floating charge on all other assets, subject only to the mortgages and securities guaranteeing the existing debenture stock of £6,257,000. Armstrongs had an issued share capital of £10,012,500 and assets of £15,482,687. Net profit in 1921 was £438,887, in 1922 was £467,549, in 1923 was £655,135 and for 1924 was £800,046. Clearly the Newfoundland scheme needed quickly to provide a good return if it was not to become a ruinous charge on the Company. 1

The prospectus for this issue was dated 13 December 1924 and recorded 'creditors and credit balances, including loans and provisions for taxation and employees' deposits' at £3,782,954, but the balance sheet issued a fortnight later, in respect of 31 December 1924, showed this item at £6,139,230. The prospectus also bore prominently on its face the names of the Governor and Company of the Bank of England, who were authorised as Armstrongs' bankers to receive applications for the new issue. This disparity between prospectus and balance sheet drew comment then and later: although the success of a new issue might help a concern to turn a difficult corner, that could not justify withholding information. 2

As the Newfoundland scheme progressed in 1925 the Company increased its loan and bank overdraft by £1,360,000, which together with the £3 million received from the consolidated mortgage stock (1924), gave £4 ½ millions of new money. The accumulating interest charges are shown in Table 20.

1. Economist, 20 December 1924.
2. For an interesting discussion of the uncertain laws governing the accuracy of prospectuses in the twenties, centring on a prospectus issued by Docker's co-director of the Midland Bank, Lord Kylsant, see Collin Brooks, ed., The Royal Mail Case. London 1933, xiii to xl and passim.
Table 20 to illustrate interest charges accumulated by Armstrong's 1922-5

<table>
<thead>
<tr>
<th>Year</th>
<th>Net earnings available for interest</th>
<th>all interest charges</th>
<th>surplus + or deficiency</th>
<th>add special additions to profits from reserves &amp;c</th>
<th>balance as per general profit &amp; loss account</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>£436,342</td>
<td>£268,793</td>
<td>£167,549</td>
<td>£300,000</td>
<td>£467,549</td>
</tr>
<tr>
<td>1923</td>
<td>£265,577</td>
<td>£235,425</td>
<td>£30,152</td>
<td>£406,224</td>
<td>£436,376</td>
</tr>
<tr>
<td>1924</td>
<td>£680,826</td>
<td>£344,861</td>
<td>£336,965</td>
<td>£169,285</td>
<td>£505,250</td>
</tr>
<tr>
<td>1925</td>
<td>£415,780</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Less provision for special losses £925,621

Losses £509,840

£613,573 -1,123,413 1,131,911 8,498

Source: The Economist, 18 December 1926

Note: the figures of profits given in the circular attached to Report of December 1926 differ slightly from those disclosed in annual reports. Figures underlined indicate loss.
When in 1925 Armstronks again approached the Bank of England for further support, the latter became thoroughly alarmed, and arranged for the Newcastle directors to be joined by James Frater Taylor (1873-196?). Of Scottish origins, Taylor was an accountant with long experience of Canadian business, and he immediately began to rationalise the Newfoundland scheme, and economise the workings of the Armstrong group. Such reforms necessitated confrontation with West, who certainly had proved 'another Sir Andrew, more or less'.

By dint of withdrawing £900,000 from reserves, a profit of £8,498 was announced for 1925, but this could not mask an actual net loss of £891,502. The accounts were published in a less obscure style, although West tried to delay their publication until the last possible moment. The property item (£11,072,548) was separated from investments in subsidiaries (£9,500,012), which consisted of £5,116,300 for the Newfoundland Power & Paper Co. and £4,383,700 for the other undertakings. Details of contingent liabilities were given for the first time: these amounted to £2,708,729, made up of £1,910,700 for guarantees of debentures and bank overdrafts of subsidiary companies, £35,318 for partly-paid shareholdings and £762,711 for bills discounted.

The catastrophe of the Report for 1925 was emphasised by the resignation, on its publication in June 1926, from the Armstrong board, of West and four other directors: Falkner, Murray, Ottley and Sydenham (Watts had just died). The new chairman Lord Southborough (1860-1947) had trained as a solicitor before entering the civil service, and had held high posts at the Board of Trade, Colonial Office and Admiralty, culminating as Secretary of the Irish Convention of 1917. As Sir Francis Hopwood, he had been the object of a long campaign (1910-12) by Rendel to lure him onto the Armstrong board, with a view to succeeding Noble as Chairman. Even Falkner,
who wanted that office himself, called Southborough, 'a really high-class man of business...the best type of Chairman'.

He had finally joined the Board in April 1918.

Initially Frater Taylor thought that a receivership was inevitable; but having been joined in his deliberations by Sir Gilbert Garnsey (1883-1932), an accountant with experience of the Ministry of Munitions, he produced in December 1926 a scheme of rearrangement for the company. This was 'most drastic' and 'even more unfavourable than the most pessimistic had suggested' previously. It was usual, as with Vickers in 1926, for the rights of preference shareholders to suffer first, and such companies after writing down huge losses were usually able to show a few shillings per share in balance-sheet assets for the ordinary shares. But Frater Taylor and Garnsey reported that the gravity and uncertainty of Armstrongs' position was such that no use was served by writing down capital. Instead, all shareholders, noteholders and debenture holders—except the first debenture stock holders—were asked to agree to a moratorium for five years. The £2,000,000 Notes due in April 1927 were not to be paid off until 1932. All profits until the end of the moratorium were to pay the interest on the securities effected, and all arrears of interest after 1931 were to carry 5 per cent interest. To permit the company to borrow money for working capital, the first mortgage debenture holders were asked to consent to a prior charge, as otherwise no new capital could be raised. The Bank of England agreed to ask for no reduction of £3,000,000 of short-term secured advances for five years, and for no interest on their

1. Falkner to Rendel, 31 July 1912. A.W. box 167. Southborough was also considered by the pre-war Government as a possible Viceroy of India, but was found to have no private income to support the office.

2. Investors' Chronicle, 18 December 1926.
collateral security until all other holders of similar stock received interest out of profits. The Report stated publicly that the sums necessary to pay interest charges for 1926-7 'cannot possibly be earned'. Any profits earned at Elswick or Openshaw would be swallowed by the expected loss of £600,000 by the civil engineering department—a loss for which no specific reserve had been provided in 1925—and 'no new civil engineering orders have been booked'.

The immediate intention of Frater Taylor and Garnsey was to avoid any default on any of the debenture stocks or other loan securities and the appointment of a Receiver, and the lead given by the Bank of England helped this aim materially, as well as supporting the company's credit standing.

Apart from his accountancy work with Garnsey, Frater Taylor pursued another tack. As Jenkinson told Docker, Frater Taylor inquired whether Vickers would be prepared for complete fusion with Armstrong Whitworth. I told him...that an arrangement as regards armament was probably all that could be effected at the moment...Frater Taylor is convinced that some such arrangement must be made, but naturally he is out to do the best he can for his Company...it will pay us better not to hurry negotiations, as it is very evident that he would like to get something settled very quickly.

Negotiations continued with Government cognisance for more than a year, Lawrence maintaining throughout that Vickers would not pay Armstrongs cash — their own cash position being such an 'important element of our strength'—and indeed he recognised that the Cammell Laird fusion was more important strategically.

1. The Economist, 18 December 1926 quotes the Report extensively, 1058-1060. The original copy, dated 27 November 1926, is in Armstrong papers, C.9.
2. Other features included the sale of Armstrong-Siddeley Motors to Mr Siddeley, the latter paying £200,000 on account for £500,000.
5. Lawrence to Jenkinson, 11 September 1927. V. microfilm R323.
In June 1927 a New Company with share capital of £18,500,000 and aiming at minimum profit of £1,250,000 per annum was agreed, subject to the government paying an annual rent of £300,000 for five years for the armament capacity which would be retained by the Company and which otherwise would be shut. In approaching the Government with this proposition, Sir William Plender, chairman of the joint committee of Vickers and Armstrong's, added the rider that if, during this five year period, the new company's profits, after charging depreciation, should exceed £1,250,000 plus interest at 6 per cent on new share capital, one half of such excess should be repaid (up to a maximum of £300,000) to the government as rebate on the rental. They also sought 'an understanding' that the New Company should receive 'the same proportion of orders as the two Companies have received in the past'—that is, that firms not already engaged in armament production should not be asked to tender for such orders—'provided it gives satisfactory service'. In return, the new company would undertake to maintain shops, plant and skeleton staffs for ten years.

The New Company's proposed capitalisation was put at £6,000,000 6 per cent Cumulative Preference shares, £7,500,000 7 per cent Preferred Ordinary stock and £5,000,000 Deferred Ordinary stock. In order to pay these dividends (amounting to an average over the entire share capital of 6\(\frac{3}{4}\) per cent), the company needed minimum annual profits of £1,250,000. If the Government demurred from the rental proposal, it was suggested that they should purchase, or guarantee, profit notes of the new company, payable if profits in any one of the first five years either fell beneath an agreed sum, or short of £1,250,000 plus 6 per cent interest on the new share capital. These profit notes would bear 6 per cent interest, and would be repayable gradually out of profits. Plender ended his memorandum.
by warning that merger would provide the government with 'a large reserve equipment... ready to be put into rapid operation', and that if existing plant was dismantled, the Government might 'be compelled' by national security 'to spend several millions on the extension of their own works'.

When the Government indicated to the Bank of England—as Armstrong's bankers, involved in every stage of negotiation—that they would not entertain these proposals, the merger nearly collapsed. Vickers were persuaded to continue talks, subject to the Bank of England arranging for Sun Insurance to issue a policy, of five years duration at a premium of £400 per annum, whereby if the profits of the new company fell beneath £900,000 in any one year, Sun would contribute a sum that would bring them up to that figure, subject to a maximum contribution of £200,000. It was Lawrence's doing that Vickers held out for this guarantee, and very typical of his ruthless thoroughness in negotiations. Vickers-Armstrong duly received £200,000 per annum from Sun in 1928-32. With this provision secured, the merger agreement was signed on 31 October 1927. The new company, Vickers-Armstrong Ltd., capitalised at £21,000,000, amalgamated all the armaments and naval shipbuilding works of the two firms: for land, buildings, machinery, tools, plant, patents and goodwill, Vickers received 2 million A Preference, 1½ million B Preference and 5 million Ordinary shares, whilst Armstrongs got 2 million B Preference and 2½ million Ordinary shares (which Vickers bought in 1935 for just over £2,000,000). Vickers and Armstrongs remained separate companies in various commercial

manufactures accounting for about one-quarter of their interests.  

<table>
<thead>
<tr>
<th>Table 21 to analyse Vickers-Armstrongs' expenses 1928.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>£</strong></td>
</tr>
<tr>
<td>Directors' fees and head office salaries</td>
</tr>
<tr>
<td>General head office salaries</td>
</tr>
<tr>
<td>Special head office expenses</td>
</tr>
<tr>
<td>Special management expenses</td>
</tr>
<tr>
<td>Ordnance inspection</td>
</tr>
<tr>
<td>Naval yard</td>
</tr>
<tr>
<td>Accounting and statistics</td>
</tr>
<tr>
<td>Sales and agencies</td>
</tr>
<tr>
<td>Contracts and sales</td>
</tr>
<tr>
<td>Commissions</td>
</tr>
<tr>
<td>Publicity and advertising</td>
</tr>
<tr>
<td>Foreign agencies and business</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>


The formation of Vickers-Armstrong went some way to achieving Jenkinson's ideal of public companies having two boards—one executive and one control. Vickers now took the form of a holding company, with Vickers-Armstrong existing more as the operating company of the shipyards, armament and steel works, and other engineering interests. The names of Vickers-Armstrong's original board (1927) are mostly familiar already: Birch, Buckham, Craven, Dawson, d'Eyncourt, Hadcock, Frater Taylor, Jenkinson, Lawrence (Chairman) and George Taylor (Deputy Chairman). To these should be added Sir Edward Peacock and Sir Otto Niemeyer (1883-1971),


Sun Insurance was as close to the Bank of England as any City institution of that size. E.C. Grenfell (1870-1941; Lord St Just 1935), the senior partner of the merchant bankers Morgan, Grenfell, was also Director of both the Bank of England and Sun Insurance.

2. See above, p 142, note 2.
an official of the Treasury and Bank of England who was a director of Vickers-Armstrong 1927-35. 1 d'Eyncourt left the Vickers-Armstrong board in 1928, and Frater Taylor and Peacock in 1929, being replaced by Sir James Cooper (1868-1936), an accountant who had served in the Ministry of Munitions, G.G. Sim and Brigadier Dawnay. The Vickers-Armstrong board was subsequently joined by such long-established company servants as Sir Frederick Yapp (1880-1958), director from 1931 and Chairman 1944-6, and Reid Young. This board, in time, proved itself equal in talent and success to the Board which Albert Vickers had assembled after 1900. All of these men came from the Vickers, and not the Armstrong, side of the combine, and the team of Lawrence and Jenkinson dominated throughout. 2

One interesting sidelight from the formation of Vickers-Armstrong comes from the appraisals of the two firms made by the Service Departments during the merger discussions. Thus the War Office judged Armstrongs were not 'an indispensable source of supply in peace-time': although they held sole British manufacturing rights of the Browning gun, and were Dragon designers, in neither case was 'their manufacturing capacity indispensable, and the difficulty of their having the right to orders would disappear if the firm went out of business'. But supply 'was not everything: Armstrongs' 'staff, records and traditions...would be a very serious loss', and they had 'extreme importance as designers'. The artillery branch at the War

1. Niemeyer was Director of Finance at the Treasury, 1922-7. Chairman of Financial Committee of League of Nations, 1927-37. Chairman of Bank of International Settlements 1937-40. Joined Bank of England 1927; Director 1938-52. 'Probably no finer brain has been applied to the practical detailed complexities of twentieth-century national and international finance'. The Times obituary, 8 February 1971. Keynesians were less enthusiastic.

Office attached 'the greatest importance to the continued existence of both Armstrong's and Vickers as designers in competition both with one another, and our own Design Branch'. Taking the needs of an Army of 40 divisions in the first year of a major war, Armstrongs represented only about 15 per cent of total national productive capacity in guns and carriages, which was 50 per cent deficient. They represented 15 per cent of total national capacity to manufacture shells, and 12 per cent of bullet-proof steel; and in all these cases 'the disappearance of Armstrongs would create a very serious position'.

The Admiralty, too, took a line which might seem surprising: 'there is no need whatever for the purpose of meeting naval requirements, either in peace or war, for the continued existence of either Armstrong shipyards or, subject to the transfer...of certain plant to Elswick' from Openshaw and Scotswood. But the Elswick Ordnance Works (for guns and mountings), and Thames Ammunition Works (for fuse filling) were both 'indispensable' to the Admiralty. The Air Ministry dealt with only one Armstrong factory, that run at Coventry by J.D. Siddeley supplying aircraft and engines—one of seventeen firms manufacturing such weaponry for the R.A.F.

This survey partly reflect West's policy of transfer from the commercially abherent armament business to civilian lines, partly the distance of any major war in 1927, and partly the new requirements of total industrial mobilisation. They also show that Vickers as armourers, both in supply and design functions, though considered junior to Armstrongs in some quarters in 1918, had substantially

superceded them within a decade. If the record of the Vickers owner-managers was imperfect after 1918, at least the traditions and managerial style which they established before 1914 were strong and healthy. They corrected their miscalculations, replacing unsuitable directors and reforming unsatisfactory financial and industrial procedures. If board members such as Morriss and Symon showed a failure in quality, this was only temporary. Armstrongs, to the contrary, were saddled with the legacy of Andrew Noble. Directors were unaccustomed to initiative, and uncritical of a Chairman who behaved like a super-man: whilst the gravity of Armstrongs' habits of financial misinformation cannot be exaggerated. Although Vickers appreciated the capital intensity of electro-technology, Armstrongs did not realise the first principle of financing civil engineering, which is that it is essential to spread the risks. The fiasco of the Bowater and Newfoundland contracts were the product of West's managerial style, which in turn originated with the mis-direction of Armstrongs during Andrew Noble's leadership of 'the old Elswick junta'.

As Alfred Sloan noted of General Motors, a group makes policy, but individuals administer it. The fatal trouble at Armstrongs was that West intimidated Board and administration alike.

1. Rendel to Murray, 15 February 1913, A.W. box 163.
CHAPTER FIVE

The previous chapters narrated the general history of several arms firms during Disarmament, and it now remains to look more closely at Vickers' operations as armourers. Tables 22-23 show the proportion of armament to Vickers' total turnover, and the division of orders between the R.O.F. and private contractors is shown in graphs 3 and 4.

In armament work, Vickers dealt exclusively with Governments. As shown in Chapter two, this did not entail manipulation of procurement officials and politicians, but to the contrary, meant that the firm usually had to submit to the demands of purchasers who would use their monopsonist position ruthlessly. Like much else, the relationship between the Service Departments and their private manufacturers was altered by the Great War. In 1907, the Parliamentary Secretary of the Admiralty described relations between his Department, Armstrong and Vickers as 'rather a trinity', and in 1913 it was said that 'precious little of what comes out of the Admiralty construction department by the front door has not previously entered at the back'. It might be thought that this intimacy was tightened during 1914-18 given the inter-change of personnel between industry and the Ministry of Munitions. In fact, the opposite occurred, as indicated by the retiring Director of Naval Construction's explanation (1924) as to why there was no suitable candidate outside the Admiralty to succeed him.

The conditions now...are totally different from those subsisting before the war, when most of the information held by the Admiralty was, to a very large extent, available for shipbuilders and naval architects outside.

1. Evidence of E.G. Pretyman to the Murray Committee (1907), Q. 1200. Quoted Vickers Brothers, 15.
2. Arms & Explosives, October 1913.
Table 22 to show yearly armament turnover and armament profit of Vickers-Armstrong 1930 - 4

<table>
<thead>
<tr>
<th>Year</th>
<th>Value of armament turnover</th>
<th>Profit after special expenditure</th>
<th>Profit before special expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>7,618,222</td>
<td>658,298</td>
<td>688,122</td>
</tr>
<tr>
<td>1931</td>
<td>6,069,087</td>
<td>620,910</td>
<td>762,660</td>
</tr>
<tr>
<td>1932</td>
<td>5,437,817</td>
<td>288,729</td>
<td>632,666</td>
</tr>
<tr>
<td>1933</td>
<td>5,709,946</td>
<td>557,564</td>
<td>667,778</td>
</tr>
<tr>
<td>1934</td>
<td>7,288,451</td>
<td>654,239</td>
<td>818,349</td>
</tr>
<tr>
<td>Average for the five years</td>
<td>6,424,704</td>
<td>555,948</td>
<td>713,915</td>
</tr>
</tbody>
</table>

Source: Minutes of Evidence, 404
Table 23 to illustrate armaments turnover of Vickers-Armstrong 1930-4

### Total Armaments Turnover

<table>
<thead>
<tr>
<th>Year</th>
<th>Military %</th>
<th>Military £</th>
<th>Naval %</th>
<th>Naval £</th>
<th>Total £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>14.59</td>
<td>847,826</td>
<td>85.41</td>
<td>4,963,197</td>
<td>5,811,023</td>
</tr>
<tr>
<td>1931</td>
<td>28.50</td>
<td>1,194,380</td>
<td>71.50</td>
<td>2,997,028</td>
<td>4,191,408</td>
</tr>
<tr>
<td>1932</td>
<td>33.28</td>
<td>1,411,485</td>
<td>66.72</td>
<td>2,830,081</td>
<td>4,241,566</td>
</tr>
<tr>
<td>1933</td>
<td>30.87</td>
<td>1,183,261</td>
<td>69.13</td>
<td>2,649,595</td>
<td>3,832,856</td>
</tr>
<tr>
<td>1934</td>
<td>21.78</td>
<td>1,220,176</td>
<td>78.22</td>
<td>4,381,302</td>
<td>5,601,478</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5,857,128</td>
<td></td>
<td>17,821,203</td>
<td>23,678,331</td>
</tr>
</tbody>
</table>

### British Empire

<table>
<thead>
<tr>
<th>Year</th>
<th>Military %</th>
<th>Military £</th>
<th>Naval %</th>
<th>Naval £</th>
<th>Total £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>5.02</td>
<td>190,771</td>
<td>94.98</td>
<td>3,606,618</td>
<td>3,797,389</td>
</tr>
<tr>
<td>1931</td>
<td>8.45</td>
<td>211,936</td>
<td>91.55</td>
<td>2,294,957</td>
<td>2,506,893</td>
</tr>
<tr>
<td>1932</td>
<td>18.23</td>
<td>535,543</td>
<td>81.77</td>
<td>2,402,476</td>
<td>2,938,019</td>
</tr>
<tr>
<td>1933</td>
<td>9.44</td>
<td>222,997</td>
<td>90.56</td>
<td>2,137,922</td>
<td>2,360,919</td>
</tr>
<tr>
<td>1934</td>
<td>16.29</td>
<td>496,128</td>
<td>83.71</td>
<td>2,549,377</td>
<td>3,045,505</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1,657,375</td>
<td></td>
<td>12,991,350</td>
<td>14,648,725</td>
</tr>
</tbody>
</table>

### Foreign

<table>
<thead>
<tr>
<th>Year</th>
<th>Military %</th>
<th>Military £</th>
<th>Naval %</th>
<th>Naval £</th>
<th>Total £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>32.63</td>
<td>657,055</td>
<td>67.37</td>
<td>1,356,579</td>
<td>2,013,634</td>
</tr>
<tr>
<td>1931</td>
<td>58.31</td>
<td>982,444</td>
<td>41.69</td>
<td>702,071</td>
<td>1,684,515</td>
</tr>
<tr>
<td>1932</td>
<td>67.19</td>
<td>875,942</td>
<td>32.81</td>
<td>427,605</td>
<td>1,303,547</td>
</tr>
<tr>
<td>1933</td>
<td>65.24</td>
<td>960,264</td>
<td>34.76</td>
<td>511,673</td>
<td>1,471,937</td>
</tr>
<tr>
<td>1934</td>
<td>28.33</td>
<td>724,048</td>
<td>71.67</td>
<td>1,831,925</td>
<td>2,555,973</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4,199,753</td>
<td></td>
<td>4,829,853</td>
<td>9,029,606</td>
</tr>
</tbody>
</table>

Source: Minutes of Evidence, 420
Graph 3 to show distribution of money spent on British naval armament as between Government factories and private trade 1920-37

--- total
----- government
****** trade

Source: Minutes of Evidence 624
When the war began, immediately an immense amount of special information was accumulated, including all the experience gained during naval operations, and all the confidential experiments made... All this later information has been kept very strictly within the walls of the Admiralty, and no-one outside has the special knowledge required to enable the best design and construction work to be done to meet the new conditions.  

For this reason every British warship (except submarine repair depots) constructed after 1918 by private contractors was designed by d'Eyncourt or his successor Sir William Berry (1865-1937), and not private firms' designers, such as Sir George Owens-Thurston (1869-1950), Vickers' naval designer. Moreover the allegations of radicals like Woodman that merchants-of-death were subverting procurement agencies undoubtedly led to cautious reserve by some of the officials concerned.  

As Hadcock noted in 1931, the Admiralty was 'in every way our best customer', and for twenty years the cultivation of the Admiralty connection fell to Dawson. After Craven superseded McKechnie in 1923, he began to share liaison work—in his own words, 'there is no real salesmanship required, but very delicate negotiations are continually taking place'.

2. Though Owens-Thurston visited Turkey in October 1927 in connection with the naval programme, Vickers found increasingly little work for him, and retired him against his wishes less than three years afterwards, with an annuity of £1,250. In 1911, when Watts was retiring as D.N.C., Dawson pressed Thurston's claims as his successor against d'Eyncourt's. A. Vahid Bey to Thurston, 18 November 1927 and Thurston to Jenkinson, 4 November 1927. V. microfilm R.340. Jenkinson to Craven, 27 July 1934. V. microfilm R.334. Dawson to McKenna, 1 September 1911. MCKN 3/22.  
Described by the Secretary of the Admiralty as 'perenially and delightfully young', Craven emerged as Vickers' most powerful executive after Dawson's death (1931), and raised the group's Admiralty connection to its apogee. In 1933 the First Lord, addressing workers at the naval yard, averred that Craven could not be bettered as a managing director, adding 'The Admiralty and Barrow are mutually dependent on each other'. Craven did not treat the Admiralty as Birch, the director for land armaments, behaved to the War Office. Birch acted as if he was still a member of the Army Council, but Craven took a humbler tone, and Vickers at Barrow were 'a shop to which the Admiralty came for what it wanted, and if there was a difference of view about what was best, the customer was always right'. Orders booked at Barrow 1917-34 are shown in graph 5.

The aviation armaments side of Vickers fared considerably worse. But for a contract signed in October 1919 to supply forty Vickers Vimy commercial aircraft to China, Vickers would probably have closed all aviation work. As it was, the Aviation Department was incorporated into the Ordnance Department (then headed by Morriss) in the summer of 1920, and all of its London staff dismissed, except for three secretaries, and Captain Peter Dyke Acland (1884-1953), the head of the Department, together with Brigadier W.B. Caddell (responsible for developing foreign sales) and Oliver Vickers.

1. Sir Oswyn Murray, speech at Barrow 23 July 1929.
4. See Caillard to Acland, 11 June 1920. Acland to Caillard, 21 June 1920. V. microfilm R.275. Sir Arthur Whitten-Brown who flew a Vickers aeroplane in the first crossing of the Atlantic in June 1919 was apparently one of those dismissed. He had previously been employed by British Westinghouse (Metrovic). Pilots and those on foreign missions (such as Livingston) were not dismissed.
Graph 5 to show commercial and armament orders booked at Barrow 1917-34

Source: Vickers Papers
Acland was a former cavalry officer, with strikingly good looks, whose influence was based on social contacts, rather than technical expertise. He succeeded T.O.M. Sopwith as Chairman of the Society of British Aircraft Constructors 1927-9, but suffered a bad fall a fortnight after the expiry of his term of office. Lord Trenchard, Chief of Air Staff 1918-29, thought little of Acland's mental calibre and wrote in 1930: 'owing perhaps to his accident, does not pull his weight in the Company'. Later in 1930 Acland left Vickers.

This team made an elementary blunder which cost the group dearly, and damaged Vickers' reputation for technical leadership. The life of R.A.F. aeroplanes in service was not supposed to exceed five years: in the fourth year of life, competitions were called to decide upon replacements. Therefore, when 1925 proved an important year for replacements, it was obvious that 1930 would also be. In 1925-6 Vickers sold to the Air Ministry some 78 big, heavy machines (Vernons, Virginias and Victorias), but only nineteen in 1927, sixteen in 1928 and none in 1929. From drawing board to production of a new type took three years, yet in 1930 Vickers had no replacement in stocks. Trenchard called this 'a definite lack of endeavour to provide new machines to replace the old ones where obsolescence should have been foreseen'. This blindness was not an isolated case.

1. Harald Penrose, British Aviation: the Adventuring Years 1920-9. London 1973, 531-2. Acland became Assistant Manager of the Aviation Department in February 1918 at an annual salary of £1,000 plus 2 percent commission on aviation profits from Weybridge and Crayford. In March 1919, following Major Wood's death, Acland became Manager of the Department at annual salary of £2,500, plus 3% commission on net aviation profits. In April 1920 his annual salary was reduced to £1,500 plus special entertaining allowance of £1,250 p.a. Vickers papers, box of agreements AA-AM.

In 1928 Vickers bought for about £400,000 the firm of Supermarine Aviation, specialists in flying boats and high-speed aircraft, whose chief designer 1920-37 was R.J. Mitchell. In 1925 Supermarine sold six Southamptons; followed by fourteen in 1926; ten in 1927; sixteen in 1928; and two in 1929. 'It should have been obvious after the first one or two production orders that the time would come when the machines would die out', but again, Trenchard complained, no provision was made for this. He also commented on 'considerable evidence of serious friction between Vickers Aviation and Vickers-Armstrong'—something noted by Craven as late as 1937. 1

Oliver Vickers was responsible for technical liaison with the R.A.F., and after his death (1928), Air Commodore J.A. Chamier (1883-1974; knighted 1944), Director of Technical Development at the Air Ministry 1927, was recruited as Technical Director of Vickers Aviation and Supermarine.

Both within and without official circles most people thought the marriage would soon fail, for Service outlook is not compatible with commercial necessities nor is the value of a temporary post-holder likely to be lasting—it would also take strong nerves to live with Chamier's tenseness and neighing laugh. 2 This proved correct, and after clashes of temperament, Chamier left Vickers in 1932 to become Secretary of the Air League of the British Empire. 3 The individual with whom Chamier could not work was Sir Robert McLean (1884-1964; knighted 1926), a fierce Scot who, whilst General Manager of the Great Indian Peninsula Railway 1922-9, had started the first railway electrification schemes of India. He was Chairman of both Vickers Aviation and Supermarine 1928-38—presumably at the introduction of his ex-colleague in India, Sim—and in the same period, Captain Pynches became Vickers' first aviation weaponry technologist.

3. In that post he became a bogey of the radicals. See Noel-Baker, Private Manufacture, volume 1, 325-45.
In Trenchard's words, Maclean 'was given an extremely difficult task' and 'had very much knowledge to glean' about aviation. A big worry was the multiplicity of the aviation section: in 1930 there were nineteen aviation firms in Britain, of which three built engines only, two built engines and aircraft, and fourteen built aircraft only. The future successes of Vickers' aviation interests are recounted elsewhere: here it is sufficient to note that the organization of these interests was rather haphazard during the last years of the owner-managers, but gained cohesion by the new management introduced during Lawrence's chairmanship.

The history of land armaments is similar. With the huge surplus of munitions left after 1918, there was little demand in the early 'twenties. Dawson was responsible for contact at senior level with the War Office, and had some supervision of Vickers' foreign policy. Several other individuals were involved: the unimaginative Morris was in charge of the Ordnance Department for a time, whilst other related matters were handled by Buckham and Symon. This unclear demarcation had unfortunate results. The technical staff at Vickers House sometimes performed below par, and the sales staff lacked push. There were complaints from foreign customers that they could not get models or detailed figures of what Vickers had to sell. During 1918-27, then, the managerial standard of Vickers land armament was indifferent.

General Sir Noel Birch (1865-1939; knighted 1918)—'Curly' to cavalry officers of his own generation—was recruited in 1927 as the Vickers director in charge of land armaments sales, retiring in July 1938.

3. J.D.Scott, Vickers, 199-215 and passim.
4. Birch to Lawrence, 10 February 1928. V.microfilm R.286.
Once the best four-in-hand whip in the British Army, and fond of driving horse-coaches throughout his life, on one occasion, after taking over a new artillery command,

he had paraded the whole battery and asked if there were any men who thought they could box, if so, to step out, and he would satisfy himself whether it was a fact or not...and personally beat the best man in the battery. 1

He was Artillery Adviser to Haig's forces in France 1916-19 held posts at the War Office from 1920, culminating as Master General of Ordnance 1923-7. In that capacity he chaired the first meeting of the Principal Supply Officers Committee in 1924, and according to his friend Hankey, was 'a great help' in early deliberations on industrial mobilization. 2 Unlike his diehard brother-in-law, Field Marshal Lord Chetwode (Commander-in-Chief of Indian Army, 1930-5)—one of the cavalry officers whom Liddell Hart said lost the early battles of World War II years before, in the Cavalry Club—Birch was progressive-minded. 3 According to a co-director of Vickers, Birch

was the very type of political soldier, a quick and intelligent man who liked to be in the swim of affairs in Whitehall, and who dearly loved to bring the great world to his home overlooking Hyde Park...complete cavalryman as Birch was, he was pressing mechanization on the War Office...But...did not...[carry] all the weight in the Company or in Whitehall that he thought he carried. 4

1. Livingston, Hot Air & Cold Blood, 19
3. On Chetwode, see Sir Basil Liddell Hart, Memoirs. London 1965. volume 1, 77 & 329. The General's son, Nigel Birch (Lord Rhyl 1970), was (with Thorneycroft and Powell) one of the three Treasury ministers whose simultaneous resignation in 1958 was described, in a famous phrase of Harold Macmillan, as 'these little local difficulties'.
4. Colonel A.T. Maxwell to J.D. Scott, interview 1959. V.file 425. Cf obituary in Daily Telegraph, 4 February 1939. 'He commanded the Royal Horse Artillery in the retreat from Mons...No horse gunner could have been more splendidly typical. A tall, handsome figure, whose tremendously keen blue eyes impressed themselves on the memory of everyone who met them'.
This extrovert soldier took to his second career with gusto, and had immediate impact. Exacting and sometimes intolerant of his subordinates, his understanding of military technology enabled him to master client-contacts at home and abroad. His major foreign tours included Turkey, Greece and Romania (1928), Belgium (1930) in connection with a technical aid agreement to fortify the German frontier and all the Baltic provinces (1932). He was a contemporary of many War Office brass-hats, and spoke freely to them. Thus, in 1929, with the concurrence of the Vickers board, he wrote to Milne, the Chief of Imperial General Staff, about the 'serious' position of industrial mobilization.

The War Office complains that our prices are high. When you get shops working at fifty per cent of their capacity, the prices can be nothing else. After all the shareholders must have some consideration even if they are rash enough to take shares in a national concern.

Apropos the War Office veto on Vickers selling current weaponry types abroad lest such sales jeopardise the secrecy of British R & D, Birch urged

Release every model as soon as it is accepted, whether it is gun, tank, rifle or instrument of any sort for war. It is only by selling new things that we can hope to live as an armament firm. Releasing can do the Empire nothing but good, and it will increase our power of mobilization, and we are not near enough to war to make it dangerous.

He also complained of the practice, consequent upon the manner in which the Service Estimates were put before Parliament, whereby Government work 'as a rule ceases on 1st April and does not begin again until June', causing slack periods of uneconomic working.

Birch continued

If we are honest as a nation we must pay just as much attention to the industrial mobilization for war as we do to our armed forces and act accordingly. British outside armament firms... should get the same proportion of orders and the same facilities as the Arsenal has for continuous work...
To put it plainly we are being had for fools. Other nations are pushing all they know how to get orders for their armament firms for two reasons. One is to produce their own armaments cheaply, and the second is to keep their armament firms alive. Further, they cannot be unmindful...that they are incidentally reducing the fighting power of the British Empire...the next war will be won in the workshop.

If private manufacture continued to run down, Birch asked 'where will be the force behind diplomacy?'

As noted in chapter three, Birch believed that profits from armaments 'should be looked upon as windfalls', and that Vickers' future profits lay with commercial work. Nevertheless he put a tremendous effort into the Military Sales organisation. One official at Vickers House warned their agent in Sofia and Warsaw (who was soon dismissed), 'There has been a great deal of strafing recently', and those removed by Birch included Anthony Vickers and General Guy Livingston (1881-1950), Vickers' mercurial agent in Argentina, Paraguay, Peru and Uruguay. Livingston had been taken on by Vickers in 1920 to get aeronautical business in South America (after a short and stormy spell as first aviation correspondent of The Times).

Birch found that Livingston was paid an annual salary of £4,500, which would have been excessive, even if he was successful—which he was not.

2. Birch to Lawrence, 10 February 1928. V.microfilm R.286. See p 151.
Birch replaced this motley crew with men of a better stamp. On the sales side there were three artillery officers who had won the D.S.O. in the Great War: Colonel Gerald R. V. Kinsman (1876-1963), Colonel Rupert Ryan (1884-1952) and Colonel Charles Bridge (1886-1961). Kinsman had joined the Royal Artillery in 1896 and was Chief Instructor in Gunnery 1918-19. In 1921 he was seconded to the Chilean army, and was British Military Attaché to Chile and Brazil 1923-7. A fluent speaker of Spanish, he took charge of Vickers' armament business in South America in 1928, and remained with the Company until his retirement in 1945. He made major tours of the area, sometimes annually. Ryan had a more heterodox background. One grandfather was an Irishman who had emigrated to Macedonia; and the other was an Australian politician. Ryan's father was a surgeon in the Turkish Army during the Serbian and Russo-Turkish wars, a surgeon Major General in the British Army during the Great War, and Consul General for Turkey in Melbourne during the 1920s. Ryan was educated at Harrow and Woolwich, and after particularly distinguished war service, was British Deputy High Commissioner on the Rhineland Commission at Coblenz, 1920-8. His young wife was the sister of a fashionable earl, and after their divorce in 1935, he returned to Australia, where he was a Member of the House of Representatives from 1940. His commanding manner and artillery expertise made him a good foreign salesman, and his travels for Vickers in Europe and Asia included long spells both in Siam and Moscow.

Regular officers, like Ryan, who served on the Rhineland Control Commission, were convinced, as one of them wrote, that Germany 'never has been disarmed, materially or morally' and 'has never acknowledged her responsibilities, has never accepted defeat, is determined to rearm in any event, and is merely biding her time'.

With this knowledge, Ryan regarded his work for Vickers as nationally urgent.

Vickers worked cordially but discreetly with British Intelligence, one of whose officers wrote to Birch from the War Office in 1928:

"Our M\[ilitary\] A\[ttache\]s do what they can to assist the sale of British war material: we here realise only too well how you are handicapped in competition with foreign armament firms by the fact that the latter receive Govt: assistance in more ways than one—but you can rely on us in M\[ilitary\] I\[ntelligence\] to assist in any way we can."

1. Lieut. Col. Charles Hordern, late of Control Commission, to Brigadier J. H. Morgan, late of Inter-Allied Military Mission of Control in Germany, letter 11 October 1933. Quoted Morgan, Assize of Arms, xv. There are many interesting references to Ryan in DBFP, series IA, volumes 1 and 2 (1966-8). Another Vickers official with such experience was Major P. L. Teed, R. N. A. S., who after the Armistice was Head of the Gas Chemistry Section of the Inter-Allied Mission of Control in Germany, before becoming principal assistant to Barnes Wallis in the Airship Guarantee Company (1924), a Vickers subsidiary. Teed was Metallurgist and chief of the mechanical testing department at Vickers Aviation Weybridge, 1931-8, becoming Chief Inspector of Materials at the Air Ministry, 1939. Later Deputy Director of Aeronautical Research & Development at Vickers-Armstrong Aircraft Ltd. in 1950s.

2. See Sir Basil Thomson to E. Cohn, 21 April 1921. Also the memorandum on the state of Russian industry in 1920 by Weintraub, Chief Officer of Russian Inland Water Transport, who escaped to the West in January 1921. V. microfilm R. 346.

In order to have this crucial part of his Department's work in competent hands, Birch recruited Charles Bridge, who ran the Industrial Intelligence section from January 1928 until 1934. Bridge was another sterling acquisition with a strong Service background. After technical education at Woolwich and war-time service with the Royal Artillery, he worked in Military Intelligence at the War Office before becoming Military Attaché at Washington and at Warsaw and Prague 1927-8. Bridge thus brought with him many useful contacts: for instance James Marshall-Cornwall (1887- ; knighted 1940), Military Attaché in Berlin, Stockholm, Oslo and Copenhagen until 1932, who regularly sent details of the Bofors works and of German industrial mobilization; or of the remarkable Noel Mason-Macfarlane (1889-1953; knighted 1943), who was Military Attaché at Budapest, Vienna and Berne 1931-4 and at Berlin and Copenhagen 1937-9; or of Basil Liddell Hart (1895-1970; knighted 1966), whom he prompted to write on industrial mobilization. Fluent in French, German and Italian, with some knowledge of Polish, Bridge had several contacts within the rising Foreign Office hierarchy including Horace Seymour (1885-1978; knighted 1939), then assistant to Simon, the Foreign Secretary, and Rex Leeper (1888-1968; knighted 1945), who had been at Warsaw with Bridge and became a key figure in the Foreign Office in the thirties.

1. Bridge's father was Director of Transport to the South African Field Forces during the Boer War, and one of his uncles was Admiral Sir Cyprian Bridge, an ordnance specialist who was Director of Naval Intelligence 1889-94, and one of the most responsible critics of capital ships after 1918.

2. The correspondence between Marshall-Cornwall and Bridge is chiefly in V. microfilm R. 308.

3. See Ewan Butler, Mason Mac. London 1972. Mason-Macfarlane was afterwards Director of Military Intelligence to the B.E.F., sometime Head of the British Military Mission to Moscow, Chief Commissioner of Allied Control for Italy and a Labour MP.

4. Bridge to Liddell Hart, 21 February 1930. V. microfilm R. 309. Liddell Hart was then military correspondent of the Daily Telegraph.
In 1934 Leeper and Bridge launched an idea which they had been discussing together for several years, and Bridge left Vickers to become, in November, the founding Secretary General of the British Council—a job he kept until 1940 when he became Head of the British Military Mission to Polish G.H.Q. This gifted and resolute soldier is not named in any of the radical denunciations of the period, although his work was at the heart of Vickers' armament business—perhaps because no-one would better give the lie to the emotive glamorisation of merchants-of-death. As a fellow Artillery officer wrote of Bridge and Ryan, 'They were both exceptionally intelligent people, and would have risen to high rank had they remained in the Army'. Part of Bridge's job was privately 'to refute the statements made by sloppy pacifists that we and Schneider, Skoda and Bofors farm out all armament orders between us', and together with Birch, he was responsible for publicity and propaganda. He was a keen proponent of mechanization, who obtained considerable influence among such men as Sir John Carden (1892-1935), the tank designer, and forward-thinking soldiers like Sir Frederick Pile (1884-1976). Apart from his international correspondence with British Military Attachees and Vickers agents, he toured abroad, accompanying Birch on the Baltic tour of 1932 and visiting Berlin in 1933 in search of Chinese orders. Bridge, like Kinsman and Ryan, was recruited at an annual salary of £1,000, and also drew retired Army pay.

3. 'Tim' Pile was Assistant Director of Mechanization at the War Office, 1928-32. He was the only General Officer Commanding-in-Chief to retain his command (Anti-Aircraft) from the start to finish of World War II. See Pile to Bridge, 19 December 1933. V. microfilm R.310.
4. No arms orders were then being placed abroad by Chinese without reference to military advisers in Berlin. See Bridge to Birch, 16 May 1933. V.microfilm R.307.
Birch also added to his technical staff Brigadier General K.E. Haynes (1871-1944), an artillery specialist who had recently retired as Vice President of the Ordnance Committee. When Birch took over, Vickers' military sales could scarcely have been in a sorrier condition. In February 1928, they had only two foreign orders—for Lithuania and Bolivia—'Schneider and Skoda seem between them to share the rest of the world', as Birch wrote. The team he assembled believed in the inevitability of another European war: the 'only chance' of achieving the necessary industrial mobilization was 'by selling munitions abroad'. Men like Bridge and Ryan, with their first-hand knowledge of German and Czech economic mobilization, were a far cry from the legends of Zaharoff, but represent more accurately the Vickers way of armament business between the world wars.

The preceding section described the personnel responsible for the armament departments and suggested both a general weakening of organisation during the final years of the owner-managers, when Douglas Vickers was Chairman; and a gradual recovery from 1927. Against this background the procurement officers did not hesitate in showing ruthlessness in their dealings with private contractors—such as when a large Admiralty order for gun mountings placed with Vickers at Sheffield was made conditional on Vickers maintaining in readiness for three years their unused Darlington Forge Co.

1. Haynes was Assistant Superintendent of the Royal Carriage Factory 1907-12, Superintendent of Experiments 1913-18 Superintendent Of Design 1924-5 etc.
2. Birch, memorandum of 24 February 1928. V.microfilm R.286
The rest of this chapter examines Vickers' experience in supplying four different types of weaponry in Britain. The types of equipment which are to be discussed—armour plate, machine guns, the tank and the airship—were each associated with the Vickers group from an early stage of development, and illustrate different aspects of the evolution of private armours. The adversity of Vickers' market during Disarmament, coupled with mounting expenses of R & D, reiterated the themes of this study: that in the absence of a steady programme of orders, Vickers suffered from being the suppliers of a ruinously unsteady demand.

Armour Plate

The experience of the armour-plate manufacturers supports the contention that the British Empire was a confidence trick which was only exposed by the Japanese in 1940-1. The manufacture of armour required massive plant, without convertible value to civilian work; expert craftsmen; and the mastery of an exceptionally complex production process. To borrow Birch's phrase to Milne, if Britain was to be honest as an Imperial nation, it had to support and use broad supply-lines in armour plate. Its flexibility in international commitments required an effective Fleet, yet by 1938-9, Britain was obliged to buy armour plate from Czechoslovakia to meet current requirements.

As early as 1915 the First Sea Lord had written 'that after this War our financial state will be such that economy in naval construction will be a paramount necessity', and foresaw competition with 'our richer friends across the Atlantic'. The naval race between Britain and the U.S.A. began even before the Armistice, and by April 1919, the First Lord was damning the Americans for 'an immoral, devilish policy'.

2. Admiral Sir Henry Jackson, First Sea Lord, to Third Sea Lord, 6 December 1915. DEY/27.
This was a race which the Admiralty knew they had not the finance-power to win. D'Eyncourt wrote (1919),

it would be the worst possible economy to sacrifice the efficiency of the Navy...if, having in view the probability of general peace for a period of years, we shut down the new building programmes and stop new construction, the outlook for any future material that may be required is a most serious one.

Special steps must therefore be taken to prevent our designs...becoming obsolete...The only sound policy...is that the question of the efficiency of our existing and future types of ships should be reviewed annually...The D.N.C. should send in his report every year upon the existing ships and upon the designs...

It would be far better to spend annually a considerable sum upon the necessary arrangements for the future provision of material...and have a smaller existing fleet, than to use all the money available in attempting to keep up a large Fleet which is gradually becoming obsolescent, and which when the time came we were not in a position to replace...

If provision for improved material...is not made, we should get left behind...by other more prudent nations, and in five or ten years time we shall be in a worse state of preparedness...than has happened for many generations. 1

No-where was the loss of capacity quicker or more remarkable than in armour-plate supply. After four years of war, such plant had 'serious obsolescence', 2 and by February 1920, d'Eyncourt was warning that the armour-plate firms would not 'retain their special expert staffs unless some inducement is offered to them to do so', and that 'if they are not subsidised they are quite prepared to scrap all their special war plant'—as, of course, more civilian orientated steel manufacturers had done shortly after the Armistice. 3

The ship construction programme proposed by the Admiralty in the summer of 1920 entailed laying down four capital ships of 48,000 tons ('super-Hoods') in both 1921 and 1922, although it was considered unnecessary to build further cruisers, destroyers or submarines 1921-2, apart from completing those already ordered.

1. d'Eyncourt, memorandum of 8 September 1919. DEY/21.
They also wished to convert one battleship into an aircraft carrier, and to complete two aircraft carriers on the stocks. The Admiralty thought this was necessitated by Britain possessing only one modern capital ship (the Hood) when there were sixteen building or approved by the U.S. Navy. Such a programme already exceeded British armour-plate capacity. In the summer of 1920 Armstrong's had shut down their armour plate works at Openshaw, and in December the First Sea Lord reported to the Cabinet,

The armour plate plant has been dismantled. The only portion of the plant in use are the rolling mills, which are being used for making railway material. The skilled workmen have been dispersed. The firm has ceased to supply even armour plate for experimental purposes, and at the end of the month the Armour Plate Department will have ceased to exist. 1

Vickers in 1920 secured an order from the Japanese government for 7,600 tons of armour, varying in thickness from 6" to 11", and with the largest dimensioned plates said to be 13' 6" by 9' 0" by 11"; and were also tendering to the Spanish government to supply armour. The combination of Armstrong's closure and the Japanese order 'so reduced the effectual output of armour-plate in this country that... it will entail serious delay in the completion of the capital ships which the Admiralty have proposed'. 2

With bitter irony the proposal of this £84 million capital ship programme, for which already there was insufficient capacity, destroyed the only initiative taken which could remedy the trouble.

The heavy gun, armour and gun mounting firms had in 1920 sought a subsidy amounting to 6 per cent of the value of plant in existence, viz £500,000 per annum, which was not excessive if one accepts the Admiralty's own estimate that if such plant were scrapped from lack of use in 1921, but again required two or three years later, 'it will require an expenditure of ten times its original cost, i.e. £100,000,000'. An item establishing the policy for such subsidies was included and passed in the Naval Estimates for 1920-1, and the principal firms involved gave evidence to a committee chaired by Stanley Baldwin, Financial Secretary to the Treasury 1917-21. But before any further action could be taken, the Admiralty agreed orally with the Treasury that the subsidies would not be needed, in view of the large capital ship programme now proposed.

As it transpired, the programme was never executed. The Admiralty's first proposals had totalled £98 millions, but when they reached the Cabinet in December 1920, they had been cut to £85½ millions. In January 1921 the Admiralty were told by the Cabinet to prepare new Estimates totalling £60 millions, although after some cross-bargaining, a figure was agreed of £80 millions plus another £2½ millions 'for replacement of obsolete ships'. The shipbuilding vote having been passed by the House of Commons on 3 August, contracts for the four capital ships were placed on 21 October with Fairfield's of Govan; John Brown's, Clydebank; Swan Hunter & Wigham Richardson, Newcastle (with machinery by Parsons Turbine); and with Beardmore's, Dalmuir (with machinery by Vickers); but before construction had much progressed, other events overtook the programme.

3. Adm 1/8602
The Washington Conference on Naval Disarmament opened on 12 November, and the Americans took the other delegations by surprise in proposing a ten year naval holiday in capital ship construction; a 5:5:3 proportion of ships as between the U.S., Britain and Japan; and a maximum displacement for new capital ships of 35,000 tons. In less than a week, on 18 November, the Admiralty wrote to the firms concerned instructing them not to incur further liabilities in respect of the super-Hoods, and the contracts were cancelled early in 1922. Even though the Treaty allowed Britain to build two ships of 35,000 tons (to compensate for the age and technical inferiority of remaining British capital ships), the Director of Naval Construction wrote personally to Lloyd George that 'A ten years' Naval Holiday would result in a complete débâcle', for Britain had 'practically had four years' holiday already. You will never have an A.1 Navy with C.3 or even worse material: you will never produce A.1 material if you stop construction. Without an A.1 navy we are finished'.

Both A. J. Balfour, who led the British delegation at Washington, and the Admiralty officials advising him, recorded their expectation that during the naval holiday, 'Government should take over manufacture of all warship specialised industry', whilst the Cabinet also accepted the principle of keeping all 'necessary [shipbuilding] plant in existence by subsidies [during] the ten years' holiday'.

1. d'Eyncourt to Lloyd George, 12 Dec 1921. DEY/23.
3. Telegram No 7 of Lord Curzon of Kedleston, Foreign Secretary, to A. J. Balfour, Washington delegation, 15 November 1921. See also Telegram No 29 of Balfour to Curzon, 17 November 1921; Telegram no 73 of Balfour to Curzon, 28 November 1921; Telegram no 66 of Curzon to Balfour, 1 December 1921. Texts printed in DBFP, 1st series, volume 14 (1966), 475-6, 480-1, 519-21 and 526-8.
Hankey, also in Washington, believed there was little risk in the holiday, and has left a very persuasive defence of the British decision not to compete where we were bound to be worsted, given the nasty and menacing attitude of America towards tremendous British indebtedness and the urgency of restoring the City of London's credit.

The repercussions of cancelling four super-Hoods were considerable. At Armstrongs, where the Armour Plate Department shut in 1920, the Board had resolved (May 1921) to spend £50,000 annually on laying out armour-plate plant sufficient to produce 8,800 tons of armour from Openshaw, and Armstrongs had already spent £12,000 before the work was suspended in November. The compensation for cancellation paid by the Admiralty (April 1923) was apparently £95,000. The Admiralty contended paying £85,000 each to Cammell Laird and Brown's, £50,000 each to Vickers and Armstrong's, but pressure to economise after the Geddes Axe on Services expenditure prevented agreement on a subsidy being reached.

Hankey to Lloyd George, 10 November 1921. Hankey to Macdonald, 22 September 1933. Cab 21/369. There is, incidentally, other evidence to support Hankey's opinion that the differences between the relatively successful naval disarmament conferences at Washington and London, and the failed Geneva Conferences, were partly due to the active role of professional officers at all stages of the former, and their exclusion from the Ministerial Committees directing policy at Geneva. Hankey to MacDonald, 29 March 1934. Cab 63/48.

Minutes of Board of Armstrong, Whitworth: 19 May 1921, 20 October 1921 and 12 April 1923. Armstrong papers, C.29.
The supply of armour-plate henceforth was for the Admiralty 'one of the most anxious and difficult tasks which they were...faced with'.

Under the terms of the Washington Treaty, except in the unlikely event of war, the maximum requirements of armour would be 3,000 tons per annum for the cruiser replacement programme announced in July 1925, 'but in 1931', after expiry of the ten year naval holiday,

they would probably have to start a battleship replacement programme and their requirements would be very much greater, approxiamating to an average of 18,000 tons per annum with a maximum of about 23,000 tons per annum...in 1931 and subsequent years there might be five or six battleships under construction at the same time...armed with 16" guns as at present and an important matter would be the rapid production of 16" turret shields and the space and facilities existing for the erection of such shields.

The Admiralty encouraged the five firms to maintain their expensive armour plate plant almost unemployed (1921-5), but matters then came to a head, when the Admiralty placed an order for deck plate with Colville's, who had submitted a cheaper price. This really drew the wrath of the five older suppliers—especially as they had taught Colville's their expertise in armour-plate production during the recent war.


2. H.C. Deb. vol 186 cols 2421-3.


4. There is some good background information on Colville's in Scott and Cunnison, The Industries of the Clyde Valley.
Thus Sir William Ellis (1860-1945; knighted 1918), joint managing director of John Brown's, pointed out that his firm maintained plant worth a million sterling whereas Messrs Colville had only to carry a plant worth about £100,000. They were therefore faced with unfair competition and they did not consider that their prices should have to be influenced by their heavy burden of overhead charges. If the Admiralty could make a grant out-of-pocket expenses for upkeep of plant they could supply at an economic rate...if it were decided to put certain firms out of the armour manufacture business they should receive a grant to wipe off their plant. Half a million pounds was directly involved in plant for armour manufacture and up to 1931 they would carry a burden of overhead charges out of all proportion to the orders that could be placed with them. If they could be assisted in this way they would then compete with Colville's; at present they were losing orders through no fault of their own. 1

Douglas Vickers having said 'that it was out of the question that the five firms could retain their plant on the small Admiralty orders', the Admiralty in July 1925 told the five firms that they proposed to cut the membership of the ring to three—Vickers, Armstrong and one other—and invited their reactions.

The Ring's response was based on the following figures of average annual minimum costs of each of its five members:

<table>
<thead>
<tr>
<th></th>
<th>£</th>
</tr>
</thead>
<tbody>
<tr>
<td>rates</td>
<td>11,380</td>
</tr>
<tr>
<td>maintenance</td>
<td>14,160</td>
</tr>
<tr>
<td>staff, foremen &amp; essential workpeople</td>
<td>20,800</td>
</tr>
<tr>
<td>similar charges in other departments working for armour plate manufacture</td>
<td>15,000</td>
</tr>
<tr>
<td>depreciation</td>
<td>10,000</td>
</tr>
<tr>
<td>total</td>
<td>71,340</td>
</tr>
</tbody>
</table>

The five firms proposed that instead of giving a maintenance allowance of £71,340 to each of three firms—some £214,020 altogether—the Government should divide £214,020 between the five firms, but deducting £15 for each ton of armour placed. This figure of £214,020 should be considered in the light of the figures submitted by the five firms as their actual cost of maintaining expert staff and plant to make armour efficiently:

<table>
<thead>
<tr>
<th>Firm</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armstrong, Whitworth</td>
<td>81,713</td>
</tr>
<tr>
<td>Beardmore</td>
<td>116,633</td>
</tr>
<tr>
<td>John Brown</td>
<td>91,678</td>
</tr>
<tr>
<td>Cammell Laird</td>
<td>59,155</td>
</tr>
<tr>
<td>Vickers</td>
<td>74,896</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>424,075</strong></td>
</tr>
</tbody>
</table>

(Note: Vickers originally put in a figure of £147,196, but withdrew later).

In October 1925 Douglas Vickers informed the Admiralty that the prices which the ring intended to submit for armouring the seven cruisers announced in the 1925-6 programme, viz. cemented armour at £165 per ton and non-cemented armour at £115 per ton, would include a margin of £214,020 for division among the five firms to help establishment charges. As a result of these discussions, the Admiralty agreed terms with the ring for the supply of armour for 1925-6. The basic price for the first 2,500 tons ordered was £190 per ton for cemented ship armour, and £136 per ton for quantities above 2,500 tons. The price for non-cemented armour varied from £160 per ton £104 per ton, dependent on the amount ordered. For armour plate for proof of projectiles and trial plates the ring was to receive 90 per cent of the price of the corresponding type of ship plate.

The ring agreed to rebate to the Admiralty £21 per ton of armour ordered by any other home buyer during 1925-6, and £15 per ton of foreign armour. The amount recoverable by the Admiralty was limited to £85,000.¹

Subsequently, the armour-plate ring's membership (and in the Service departments' opinions, its capacity) were diminished by the fusion between Vickers and Armstrong in 1927, and in 1928 between Vickers-Armstrong and Cammell Laird which created the English Steel Corporation. Following this upheaval in the ring, the Admiralty offered in 1930 orders at £134 per ton for two years on the basis of 1,500 tons per year; of which 900 tons (60 per cent) were given to the English Steel Corporation and 300 tons each for the other two firms. A meeting of the armour makers agreed to ask the Admiralty to increase the basic price by £5 per ton for every 100 tons less than 1,500.² The upshot was, then, that the armour plate firms were receiving a form of subsidy, through the price agreed with the Admiralty; but as late as 1935, the national requirement of armour plate stood at only about 7,000 tons. With the onset of re-armament after 1936, demand rose steeply; and despite expansion by E.S.C., Beardmore and Firth-Brown, it was calculated in 1937 that production 1937-9 would be about 65,000 tons short of needs in those three years.³ Indeed, the Admiralty considered seeking supplies from Krupp, Schneider, or the Carnegie-Illinois Company, and 12,500 tons were received during 1938-9 from Vitkovice, a Czech firm under German control.⁴

4. The progress of this Vitkovice order can be followed in D.P.R. 258, D.P.R. 270, D.P.R. 271, D.P.R. 293 and D.P.R. 299 in Cab 16/143. As late as D.P.R. 306 (dated 19 April 1939), the arrival in Britain of 2,600 tons of Vitkovice armour was noted. Cab 16/144.
It was tragic that the British need of armour-plate had become so desperate, although armourers and admirals alike had warned that it would since 1920. The direct and indirect cost was high, emphasising the truth of Bridgeman's warning in 1925 that 'People do not understand what a heavy tax parsimony can be'. The only precedents for resorting to emergency foreign suppliers dated from the Boer and Great Wars—the munitions missions to Canada and the U.S.A. in 1915-18 come to mind.

The history of armour-plate supply 1918-39 is one of hesitant compromise. The private firms had no use for their armour-plating plant, except Government armament work, of which there was precious little. Government realised that if it erected its own capacity, 'an enormous amount of plant would have to be kept lying idle at a staggering expense', and preferred to adapt the established Ring to current circumstances. Though the nucleii of Vickers and the other Ring members survived the Disarmament period, and were expanded in the late 'thirties, their circumstances were consistently bleaker than in their Edwardian heyday. Vickers' armour-plate business did not encounter technological barriers, or failures in R & D. The problem was that the Government's organisation of its armour-plate programme reduced productive capacity, so that when the emergency occurred, the members of the Ring were inevitably found wanting.

1. This phrase is taken from a memorandum prepared by Winston Churchill and Professor F.A. Lindemann for submission to the Royal Commission on Private Manufacture of Arms, 1935. Churchill papers 2/247, Chartwell Trust. I am grateful to Mr Martin Gilbert for this reference.
Machine Guns

From 1884, when the Maxim Gun Company was formed with Albert Vickers as Chairman, the history of the British Army and of the Vickers firm were both shaped by the story of the Maxim machine-gun, and when this became obsolete, Vickers produced a new model, which entered production at Crayford in 1912. The pre-war stocks of machine-guns, including those with units, in 1914 had comprised 105 Vickers, 1,858 Maxim .303 inch or .303 inch converted, and 23 Maxim .45 inch—a total of 1,986 machine guns. Monthly British production of Vickers machine-guns expanded from 7 in August 1914 to 1,006 in November 1916; and an idea of the manufacturing power in machine-guns is provided by the following table.

<table>
<thead>
<tr>
<th>Type of gun</th>
<th>Aug to Dec 1914</th>
<th>1915</th>
<th>1916</th>
<th>1917</th>
<th>1918</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vickers</td>
<td>266</td>
<td>2,405</td>
<td>7,429</td>
<td>21,782</td>
<td>39,473</td>
<td>71,355</td>
</tr>
<tr>
<td>Lewis</td>
<td>8</td>
<td>3,650</td>
<td>21,615</td>
<td>45,528</td>
<td>62,303</td>
<td>133,104</td>
</tr>
</tbody>
</table>

Source: History of Ministry of Munitions, vol 2, pt 5.

The Vickers gun was a remarkable weapon, but the Company was not technologically complacent, and in May 1918, at the behest of Dawson, they bought the rights of a new machine-gun designed by a French general called Berthier. Although Vickers invested a fortune in the development of the Vickers-Berthier machine-gun (over £100,000 across sixteen years), until 1923, they got just one order for 60 Berthier guns for Spain.¹ By 1934 Vickers drawing office expenses on machine-guns had reached £10,000 per annum.²

Vickers secured the coup of equipping the Indian army with Berthier guns: but despite an almost desperate campaign, they failed to sell any number to the War Office, or interest foreign powers in the type. Very reluctantly the line was abandoned and Vickers in the mid-thirties agreed to manufacture the Bren gun for the British army.

¹. Minutes of Peace Products Committee, book 3, p 64. V.file 308.
³. See WO 32/3360.
The bitter truth was that the world-wide surplus of war-time machine-guns killed the market for the Berthier gun in the 'twenties, and that by the time rearmament started, other weapons had the edge over it. As Birch wrote, except during 1937-9, in the British machine-gun trade, Vickers were 'competing for work that would not keep a cat'.

In 1921 the War Office committee on equipment for war reserves recommended the retention and maintenance, to provide for total establishments, excepting tanks, of 5,000 Vickers, 16,000 Lewis and 1,000 Hotchkiss ground service machine-guns. For war reserve they recommended the maintenance of 2,700 Vickers, 9,750 Lewis and 475 Hotchkiss machine-guns, together with 8,800 Hotchkiss tank pattern guns. Wastage in France during the last year of the Great War had been 60 per cent for Vickers guns, 50 per cent for Lewis guns, 25 per cent for Hotchkiss ground service and 105 per cent for Hotchkiss ground type guns, and the 1921 figures for war reserves were based on 18 months' wastage from initial requirements. Machine-guns abroad with troops in the spring of 1921 were reckoned at 1,954 Vickers, 4,237 Lewis and 825 Hotchkiss machine-guns, and stocks comprised 15,198 Vickers, 36,297 Lewis and 31,880 Hotchkiss guns.

By this time, Hotchkiss had broken up their works and could not enter into production again for a long time; B.S.A. could revert to an output reaching 250 Lewis guns weekly after six months of war; whilst Vickers, which had once attained war-time production of 1,100 machine-guns weekly, had 'turned over to peace work' so completely that 'production in any quantity could not be effected except by a gradual process covering probably the first two years of war'.

2. These figures include those in repairable or doubtful condition: Vickers and Lewis guns cost an average of £22 and £11 per gun respectively to repair. The scrap values of machine-guns on 20 May 1921 (with scrap values in February 1921 parenthetically) were 2s-8d Vickers (£1-6s-7d), 9d. Lewis (7s-9d) and 1s-7d Hotchkiss (15s-6d). WO 33/988.
This same committee regularly reviewed the machine-gun position, and by 1926, preparedness was such that, in the first thirteen weeks of a major war, neither Vickers nor B.S.A. would produce any machine-guns. In the interval before the Committee's next consideration of machine-gun capacity, in 1928, the scale of equipment for Vickers machine-guns was raised from eight to twelve in cavalry regiments, and from eight to sixteen in infantry battalions; whilst Lewis guns were cut from 34 to 26 in infantry battalions, and the thoroughly unsatisfactory Hotchkiss guns further reduced in tank and cavalry regiments. In this survey of 1928, the total of machine-guns needed to maintain regular Expeditionary Force in the field for a year was given as

<table>
<thead>
<tr>
<th></th>
<th>Vickers</th>
<th>Lewis</th>
<th>Hotchkiss</th>
</tr>
</thead>
<tbody>
<tr>
<td>base reserve</td>
<td>489</td>
<td>261</td>
<td>312</td>
</tr>
<tr>
<td>training</td>
<td>1,064</td>
<td>889</td>
<td>367</td>
</tr>
<tr>
<td>war wastage</td>
<td>1,105</td>
<td>590</td>
<td>689</td>
</tr>
<tr>
<td>for an armoured force</td>
<td>116</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>total</td>
<td>2,774</td>
<td>1,740</td>
<td>1,368</td>
</tr>
</tbody>
</table>

Actual machine-gun stocks existent in 1928 were:

<table>
<thead>
<tr>
<th></th>
<th>Vickers</th>
<th>Lewis</th>
<th>Hotchkiss</th>
</tr>
</thead>
<tbody>
<tr>
<td>serviceable</td>
<td>5,626</td>
<td>36,212</td>
<td>11,759</td>
</tr>
<tr>
<td>repairable</td>
<td>6,142</td>
<td>1,271</td>
<td>3,745</td>
</tr>
<tr>
<td>doubtful</td>
<td>92</td>
<td>277</td>
<td>16,188</td>
</tr>
<tr>
<td>total stocks</td>
<td>11,860</td>
<td>37,760</td>
<td>31,692</td>
</tr>
</tbody>
</table>

Ten years after the Armistic, the Army still held stocks of Vickers machine-guns fivefold in excess of requirements, these being of the pattern first produced in 1912. As to the Berthier design which Dawson had hoped would lead the market, in 1928 it had been adopted in only two countries, Latvia and Bolivia, 'and in recent trials had given very indifferent results'.

1. 20th Interim Report of Committee on Manufacturing, Equipment & War Reserves, April 1926. WO 33/1117.
2. The fermaature nut of the Hotchkiss machine-gun was fragile and often fractured, necessitating factory repair. War wastage of Hotchkiss ground service machine-guns and tank machine-guns was (1928) put at 100 per cent and 155 per cent respectively. The equivalent figures for Vickers guns were 60 and 115 per cent annually.
Table 25 to illustrate war-time rate of producing machine-guns as estimated in 1928.

<table>
<thead>
<tr>
<th>month of war</th>
<th>rate of prodn.</th>
<th>total of Vickers guns made</th>
<th>rate of prodn. by B.S.A. of Lewis guns</th>
<th>total Lewis guns</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 3rd</td>
<td>nil</td>
<td>nil</td>
<td>nil</td>
<td>nil</td>
</tr>
<tr>
<td>4th</td>
<td>90</td>
<td>90</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>5th</td>
<td>345</td>
<td>435</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>6th</td>
<td>645</td>
<td>1,080</td>
<td>200</td>
<td>260</td>
</tr>
<tr>
<td>7th</td>
<td>750</td>
<td>1,830</td>
<td>200</td>
<td>460</td>
</tr>
<tr>
<td>8th</td>
<td>825</td>
<td>2,655</td>
<td>200</td>
<td>660</td>
</tr>
<tr>
<td>9th</td>
<td>855</td>
<td>3,510</td>
<td>250</td>
<td>910</td>
</tr>
<tr>
<td>10th</td>
<td>892</td>
<td>4,402</td>
<td>400</td>
<td>1,310</td>
</tr>
<tr>
<td>11th</td>
<td>938</td>
<td>5,340</td>
<td>400</td>
<td>1,710</td>
</tr>
<tr>
<td>12th</td>
<td>990</td>
<td>6,330</td>
<td>500</td>
<td>2,210</td>
</tr>
</tbody>
</table>

Increasing to per month some 5,901 to 8,666


Note: the figures for Vickers guns are 75% of those given by the firm. A year later Vickers revised their estimated productive capacity in machine-guns as follows. Double Shift: 50 in first quarter year of major war; 1,170 in second quarter; 1,800 in third quarter; and 1,800 in fourth quarter. Treble shift: 70 in first five months of major war; 1,550 in second quarter; 2,460 in third quarter; and 2,460 in final quarter. See Vickers to Director of Army Contracts, letter 4 November 1929. WO 33/1209.

Unsurprisingly, Vickers' productive power in machine-guns, of a type which they considered obsolete, had fallen into the desuetude shown in table 24; and Birch, on taking charge of land armament contracts, felt great anxiety at the position. The failure to obtain production orders for the Berthier gun was doubly worrying because of the foreign competition now being offered in the machine-gun market. In the late 'twenties, Vickers had some fourteen rivals: Colt based in Belgium, the firms of Brno and Skoda in Czechoslovakia, Madsen in Denmark, Darne and Hotchkiss in France, Simpson in Germany, Fiat and Breda in Italy, Star and Trapote in Spain, and in Switzerland, the firms of Fuhrer, Oerlikon and (German-owned) Solothurn.
Less than half of these had competed with Vickers in supplying machine-guns before 1914, but each now vied with Vickers and influenced British procurement officers. As the Director of Artillery at the War Office told Birch (1935),

The whole of Europe is busy on Small Arm design, also America, and we are constantly getting in new ideas, and like mechanization, it is very hard to get out a specification which won't be out of date in a very short time. 1

Czech weaponry was often keenest in this trial of ability, and consequently, in 1928 Vickers apparently reached an agreement of three years' duration with Brno, whereby upon receipt by either company of a machine-gun enquiry from any country, one company would give the other full particulars.

2. It shall be agreed between the Companies which Company will submit a completion tender with a view to securing the order and the prices which each respective Company shall quote.

3. The Company securing the order will pay to the other Company commission, the amount of which is to be agreed but shall not be less than $10 or more than $20 per weapon, for each weapon for which an order is secured.

4. In the case of non-agreement by the Companies under Clause 2, both Companies shall be free to act independently and free of any liability one to the other in respect of the order secured. 2

This market-sharing and profit-sharing arrangement resembles the agreements in force (1901-14) between Vickers and Deutsche Waffen and Munitionsfabriken, except that the earlier German agreements were negotiated to Vickers' advantage, when they were confident of the Maxim gun beating other types. The Brno agreement signified Vickers and their Berthier gun retreating in international markets, trying to defend their corner in circumstances where Albert Vickers had operated a policy of aggressive commercial diplomacy.


2. Agreement between Vickers-Armstrong and Brno, 19 February 1928. V.microfilm R.286. Despite an extensive search, I have not traced material relating to the workings of this agreement; and it is therefore possible that it was not finalised. As it would have expired in 1931, there is no mention of it in Royal Commission documentation of 1935-6. Whether the agreement actually operated or not, it is significant of Vickers' difficulties that they sought it.
Traditionally the British and Indian armies were equipped with similar weaponry, and after the India Office ordered Berthiers (1929), Vickers felt confident that War Office contracts would follow. However, late in 1930, the War Office tested Brno's new type, after which their Director of Mechanization told Bridge both that the 'Vickers-Berthier lacked finish when compared to Continental weapons of the same class', and that the Brno was superior...in detail, in the mechanical accuracy, in the fitting of the parts and in handiness generally.

In actual accuracy of shooting the Berthier is probably equal to any of the others, but not when it comes to handling. Many of the catches and pins require re-designing. 1

The Brno was in 1930 some 30 per cent cheaper than the Berthier. 2 This threat brought consternation at Vickers House, because other prospective purchasers knew that a War Office decision was imminent, and were holding off enquiries about the Vickers-Berthier until the British Empire had confirmed that they were re-equipping with the British model. Vickers emphasised that the Berthier would not be profitable on just Indian and War Office orders, but that foreign sales were needed to cover overhead charges. Nevertheless, the Berthier continued not to satisfy. In 1931 the Madsen beat the Vickers gun in an Endurance Test in India, the Colt and Vickers were 'handsomely beaten' in Greek tests, and the Vickers-Berthier came third in a new round of War Office trials. Birch wrote to Craven

As I have often said, with our prices as they are, we must live by producing something which is better than anybody else's. Can we do it in Greece? If we cannot, our stock goes further down, which makes it more and more difficult for our salesmen, and it would be very much better for us to withdraw at once without giving ourselves away further. 3

At this stage of 1930-1, the War Office had four chief objections to the Berthier: its barrel fitting was slack; it needed a better barrel catch; its open sights were out of date; and there was too much flash from the gas bore, which they wanted eliminated. Negotiations between Vickers and the War Office continued, and during 1930-4 Vickers worked desperately to meet requirements, producing sample guns for testing at Enfield. At first 'the liaison with Enfield was not quite so close as it used to be',¹ but this improved after Bridge had spoken unofficially to Col. W. A. C. Saunders-Knox-Gore, Assistant Director of Military Small Arms at the War Office; even so, another difficulty, met by the procurement officers, was 'that whereas Artillery knowledge is strong in Broadway [i.e. at Vickers House], the same does not apply to Small Arms'.² By 1934 the Crayford works, then run by Hew R. Kilner (1892-1953; knighted 1947),³ were equipped to produce 100 Vickers-Berthier guns weekly and this rate of production could be reached within four months. Production could be expanded to produce 300 guns weekly within nine months, and with a concentrated effort, 1,000 such guns could be produced weekly within 18 months of the starting date.

Despite all the improvements which Vickers put into the Berthier gun, the War Office found that it remained 'definitely not such a good gun' as Brno's, which had superior automatic arrangements for clearing the gas fouling, and better change arrangements and recoil spring.⁴

1. Bridge to Kilner 14 July 1932. V.microfilm R308.
3. Kilner was an artillery officer, who was an Instructor of Gunnery 1919-23, Staff Captain at the War Office 1923-7, and did a course at the Military College of Science, before retiring from the Army in 1930, and taking over as General Manager of Vickers' Southern Works. He was director of Vickers-Armstrong from 1936, and of Vickers from 1945, retiring from both posts when he was found fatally ill in 1953.
Vickers were horrified by the War Office preferring the Czech gun, for as Bridge wrote

as soon as it became known that we had acquired the rights from Skoda of their barrel change, which they would of course only give us for the British Empire, it would ruin our market in foreign countries. The foreigner would, with justification, say 'The British Government have made Vickers adopt the Skoda barrel change, ergo the Skoda gun is a better gun than the Vickers-Berthier, and that would be the end of us. 1

This intensified 'the already disastrous effects' which the Czech gun had had on Vickers' export trade; 2 by 1936 Bren was 'going round the world saying that he has got the British Empire', 3 as indeed they had.

The Vickers-Berthier was not ordered for the British Army, and the Czech gun, with its patent barrel change, entered production in 1937: its name, Bren, being a compound of Brno and Enfield (where the first guns were made).

Table to compare data of the Vickers-Berthier & Bren machine guns.

<table>
<thead>
<tr>
<th></th>
<th>Vickers-Berthier</th>
<th>Bren</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibre in inches</td>
<td>0.303</td>
<td>0.303</td>
</tr>
<tr>
<td>Length in inches</td>
<td>45.5</td>
<td>45.5</td>
</tr>
<tr>
<td>Barrel length in inches</td>
<td>23.6</td>
<td>25.0</td>
</tr>
<tr>
<td>Weight in lbs</td>
<td>24.4</td>
<td>22.12</td>
</tr>
<tr>
<td>M.V. (in feet per second)</td>
<td>2450</td>
<td>2440</td>
</tr>
<tr>
<td>Rate of Fire (rds per minute)</td>
<td>450-600</td>
<td>500</td>
</tr>
<tr>
<td>No of rds fed from box magazine</td>
<td>30</td>
<td>29</td>
</tr>
</tbody>
</table>


Note: The comparison here is between Mk III of the V.B. and Mk I of the Bren.

2. Bridge to Birch, 1 March 1934. V.microfilm R308.
Although Vickers-Berthier was not taken by the War Office, several other Vickers machine-guns were developed and marketed in the 'thirties. In 1934 the .303" Vickers Tank Machine gun entered service and another version of this design, the .5" Vickers machine gun; was taken by the Royal Navy for anti-aircraft use and by the War Office as the main armament of armoured fighting vehicles and light tanks.

Birch's wish for the Service departments to order guns designed by Vickers was not only based on objection to paying foreigners for manufacturing licenses. British use of foreign designs meant that by 1938 'Bren and Colt have practically taken away our foreign market', with Vickers' only client being the re-arming British Government, and Birch wrote that they must 'get this market back with thin times ahead...if we are going to find men at the bench when the next war starts'. If, as Hankey considered, the War Office battle of 1930-7 between the Berthier and Bren machine guns was 'a striking example of the value' of competition between private firms leading to refinements of type, such that the very best available weapon was eventually ordered, it also showed the difficulties which all private armourers may encounter in their position as suppliers to virtually one single customer, capable of exceptional ruthlessness in exploiting its market position, Government.

Airships

After Zeppelin launched the first big German airship in 1900, British airship development was dominated by Vickers, who were convinced that its fighting and commercial potential were high.

They were the only British group willing to fund R & D, or with the
initiative to push ambitious schemes; and their airship venture after
1918 was the boldest single enterprise which they attempted in the
inter-war period. Surpassing all other projects in technological
demands, in conception it originated with the pushfulness of the
Edwardian armourer, Dawson. Its post-war execution coincided with
Lord Haldane's description (1925) of 'pre-war armament production'
as 'a highly specialised trade calling for highly specialised labour and
material' with 'extremely costly and short-lived plant': altogether a
'speculative' business 'liable to great fluctuations according to the
political complexion of the Government in power'.

Vickers' first airship, built for the Admiralty and named the
Mayfly, broke its back in 1911. This failure made the Admiralty
chary of further development, but in 1913, after the success of
commercial Zeppelins in Germany, Vickers set up an Airship Depart-
ment (whose chief designer 1916-22 was Barnes Wallis). Adjustment
to a new product line was here a long, hard haul, and four years
supervened between the completion of blueprints and the commissioning
into service of the first airships (1917). Despite the difficulties met
by manufacturers of warships and armour-plate in adapting to lighter-
than-air technology, in February 1919 their Airship Department
published a scheme for post-war development centered around the so-
called Trans-Oceanic Airship Liner.

1. Memorandum on Armament Limitation and Unemployment, 11
February 1925. Cab 63/37. This memorandum, following others
of identical title dated February 1925 by Hankey and Tom Jones of
the Cabinet Office, is not initialled legibly, but Haldane (Secretary
for War 1905-12 and de facto Minister of Defence in 1924) was
probably its author.


3. Vickers Brothers, 112.

4. There is an extensive literature on airships, of which the following
is representative. Robin Higham, British Rigid Airships 1908-31:
Airships Akron and Macon, Annapolis, Maryland, 1965. Davide
Giudici, The Tragedy of the Italia. London 1928, George Whales,
British Airships Past and Present. London 1919. Christopher
This liner was designed with a length of 800 feet, a range of 4,800 miles and a cruising speed of 60 m.p.h. with fifty passengers and ten tons of mail. Such Trans-Oceanic liners would travel from London to New York in two days direct, or 2\(\frac{1}{2}\) days via the Azores, and the fare charged to a passenger would be £45 (compared with £115 by aeroplane).\(^1\) Trevor Dawson was the animating force behind the Airship Department, and tried to infect both the Vickers board and the public with his enthusiasm.\(^2\) Despite much propaganda in 1921, the trans-Oceanic scheme did not catch a serious following, and towards the end of the year, Vickers closed their Airship Department.

Next, in March 1922, Vickers produced a new initiative, later known as the Burney scheme. Commander Dennistoun Burney (1888-1968; 2nd baronet 1929) was the bold, elegant and hard-living son of an admiral who was second-in-command of the Grand Fleet at the Battle of Jutland. In 1909 he had served on the destroyer Crusader, then employed on work for the Anti-Submarine Committee of which his father was first president; and this interest in defences against submarines led to study of aeronautics.

1. The Trans-Oceanic proposals of Vickers Airship Department were printed in full in *Flight*, 27 February 1919.
2. See Sir T. Dawson, letter in *The Times*, 11 July 1921; article on 'Commercial Airships' in *Brassey's Naval Annual*, 1921-2. The limited response to such air propaganda in Britain is in contrast to German feelings. Funds for the construction of a Zeppelin airship in 1925 were raised by a public appeal. See despatch 629 of E.M.B. Ingram, Berlin, 8 September 1926. Text in DBFP, series IA, volume 2 (1968), 345-6.
He went on half-pay in 1911 to pursue research at the Bristol Aviation Works of Sir George White (1854-1916; baronet 1904), the electric tram pioneer. After the war began, Burney devised the paravane: a torpedo body fitted with a plane, which was towed outwards from a ship's side and kept below the surface at a depth unaffected by the ship's speed, which deflected from the ship any submarine mines in her path and cut their mooring wires so that they would surface. The Admiralty placed its first paravane order in June 1915, and in the next three years, at least 50 warship paravanes and at least 40 merchant ship otters cut mines. Although this invention was made whilst Burney was in the Navy's employ, he was allowed to patent it and became entitled to royalties from its use abroad or by merchant ships. In 1916, Sir Stanley White (1882-1964), who had just succeeded his father at Bristol, together with his employee Burney, sold to Vickers the rights and patents of the paravane. The vendors were to receive 70 per cent royalties, until either they had received a total of £100,000 or the contract had run fifteen years (until 1931). Thereafter 50 per cent was payable, provided that Vickers were allowed 10 per cent purchasing profit on the commercial cost of the apparatus free of royalties.

Burney (who was Unionist M.P. for Uxbridge 1922-9) now turned his energetic intelligence to airship development, proposing a passenger service to India and Australia, rather than New York. He quickly bested Commander F.L.M. Boothby (1881-1940), a member of the Mayfly's experimental crew who had subsequently commanded Barrow's Airship Station (1915) and attempted airship promotion (1921-3) with Zeppelin patents.

2. Agreement dated 21 December 1916 between Sir G.S. White, Cdr C.B. Burney and Vickers Ltd. V. papers, box of agreements BRO-BZ. By agreement dated 3 May 1918, White, with the consent of the patentee Burney, sold to Vickers his interests in the paravane for £350,000 of which £132,000 was paid forthwith, and £218,000 paid in six-monthly instalments, terminating 1920. Idem.
Boothby claimed Burney had 'waltz[ed] off with my scheme', and broadcast envy of the financial acumen shown in paravane development which coloured later Service attitudes to the Burney scheme. In fact, there is no evidence of sharp practice by Burney either in the paravane or airship business, but similar prejudice among financially naif officers caused serious trouble to Burney.

His original proposal was for a Company capitalised at £4,000,000, comprising £1,800,000 Ordinary shares and £2,200,000 Debentures. Ordinary share dividend would be guaranteed for ten years at 6 per cent, and $4\frac{1}{2}$ per cent would be guaranteed on Debentures until redemption. Vickers and the Shell Petroleum Company would subscribe for 100,000 shares each and render technical help, whilst seeking subsidies of £91,000 from the British Government, and of £40,000 each from those of India and Australia. At this stage, Burney's proposal involved a twice weekly service to India with six large airships, and discussion of the scheme continued throughout 1922-3.

Finally, in November 1923, Vickers formed the Airship Guarantee Company in conjunction with Burney. Burney sold to Airship Guarantee the benefit of his incomplete negotiations with the Treasury to form an Imperial airship company, for the consideration of £200,000 and £200,000 B shares when Airship Guarantee was formed, with options to increase his holding later. Heads of Agreement with the Admiralty were also signed.

Under Burney's complex schemes, an airship construction company was to be formed with authorised capital of £500,000 (£300,000 to be subscribed in cash) to acquire all necessary patents and secret processes, and to procure the formation of an airship operating company with subscribed capital of £200,000. All existing airships and material would be transferred free of cost to this operating company, and the two remaining airship stations, at Cardington and Pulham, would be leased to the operating company at a peppercorn rent. During the scheme's first stage, the operating company would receive a subsidy of £400,000 and would undertake, through the construction company, to build 5,000,000 cubic feet airship and necessary mooring masts. When the operating company had completed a flight from India to England in not more than seven days, the second stage would start: the guarantee company would raise £150,000 and the Government provide £1,200,000 in subsidies over three years to run a weekly service to and from India. When this weekly service had run for three months, the third stage would begin: a bi-weekly service funded with a further £150,000 from the company and £1,200,000 from the Government. The total subsidies of £2,800,000 payable over some seven years were to be secured by debentures carrying no interest and repayable out of profits. Burney throughout maintained that the public would not subscribe without government guarantee of the debentures, and continually met comment from commercial men that airship development was too speculative.

Other trouble soon hove in view. The Admiralty adopted airships for use against the Air Ministry in their 'old interminable controversy' over naval aviation control; and by their partisanship in favour of Burney's proposals, rather prejudiced the Air Ministry against the scheme.

1. Trenchard to Hankey, 9 October 1924. Cab 21/279.
As the Third Sea Lord told Air Ministry representatives,

we want airships...run on a commercial basis, not only from
the point of view of material, but from the personnel point of
view...in war the Admiralty is mainly concerned in airships...
airships will be a very important factor in our cruiser question
on certain routes, and have an important bearing on...replace-
ment and construction...The Admiralty do not consider that the
Air Ministry have the people...for constructing efficient rigid
airships. There is no one...in the Air Ministry who is a practical
designer, and the Admiralty would not be satisfied with any scheme
where the Air Ministry's representatives constructed airships. 1

The Director of Naval Construction said explicitly that he looked
forward to airships following submarines, with Vickers and the
Admiralty together having departments 'which grew up with the subject...
in close co-operation'. 2 Adastral House could not like the sound of
this; and they also disliked Burney's scheme of 'two companies with
interlocked finances'. Burney needed two companies, because if
the scheme succeeded, he intended to make contracts with foreign
Governments; and it seemed undesirable for the British government
to deal with a company in such a position. As one Air Ministry official
complained, this created

the utmost confusion in the technical clauses, and whereas we
desire control of design and research in construction, we find
that all our Government money is being given to the Operating
Company which does not construct. 3

Furthermore, whilst the Air Ministry continually stressed the
importance of air sheds in India and Egypt, Burney did not incorporate
these into his scheme.

In 1924 the first Labour government came in, and in May it
rejected Burney's scheme.

1. Admiral C. T. M. Fuller, 3rd Sea Lord and Controller, 15 April
2. W. J. Berry, D.N.C., idem.
3. Air Vice Marshal Sir W. G. H. Salmond, A. S.R., to Secretary
for Air, 20 February 1924. Air 8/60.
The new Secretary for Air was Brigadier Christopher Thomson (1875-1930; Lord Thomson of Cardington 1924), and 'it was chiefly owing to his energy that the Government took over airship development'.

He opposed commercial firms having charge of development, and thought that long-term Government assistance to private interests should take the form of State-owned airship ports, rather than Debenture guarantees. He disliked Burney's scheme as a virtual monopoly... given to two companies with inter-locked finances, which are... subsidiaries of one of the oil combines, and a powerful armament firm, whose business has world-wide ramifications and warned the Cabinet that there was 'no safeguard other than the Official Secrets Act to prevent their research being sold to foreign Powers'.

A similar attitude, significantly, was taken by Lord Chelmsford (1868-1933), the non-partisan First Lord of the Admiralty in the first Labour administration:

if Burney had put the case for his two companies forward more on the lines of his evidence, viz:- that it was desirable to have a company for the purpose of construction of airships and another for the purpose of operating them, taking his analogy of Harland and Wolff and the Cunard Company, he would have avoided the suspicion aroused by his scheme of Guarantee and Operating Companies which savoured too much of financial juggling.

The Government instead established its own Imperial communications scheme, with airship services to India and Canada. Two airships were ordered: the R.100 from the Airship Guarantee Company (in a contract placed in October 1924 and guaranteed by Vickers) and the R.101 from the Royal Airship Works at Cardington.

1. The Times, 6 October 1930.
2. Cab. C.P. 104 (24), dated 11 February 1924.
3. Note by Lord Chelmsford, 5 April 1924. AD (24) 9. Cab 27/233. Chelmsford was Viceroy of India 1916-21 (Herbert Lawrence was considered as a possible successor) and Warden of All Soul's, Oxford, 1932.
Though the next Conservative government considered reverting to
the Burney scheme, to avoid further shilly-shallying, they kept to
Labour's scheme.

The Cardington team was headed by Colonel V.C. Richmond, of
the Air Ministry, who had little experience of airship work; whilst
the R.100's chief designer was Barnes Wallis (1887-1968). In this way, the Admiralty's policy of getting out prototypes
(whether submarines or airships) by going 'straight to the firms
commercially' was tested against the Air Ministry's wish 'to collect
all the brains and the best we could' in a Government experimental
station (as they had done at Farnborough with aircraft). As the
Admiralty recognised, 'No two designers would not immediately think
themselves in competition' in these circumstances.

The R.100 contract was for a fixed price of £350,000, stipulating
a maximum speed of at least 70 m.p.h. with a penalty of £1,000 for
each half-mile per hour by which the ship failed to meet 70 m.p.h.

The circumstances in which this airship was built were very different
from those envisaged by Dawson and Burney originally. Dawson's
belief was that once Vickers had begun to erect airships on repetition
lines, they could be made to pay. In 1920 he told the London Air
Conference that British airships 'have cost at least twice as much as
those built by the Zeppelin Company' because 'we have never yet been
able to build them upon a production scale'—Zeppelin had built twelve
airships of the same type and design in succession at their Works,
which 'enabled them to... complete a ship in twelve weeks'.

1. See Memorandum by W.C. Bridgeman, First Lord of Admiralty,
3. Other particulars of the R.100 follow. Length: 709 feet; diameter:
133 feet; actual displacement: 156 tons; engine-power: 4,200 h.p.,
maximum speed: 80 m.p.h.; cruising speed: 71.5 m.p.h.; carrying
capacity: 100 passengers; plus mail; range: 3,600 miles at 71.5
m.p.h.; with full load; engines: six Rolls Royce petrol.
4. See abstract of Sir T. Dawson's paper on operation & construction
of commercial airships, read to Air Conference, London, 14
October 1920, printed in Engineering, 22 October 1920.
Vickers' costings in 1923 had also pre-supposed repetition production. Their figure of establishment charges of £46,446 per airship posited the building of three airships annually, as did Burney's own figures of an airship's costs: £144,000 gross, or £97,000 net. ¹

Although Wallis began theoretical work in 1924, building at Howden, Yorkshire, did not start until 1926. By that time, General Lawrence was already 'very anxious' about the financial position of the Airship Guarantee Company, ² and its internal audits, as the Vickers Finance Management Board were warned, 'are undoubtedly vague'. ³ In November 1926 Lawrence told Burney that Vickers 'were quite prepared to hand over our option' on airships, subject to the approval of the Air Minister, 'but that we do not wish ourselves to be in any way involved with details regarding the formation of any such Company'. ⁴ Vickers wanted out, and Burney knew it. In January and February 1928 he visited New York and Washington to discuss 'financing the airship business', and in conjunction with financiers such as Otto Kahn (1867-1934), tried to sell Vickers' airship options to a private syndicate supported by the U.S. Government. ⁵ The capital expenditure on R.100 at 31 March 1928 was £102,760 and it was then estimated that the excess of expenditure over receipts by 31 December 1928 would be £145,397.

2. Jenkinson to Sim, 14 October 1926. V.microfilm R.317.
An internal Vickers report commented of Howden (1927), 'The utmost economy is evident in the equipment and running of the works', and attributed the rising deficit to the same cause that Burney gave Dawson.

The delay in the completion of the ship which necessarily adds expenditure to practically all items including overhead charges is mainly due to the inability of the design staff to keep the pace in the production of detailed drawings with the work in the shops, and one of the major causes of the difficulties in producing the designs quickly is that members of our drawing office and design staff are continually leaving as they do not see continuity of employment ahead of them. This difficulty is also pronounced in the engagement of new men...as it is very difficult to get new men for what can only be temporary employment. 2

By October 1928 Burney was writing, 'Vickers' policy is to liquidate the Company as soon as possible after the completion date', 3 and evidently realised that his project was doomed. In vain he tried to interest Vickers in maintaining the Howden nucleus by building there a £250 car with 'the same body span and same performance as a Rolls Royce'—in 1929 he set up the Streamline Car Company, which Vickers declined to support.

The R.100 made its maiden flight in December 1929, and in July 1930 flew from Cardington to Montreal at an average speed of 42 m.p.h. against the wind, returning on 13-16 August in 58 hours. Although technically successful, it was a commercial failure. Its building cost was £460,000, in addition to a base charge of £110,000, making a total of £570,000. The British Government paid £350,000, leaving Vickers with a loss of £220,000. 4

2. Burney to Dawson, 8 June 1928. V.microfilm R.300.
Little wonder that in antithesis to the enthusiasm of 1924 ('when you see an airship, think of Vickers!'), Craven wrote crossly in 1930, 'the sooner this blot on our management is forgotten the better... the Admiralty think we were mad ever to touch it'. After the smash of the R.101 in October 1930, the Government abandoned its airship programme, breaking up the R.100 for sale as scrap. Wallis had moved to Weybridge in 1930 as Vickers' Aviation's Chief Designer of Structures, Dawson was dead and Burney was designing motor-cars and trawlers—the Vickers board privately, but wholly, repented having taken such work.

Peculiarly damaging commercial misjudgement had been shown (not for the last time in such matters) by the partisan intervention of 1924 when the Labour Cabinet had recoiled from the operating and construction companies devised by Burney, without realising their necessity in obtaining essential repeat orders from abroad. Nevertheless, if there had been franker avowals by Vickers that as early as 1926, they considered the Burney scheme a failure of their own commercial judgement, the difficulties of private capital bearing such large R & D costs might have been more keenly appreciated when, twenty-five years later, Vickers embarked on the Vanguard and VC.10 aviation projects which proved such a considerable financial incubus after 1958. In 1965 the Vickers Board's analysis of the aircraft industry led them to equable acceptance of extended Government intervention in aviation business, and the circumstances had been clearly foreshadowed by the airship venture.

4. Evans, Vickers against the odds, 58.
5. Evans, Vickers against the odds, 122-3.
Tanks

The British Army first used armoured fighting vehicles in operations in December 1914 and tanks were first deployed by the British Army on 15 September 1916. The history of tanks is written elsewhere, and this account is of the experience of their chief private manufacturer during the Disarmament period. Although none of the big armament firms was a large-scale supplier of war-time tanks in Britain, future subsidiaries of Vickers were. Under Dudley Docker, M.C.W.F. manufactured eighty per cent. of British tanks 1916-18, with the earliest builders of tanks (Fosters of Lincoln, agricultural-machinery makers) ranking second; whilst British Westinghouse (later Metropolitan-Vickers) supplied many of the engines for M.C.W.F.'s tanks. After 1918, as tanks grew bigger and heavier, they became 'distinctly unlike' the products of any British firm except Vickers-Armstrong, and the history of mechanization is inseparable from the history of Vickers.

With hindsight it is evident that the tank was the single most significant type of weaponry being developed for land use after 1918, and that, as Liddell Hart wrote, its chief risk was 'mind-supply'. Thus Major General Sir Louis Jackson (1856-1946), formerly the Ministry of Munitions' Director General responsible for Trench Warfare Research and Supplies, in his lecture 'Possibilities of the Next War', given to the Royal United Services Institution in 1919, extended three sentences to tanks.

The tank proper was a freak. The circumstances which called it into existence were exceptional and are not likely to recur. If they do, they can be dealt with by other means.

1. Mun 4/4175.
Similarly, General J.E.B. Seely (1868-1947; Lord Mottistone 1933), Secretary for War 1912-14, Deputy Minister for Munitions (1918), and Under Secretary for Air and President of the Air Council (1919), speaking on the Army Estimates of 1921, warned that tanks were no match for cavalry co-operating with aeroplanes. Moreover, the tank may take a position, but... has no means of holding it... it would be the most extraordinary misconception... to imagine that in applying science to war, the first thing to get rid of is the horse... Every advance in science has made the horse a more and more indispensable weapon... Heavy artillery fire, heavy machine-gun fire, gas, aeroplane observation—all of them make rapid movement more essential... the only thing yet invented that can move swiftly... is the man in the seven-league boots—in this case the horse. If it had not been for the British and French cavalry, the Germans would... have entered Paris, and... have finished the War out of hand. 1

Fifteen Army Estimates later, Duff Cooper (1890-1954; Lord Norwich 1952), the progressive Secretary for War, apologised for his decision to mechanize eight cavalry regiments with the famous remark: 'It is like asking a great musical performer to throw away his violin and to devote himself in future to the gramophone'. 2 The opposition to tank warfare was considerable, and certainly not unique to Britain.

The official policy, as rationalised in 1934 by the then C.I.G.S. Montgomery-Massingberd, was if we mechanize too much, we may... build up an enormous tail; and... if we mechanize too quickly, we may find that in a year or two the larger parts of the tanks... may... be out-of-date.

He like to think that it was sufficient for the War Office to go steadily along, going to production to a limited extent whenever we have found a really good article and whenever we can get the money, and at the same time continue to experiment... so that if war looms... we may be in a position to go to production at once with the latest pattern on the stocks. 3

1. House of Commons, 15 March 1921. H.C. Deb vol 139 cols 1300-2
Montgomery-Massingberd would perhaps have agreed with d'Eyncourt and Liddell Hart who both likened re-armament to the winning spurt of a Derby winner: a question of timing. The expansion of Britain's armoured mobile forces after 1937 would not have been so dangerously 'bunched', or so narrowly timed, if there had been broad productive power in the country. Instead, as Vickers and the R.O.F. had both suffered desperately lean and irregular orders, in contrast to d'Eyncourt's recommendations (1918-21) of small, steady and economic use of manufacturing plant, the Derby spurt was made from the rear of the field. The basis of the procurement system devised in Britain after 1888 had been healthy competition between State factories and private manufacturers leading to costing and production controls by the R.O.F., and capacities for innovation and productive expansion by the private sector. As will be seen, the curbs on expenditure during Disarmament meant that orders were so meagre that this ideal was unattainable for the R.O.F. and Vickers, let alone for a reserve of other private manufacturers. Vickers' refusal to allow their designs to be used by manufacturing rivals (other than the R.O.F) undoubtedly contributed to the backwardness of tank supply until it was over-ruled by the War Office (1932). If such a bar went against the concept of the mixed procurement system, so did the small returns which Vickers received for over a decade on their investments in tank work.

The upshot of these practices was indicated in 1936, when the Secretary for War summarised 'The Tank Situation' to the Cabinet.

2. d'Eyncourt's recommendations were discussed in Chapter 1, especially pp 26-8.
The total of 209 existent light tanks of differing marks were 'barely sufficient for the peace training requirements of existing units', and 'no war reserves' of them existed. Two-thirds of these light tanks, of types produced 1931-5, were already 'obsolescent', and the mandated total of 680 light tanks would not be reached until April 1938. All but two of the British Army's 166 medium light tanks were 'entirely obsolete and unfit for war', dating from 1923-30: the two exceptions were unsuccessful experimental types. That comprised the sum of British mechanization. If the amount annually available for tank experiments 1927-36 varied from £22,500 to £93,750, this was exiguous when one experimental medium tank (1933-4) cost £29,000. As Duff Cooper wrote, Vickers and the R.O.F. were 'a very narrow field of research and experiment', but available funds had 'barely sufficed' to keep these two principal contractors occupied. Other firms were uninterested without 'a more or less certain guarantee of a production order later'.¹

Vickers' contribution to mechanizing Imperial Defence began with the building in 1921 to two prototypes of the Vickers light tank designed by Buckham. Each weighed 8½ tons, carried ½ inch armour and had an 86 h.p. engine. No 1 of this type had three mountings for Hotchkiss machine-guns in the turret sides, and the other carried a 3-pdr gun plus three Hotchkiss mountings and a position at the back of the turret roof for A.A. work. This Vickers Light Tank stood about 7 feet from the ground.

¹ D.P.R. 128. 'The Tank Situation', memorandum by Duff Cooper, Secretary for War, dated 19 October 1936. Cab 16/141.
Table 27 to illustrate productive capacity (June 1932) of various types of fighting vehicles in first year of a great war, by three-month quarters

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>First Six Weeks</th>
<th>Following Seven Weeks</th>
<th>Second Quarter</th>
<th>Output for Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROF Vickers</td>
<td>Total</td>
<td>ROF Vickers</td>
<td>Total</td>
</tr>
<tr>
<td>tanks, med. 16 ton</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tanks light</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tractors for medium artillery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tractors for field guns &amp; 4.5&quot; howitzers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Notes:
1. Present capacity of Vickers can be increased by 50 per cent in 9 months.
2. Vickers' production would employ 100 per cent of shops 17 & 38 & 45 per cent of shops 7D and 29 at Elswick.
3. Vickers' estimate that for every 10 medium tanks they could build 100 light tanks or 40 tractors for medium artillery or 165 tractors for field guns and 4.5" howitzers.
4. Estimates are based on assumption that adequate supplies of materials, partly manufactured components and proprietary manufactured goods will be obtainable and that labour required will be available.
5. Production figures based on assumption that only one of the 4 types of vehicle indicated will be produced.
6. Figures for Royal Ordnance Factory based on assumption that they will not be asked to produce gun mountings for Navy or gun carriages and mounting for Army.
The War Office originally placed an order for three tanks, but later cancelled the order for the third, and ordered an artillery transporter instead. The contract was placed with Vickers on the basis of subsequent free use of their design by either the ROF or other private firms. Vickers nevertheless sought a Government undertaking for 'a substantial portion' of future tank orders, and negotiations for another 42 Vickers Light Tanks went some way, until in 1922 the War Office decided to drop the type because of mechanical unreliability. Subsequently Vickers submitted a claim for the ex-gratia payment of £22,000 on the tank contract of 1920. The firm's total expenditure was £83,970 as against contract price of £44,903--the excess expenditure being chiefly attributable to 'the large amount of design and drawing office work necessary'.

The Treasury eventually sanctioned the payment of £11,798 to Vickers, whilst the D.A.C. agreed, in the light of experience of the 1920 contract, that private firms could not accurately predict the cost of experimental tank work. It was agreed individually with Dawson of Vickers, West of Armstrongs and Adair of Beardmore's that the terms of any future tank contract would provide for 'a fixed lump' profit, plus the net cost of materials, wages salaries and relevant Establishment charges. In this context it is worth noting that tanks were a weapon more highly specialised for the Army than either Naval ships or RAF equipment. Civilian research and commercial marketing were more applicable to ship and aeroplane designs, or marine and aero engine development, than to Vickers tanks for the British Army. This made it difficult for Vickers to support potential military capacity with alternate civilian products, as shown by their expensive and unhappy attempts (1947-61) to use their expertise in fighting tracked vehicles to develop industrial tractors.

In 1923 Vickers produced the Medium Mk I tank, followed by the Mk Ia, which had slightly thicker armour. Thirty Mk. I and Ia tanks were ordered in 1923-4 to a value of £226,000, and the contract was placed with Vickers as 'owing to emergency it was not possible to entrust the order to other makers'. Woolwich manufactured 28 such tanks, all 58 having their engines and clutches supplied by Armstrong-Siddeley. In 1924-5 the War Office ordered another 23 such tanks from Vickers and 35 from the Ordnance Factories, and the D.A.C. reported that the ROF had been 'of great assistance' in reducing the trade price to £7,650 per tank, as compared with an original price of £8,250 per tank. But he also warned that because of the technical difficulties in evolving new machines, 'the execution of the tank and dragon orders during the year has been a matter of considerable anxiety, both to the Department and to the manufacturers. Unceasing attention has had to be devoted by all concerned in order to get supplies within the stipulated time'.

He went on to urge the great importance of widening our area of production when some finality of design has been reached...in event of emergency, production would be required on a scale far beyond the capacity of the armament firms, especially as their armament capacity would then be vitally required for guns, carriages etc. If the Department makes use of other firms for the supply of tanks to Armstrongs' or Vickers' design, it would of course be subject to the understanding that during peacetime at least the original designing firms would receive a fair share of the orders, providing their quotations were satisfactory as regards price and time...widening of competition would also, apart from increasing the area of production, no doubt result in lower prices. Altogether, more than 160 Mks I and II were produced. Virtually the only tank in service with the Royal Tank Corps in the 'twenties, it remained in service until 1938/9, 'a record for longevity only equalled by the Rolls Royce armoured car'.

3. Idem, 71.
4. Crow, British AFVs 1919-40, 2
The Mks I and II could have been replaced earlier, for there was no shortage of new prototypes, but the War Office never agreed upon the role of the tank in the next war, and therefore failed to finalise any design for production. Liddell Hart thought that this Vickers tank 'proved a useful stop-gap, and experience justified the hopes placed on its reliability' and that it 'suffered undue disparagement because of the way it was kept as the standard tank of the Army long after it was obsolete'.

Although Vickers produced six other tank designs (1925-37), nothing new went into service in Britain: the Vickers Six Ton Tank (1929-30) was designed for foreign markets, and was used by Bolivia against Paraguay in 1933.

The fact that the Vickers light tank of 1921 was progenitor to a series of medium tanks does not mean that they relinquished light tank work. In 1925 an army officer named Martel built a one-man tank in his Surrey garden, which revived interest in that weapon. Morris Motors built eight two-man Morris-Martel tanks, whilst eight light tanks were ordered from Carden-Loyd according to the designs of J. V. Carden. Characteristically, the General Staff never issued a statement of their light tank requirements, but after trials in 1927, it was determined to order Carden-Loyd light tanks for battalions of the Royal Tank Corps, and Carden-Loyd machine gun carriers for infantry use. Vickers bought the patent rights of Carden-Loyd in 1928, and henceforth Carden's tank designs were produced within the Vickers group. After the sudden death of Vickers' first great tank designer, Buckham, in May 1928, Carden inherited his mantle—although it must be added that whatever Birch's respect for Carden as a designer, he sometimes found him an irritating individual who was 'always...spoken through his hat about something'.

3. Birch to Craven, 13 January 1932. V. microfilm K162.
The early Carden-Loyd vehicles were under-gunned and thinly armoured compared with Continental types, and in their early days, the new productions runs were not easy. In 1929 Carden was told that General Pile, Assistant Director of Mechanization, was 'very naturally somewhat cross about your first deliveries', and Birch told Bridge, 'the Carden-Loyd material has been very bad lately, which is the devil'. Despite these initial difficulties, Carden-Loyd's light tanks did good service in India and Palestine before 1939, and coupled with some export orders, saved the Elswick factory from shutting in 1931.

Orders for Carden-Loyd material were placed in 1929 by Chile, (£6,420), Poland (£9,072), Japan (£2,060) and Siam (£12,500), and orders in 1930 included four light tanks and two tractors for India (£10,800), one tank for Persia at £1,082, six for Peru costing £7,460, six for Russia costing £5,550 and two for Greece. Although in 1932-3 Elswick produced no tanks for Britain, and only about a dozen for export (to Poland and Russia), business of this class continued throughout the 'thirties, and unquestionably helped to maintain capacity. In exports, however, Vickers encountered a reversal of the pre-war official policy which recognised the importance of foreign trade to cheapen and widen production runs. The War Office refused to release for export up-to-date types, so that foreign powers rightly suspected that they were being fobbed off with second-best. This difficulty might reasonably have been mentioned by radical denunciators of the industry. Of course, it is not. Thus Noel-Baker writes lengthily about 'the revelation of secret information to foreign Powers', caused by private manufacturers exporting British Service weaponry, but has no mention of the numerous patents which Vickers could only use in preparing arms for the British Government.

2. Birch to Bridge, 13 March 1929. V. microfilm R.309.
As Bridge told the War Office (1932),

the firm is in some difficulty now. There is not a single tank in the British Service that they can sell, except the old Mark II, which the Poles three years ago rudely described as 'junk'... Vickers have got on the markets in spite of this, and they have been spending about £32,000 a year on development, but at present there is no certainty that when they have spent a good deal of money in creating a new model, that the War Office will release it for sale.

We soldiers here know that you are just as keen on industrial mobilization as we are... Vickers-Armstrong are now very much handicapped by other foreign firms in the tank market. 1

This was Vickers' problem in a nutshell. Although they were developing some of the most advanced weapons in the world, they were officially permitted to offer only 'junk' to the foreigners off whom they lived. The importance of these foreign sales can hardly be exaggerated: a Russian order, 'entirely due to the C.I.G.S.', for 6-ton tanks and tractors, in 1930, 'really saved the situation as far as Vickers-Armstrong is concerned'. 2 The material which they supplied to Russia was avowedly inferior, and only passed muster because of Soviet inexperience of mechanization. Vickers were more important as designers to British tank development than the ROF; but they were denied production orders in this constantly re-equipping market. At the same time, the War Office's refusal to release for export up-to-date models drove foreign powers to other manufacturing states who did not insult them with nugatory equipment. Buckham, Hadcock and Birch all looked to mechanization for orders to substitute for the depressed trade in other types of land armament, and expected Vickers' role in tank development to approxiamate to their function as Britain's chief submarine builder.

The comparison with submarines is telling. Although in 1902 Vickers had received a five-year monopoly on Admiralty submarine orders conditional on the Company not supplying foreign customers, they achieved a total net profit on submarine work (1902-14) of £1,250,000; and the product had 'vital importance' to their growth. (Until 1911 they had an unbroken monopoly of Admiralty orders).

The difference between Edwardian submarine profits and the irresolute mechanization policy practiced until 1936 signified more than marketing difficulties for Vickers. 'The decrepitude into which we have gradually allowed ourselves to slide', as Vansittart told Simon when the Disarmament Conference collapsed, was 'a menace to the peace of the world, and an almost overt breach of our obligations under the Covenant'.

Conclusions

The first conclusion from the forgoing is that Noel-Baker's view of the armaments business, according to which 'Governments do not hesitate to scrap their existing weapons' to buy with their 'virtually unlimited resources' newer and more efficient types, is utterly at variance with the reality of 1918-36. So is his description of Government as 'a clientele to whom money is no object'. On the contrary, Government and armourers alike had, in Birch's phrase, scarcely enough money to keep a cat.

By 1922, after the naval holiday had been agreed at Washington, the prospect of future work for armourers was, in the Admiralty's opinion, 'so appalling' that it was pointless for them to maintain extensive armaments capacity unless heavily subsidised—'the Admiralty favour the manufacture of munitions...being conducted by the Government'.

But if the role of armourers was from one angle defunct by 1921, from another angle it was crucial. The Government could not face manufacturing such munitions itself, because it was politically unthinkable for the establishment charges of unused, high-expensive plant to appear under direct heads in the Service Estimates. Deficit spending of that order was uncountenanceable, least of all on armament; and it would have made an apparent mockery of British pursuit of international armament limitation. The armourers, then, served as a non-Executive arm of Government policy, and enabled the indefinite postponement of decisions which might create impossible budget and diplomatic crises.

The question of whether private or Government R & D was more effective in armaments work has caused much controversy, not least before the McKinnon Wood committee and the Royal Commission. The disagreements were largely irrelevant, because of the tendency of Government agencies and private facilities to merge as 'one organisation' dedicated to armament work.

1. 'Naval Holiday and subsidising of specialised naval war material industries', paper dated 15 November 1921 prepared by Admiralty section of British Empire Delegation at Washington Conference. Adm 116/2149.
2. Note on Trade in Arms by Sir John Simon, Foreign Secretary, 16 October 1934. MacDonald papers, PRO 30/69/1/519.
3. Minutes of Evidence, 655. The phrase is that of the then Air Member for Supply and Research 1930-6, later Air Chief Marshal Lord Dowding.
Whilst there was much to be said for one manufacturer's desiderata of rival research teams, whether commercial or Governmental, set in competition together 'like the Kilkenny cats', the case of airships was a warning that no private armourer had the finance power to develop the next generations' weapons systems. The R.100 distantly presaged what would happen if the managerial patterns of Dawson or Caillard were allowed near guided missile building or supersonic aircraft.

As the historian of I.C.I. has written of its Chairman's bid in 1941 to make his firm the atomic energy authority of Britain, 'McGowan had no idea—nor had anyone else—how big a thing he was offering to take on'. The major diversification points at which entire new industries are spun off from established technologies are hugely difficult to identify when they first appear. Birch in 1936, like McGowan in 1941, probably did not fully realise the magnitude of his proposal that Vickers begin research, perhaps in collaboration with Marconi, in guided missiles; but an attempt by heavy armourers and warship builders to try suddenly to convert their markets into the light technology of electronic weaponry would have been no less 'disastrous' than for I.C.I. to try to develop both nuclear energy and the chemical industry after 1945. The tendency of events was epitomized by Power Jets Ltd., formed in 1936 as the pioneer firm developing gas turbines for jet propulsion. The secrecy and originality of its work prevented the raising of capital in the open market, so that it became necessary for the Ministry of Aircraft Production to assume financial responsibility by taking part of its share capital (1940).

1. Minutes of Evidence, 522. The phrase is Richard Fairey's, Q.3665.
5. Ashworth, Finance & Contracts, 221.
Weaponry was becoming too specialist and too expensive for development by private capital.

Atomic piles, for example, were far from all existent industrial classifications. Although, for this new sector, the British Government's first instinct after 1945 'was to use private industry as main agency contractors, just as the United States project had done', they found that I.C.I., the only suitable firm, did not want the contract for piles and ancillary plant. I.C.I. demurred for a practical reason which had been fore-shadowed by the failure of Vickers' airship work—because of the difficulty in maintaining a drawing staff nucleus at Howden. Atomic energy would have required I.C.I. to create a 'special engineering design and construction group' which 'would be extremely difficult...once wartime direction of labour was dropped'. Politically, moreover, 'I.C.I. feared that entanglement in such a potential commanding height of strategy and of the economy might lead to nationalisation',¹ as indeed the radical campaigns of 1930-6 and 1958-64 would suggest.

In conclusion, what one manufacturer called 'that terrible rate of technical progress that is called for all the time' in armaments² transformed the character of the defence sector. During 'the perpetual crisis' in armaments before 1914, the British Government developed arrangements to obtain 'a leaven of the greatest [possible number of] skilled men everywhere', especially 'in private works [where] their skill can be used for civilian and private work when they are not actually doing the war material for the Government'.³

1. Margaret M. Gowing, Independence & Deterrence, volume 2, 156-7.
2. Frederick Handley Page in evidence to Royal Commission, Q.3373 Minutes of Evidence, 524.
These arrangements gave the British Government such effective powers over procurement policy that one defence contractor, in 1936, could say of Government vis-à-vis his Company, 'They do control it now'; but nevertheless, the scheme answered decreasingly well. It was ideal, as Hankey noted, when armourers were receiving 'huge orders' from British and foreign Governments, equivalent to 'a gigantic subsidy, which carried the overhead charges'.

In August 1914, with sixty warships for the Royal Navy and thirty for foreign account building in private British yards, there was flexibility, but not so when, in August 1924, the corresponding figures were sixteen British warships and one gunboat for Siam. The conjunction of arms limitation policy with the surplus of equipment after 1918 sent several armourers out of business: instead of Vickers operating in technical competition with Armstrongs or Coventry Ordnance, counter-acting the 'cushy' atmosphere which one Admiralty official attributed to Service Departments, they became the chief arms designer and producer of the Empire. In both roles, they were denied the steady programme of orders necessary for maximum efficiency, leading (as with armour-plate) to a severe deficiency of capacity, or to loss of technical leadership (as with machine-guns). This arrangement was even less suited to meeting the R & D. costs of weaponry in new technologies, especially given the failure of British finance to participate in industrial development; so that whilst Vickers' function in Imperial Defence continued to be unequalled, fine-tuning of its capacities to the needs of the Empire proved impossible.

1. Sir Richard Fairey to Royal Commission, Q3729. Minutes of Evidence, 523.
CHAPTER SIX

However complex the diplomatic and political results, the economic reasons why British armourers have striven for foreign markets since 1888 are simple. In Britain, as elsewhere, peacetime development and production costs of armament have always out-run the Government funds available for military use. Exports spread such costs, can raise productive efficiency and may help to maintain productive capacity during periods of slack domestic orders. This made them indispensable, especially in the pre-nuclear period when flexibility in industrial mobilization was of primary importance.

It was consistently British Government policy to encourage their private armourers to lengthen production runs by exports. Apart from exports' effects on costs and capacity, they could also be incorporated into official policy in other ways. When the Great War erupted in 1914, the Admiralty took possession of four battleships which Vickers and Armstrongs were completing for Chile and Turkey; and in 1939, several destroyers being built for Brazil were taken into the Royal Navy. Foreign contracts could be taken over for instantaneous expansion of national armaments during an emergency. On other occasions, Allies were armed during a War: in 1918 when it seemed likely that the German Army would be forced in its retreat to cross the Dutch frontier, the Netherlands General Staff and the Ministry of Munitions hastily concluded an arrangement whereby Armstrongs supplied the Dutch with weaponry. Two contracts were placed (neither made public in Holland) and deliveries continued after the Armistice. On yet other occasions, Britain wished to make a display of material support to a friendly Power at a moment of international crisis.

1. BT 11/2449.
2. FO 371/7091.
<table>
<thead>
<tr>
<th>Country</th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
<th>1929</th>
<th>1930</th>
<th>1931</th>
<th>1932</th>
<th>1933</th>
<th>1934</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>144,452</td>
<td>225,473</td>
<td>89,476</td>
<td>264</td>
<td>1,904</td>
<td>11,564</td>
<td>575</td>
<td>5,927</td>
<td>3,815</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1,761,000</td>
<td>847</td>
<td>-</td>
<td>-</td>
<td>76,721</td>
<td>6,297</td>
<td>42,955</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>48</td>
<td>1,076</td>
<td>2,425</td>
<td>10,721</td>
<td>3,533</td>
<td>-</td>
<td>9,585</td>
<td>316,400</td>
<td>190</td>
</tr>
<tr>
<td>Chile</td>
<td>85,966</td>
<td>450,201</td>
<td>173,664</td>
<td>68,408</td>
<td>36,714</td>
<td>2,142</td>
<td>-</td>
<td>32</td>
<td>-</td>
</tr>
<tr>
<td>China</td>
<td>460</td>
<td>-</td>
<td>52,109</td>
<td>8,890</td>
<td>34,932</td>
<td>187,198</td>
<td>257,075</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>170</td>
<td>4,462</td>
<td>3,642</td>
<td>496</td>
<td>44</td>
<td>59,918</td>
<td>272</td>
<td>4,255</td>
<td>14,610</td>
</tr>
<tr>
<td>Estonia</td>
<td>904</td>
<td>3,098</td>
<td>6,465</td>
<td>1,443</td>
<td>4,696</td>
<td>813</td>
<td>79</td>
<td>51</td>
<td>360,180</td>
</tr>
<tr>
<td>Finland</td>
<td>19,219</td>
<td>304</td>
<td>3,674</td>
<td>1,882</td>
<td>341</td>
<td>588</td>
<td>19,325</td>
<td>6,818</td>
<td>100,408</td>
</tr>
<tr>
<td>Greece</td>
<td>32,907</td>
<td>9,810</td>
<td>8,326</td>
<td>39,619</td>
<td>56,470</td>
<td>84</td>
<td>1,898</td>
<td>276</td>
<td>227</td>
</tr>
<tr>
<td>Holland</td>
<td>36,742</td>
<td>21,039</td>
<td>112,121</td>
<td>104,891</td>
<td>96,482</td>
<td>15,556</td>
<td>20,022</td>
<td>5,793</td>
<td>9,170</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
<th>1929</th>
<th>1930</th>
<th>1931</th>
<th>1932</th>
<th>1933</th>
<th>1934</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>-</td>
<td>-</td>
<td>524</td>
<td>-</td>
<td>12,417</td>
<td>113,302</td>
<td>12,113</td>
<td>9,401</td>
<td>15,724</td>
</tr>
<tr>
<td>Japan</td>
<td>34,780</td>
<td>217,617</td>
<td>110,729</td>
<td>59,713</td>
<td>70,814</td>
<td>72,446</td>
<td>337,712</td>
<td>114,246</td>
<td>78,105</td>
</tr>
<tr>
<td>Latvia</td>
<td>8,711</td>
<td>19,216</td>
<td>21,342</td>
<td>44,896</td>
<td>11,158</td>
<td>-</td>
<td>5,841</td>
<td>9,563</td>
<td>21,026</td>
</tr>
<tr>
<td>Lithuania</td>
<td>8,510</td>
<td>7,682</td>
<td>75,212</td>
<td>17,064</td>
<td>153</td>
<td>3,331</td>
<td>691</td>
<td>42,685</td>
<td>93,434</td>
</tr>
<tr>
<td>Nepal</td>
<td>-</td>
<td>-</td>
<td>157</td>
<td>-</td>
<td>282</td>
<td>27,860</td>
<td>-</td>
<td>537</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
<th>1929</th>
<th>1930</th>
<th>1931</th>
<th>1932</th>
<th>1933</th>
<th>1934</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peru</td>
<td>-</td>
<td>-</td>
<td>4,982</td>
<td>-</td>
<td>9,626</td>
<td>-</td>
<td>53,257</td>
<td>7,390</td>
<td>-</td>
</tr>
<tr>
<td>Poland</td>
<td>35,200</td>
<td>148,332</td>
<td>24,907</td>
<td>794</td>
<td>38,122</td>
<td>180,856</td>
<td>16,857</td>
<td>81,030</td>
<td>4,562</td>
</tr>
<tr>
<td>Portugal</td>
<td>9,422</td>
<td>24,502</td>
<td>3,390</td>
<td>3,752</td>
<td>1,407</td>
<td>957,961</td>
<td>12,167</td>
<td>640,802</td>
<td>182,758</td>
</tr>
<tr>
<td>Roumania</td>
<td>710,321</td>
<td>971</td>
<td>2,068</td>
<td>2,989</td>
<td>1,891</td>
<td>1,205</td>
<td>412</td>
<td>720</td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>8,265</td>
<td>1,160</td>
<td>-</td>
<td>-</td>
<td>223,105</td>
<td>49,497</td>
<td>27,804</td>
<td>-</td>
<td>1,132</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
<th>1929</th>
<th>1930</th>
<th>1931</th>
<th>1932</th>
<th>1933</th>
<th>1934</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iran</td>
<td>695</td>
<td>2,673</td>
<td>2,590</td>
<td>216,862</td>
<td>38,069</td>
<td>5,450</td>
<td>74,776</td>
<td>219,872</td>
<td>114,746</td>
</tr>
<tr>
<td>Spain</td>
<td>1,018,128</td>
<td>1,194,110</td>
<td>230,766</td>
<td>424,410</td>
<td>29,056</td>
<td>16,042</td>
<td>14,271</td>
<td>45,753</td>
<td>62,363</td>
</tr>
<tr>
<td>Turkey</td>
<td>29</td>
<td>12,073</td>
<td>6,222</td>
<td>645,983</td>
<td>33,950</td>
<td>956</td>
<td>-</td>
<td>1,716</td>
<td>287</td>
</tr>
</tbody>
</table>

Source: Calculated from Vickers' Papers.

Note (1) The annual value of Vickers' major arms exports, with sales expenses expressed as a percentage of the value of contracts, 1926-34 (1).
Table 29 to illustrate the distribution of Vickers' major armament export orders (as percentages of total of 100 per cent per annum) 1926-34.

<table>
<thead>
<tr>
<th>Country</th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
<th>1929</th>
<th>1930</th>
<th>1931</th>
<th>1932</th>
<th>1933</th>
<th>1934</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>5.1</td>
<td>7.5</td>
<td>0.2</td>
<td>0.7</td>
<td>3.1</td>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>39.5</td>
<td>0.1</td>
<td></td>
<td></td>
<td>11.3</td>
<td>3.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolivia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>10.1</td>
<td>18.6</td>
<td>4.0</td>
<td>4.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>6.8</td>
<td>5.1</td>
<td>10.2</td>
<td>10.2</td>
<td>60.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estonia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>1.8</td>
<td>6.2</td>
<td>12.0</td>
<td>12.4</td>
<td>2.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guatemala</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holland</td>
<td>0.5</td>
<td>4.9</td>
<td>11.9</td>
<td>3.5</td>
<td>9.1</td>
<td>4.4</td>
<td>49.6</td>
<td>6.2</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>0.5</td>
<td>1.3</td>
<td></td>
<td></td>
<td>1.6</td>
<td>6.9</td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>0.5</td>
<td>2.6</td>
<td>1.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithuania</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nepal</td>
<td>1.4</td>
<td>1.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>1.9</td>
<td>3.3</td>
<td>0.6</td>
<td>4.9</td>
<td>11.0</td>
<td>2.5</td>
<td>4.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>0.5</td>
<td>58.5</td>
<td>1.8</td>
<td>34.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>7.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td>29.9</td>
<td>4.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>56.3</td>
<td>26.8</td>
<td>24.8</td>
<td>25.2</td>
<td>3.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>35.8</td>
<td>4.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.A.</td>
<td>2.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Calculated from Vickers Papers
In some circumstances, this process was reversed, and a foreign power would seek to purchase British support through the placing of arms contract with private armourers. One illustration occurred in 1923. Although a British Naval Mission was posted to Greece 1919-23, and helped re-organise the national arsenal at Salamis, Britain prohibited arms exports to Greece and Turkey until the signature of the Treaty of Lausanne on 24 July 1923. In November 1923 a new naval programme was announced in Athens which included constructing ten destroyers, sixteen submarines, anti-aircraft equipment and much other weaponry. As a British diplomat noted, this programme was 'a try on', 'suddenly evolved for the purpose of purchasing support of a Great Power'; and Britain resolutely opposed it. France, to the contrary, offered attractive financial credits to the Greeks in return for the orders, and the Admiralty became 'seriously perturbed at the idea of France equipping Greece with submarines'. Britain therefore informed Greece that if the contemplated scheme went ahead, Britain would prevent them from raising another foreign loan ever again; and in the face of this threat, the Greeks reduced their naval programme substantially. In the event, Greece placed naval contracts worth £360,000 with Vickers and the marine engineers, Samuel White of Cowes. The whole affair demonstrated the tendency for minor powers to look upon an order with a private British armourer as in the nature of an unofficial treaty with the United Kingdom, as it would have been with the French. There was no question of Vickers manipulating either the Greek or British Governments: on the contrary, they were themselves a medium for the two Governments to play their war of nerves.

1. See Report on work of British Naval Mission in Greece by Vice Admiral Aubrey Smith, 22 December 1922. FO 371/8831.
4. See F.O. 371/8832.
Throughout the episode Vickers functioned as an instrument of Government policy, and at the level at which the Anglo-Greek exchanges occurred, Vickers could not intervene with any great influence. This pattern will often recur in this chapter.

Having stated these general principles, it remains to look at foreign markets more closely. In the late nineteenth century, Britain was the world's major exporter of armament proper; and at the turn of the century, it began to export techniques of manufacture, rather than weapons. Less industrially advanced powers wished to develop their domestic armaments capacity, and sought British expertise in such high-precision technology. In 1885 Armstrong's set up the Puzzuoli works at Naples. In 1887 a British-owned firm, Placencia de las Armas, started Ordnance work in Spain, leading in 1908 to the formation of La Sociedad Espanola de Construccion Naval, a Company in which Armstrongs, Vickers and John Brown's each owned 24.5 per cent., and which was intended to build a new Spanish Navy. In 1905 Vickers-Terni was formed in Italy; and in 1907 both Armstrongs and Vickers took a large interest in the Japanese Steelworks.

Similar projects were launched in Russia both by Vickers and by Schneider; whilst Vickers and Armstrong also went together into Turkish dockyards and arsenal subsidiaries, and were interested in Brazilian options. Each of these powers lacked an extensive capital goods sector, and hoped that armaments technology would stimulate the developing economy: in such countries the nascent middle-class was a major force for modernisation, possessing a monopoly of educative and technical skills as well as providing the officer cadre. All this contributed to definition of national identity and preparation for national self-sufficiency. For a British firm such as Vickers, such schemes made it possible to offset fees and other money received under technical agreements with foreign arsenals against the loss of exports to such powers.

As we shall see, Vickers' connection with such projects diminished after 1918, and were substantially dissolved by the mid-thirties. They were beaten partly by the challenge of international management, but more by the surplus capacity which existed after the Armistice. After the experience of world war, all Great Powers were arms producers, and according to figures compiled by Noel-Baker in 1936, purchased 78 per cent of all arms manufactured in the world. Other producing and non-producing Allied States accounted for another 12 per cent, which left only 10 per cent of the world left for free-market competition; specifically the South American republics, China, the Baltic and some of the Balkan states especially Turkey and Greece. 1 The results of Vickers' attempts to corner some of this 10 per cent are foreshadowed by Birch writing in 1930,

Quite apart from the world depression in buying power, our prices in many cases are such that unless we are technically ahead of our rivals and produce work of outstanding excellence, we cannot hope to gain a paramount position in supply. 2

Vickers' relations with the Foreign Office remained those of a Government supplier dealing with a Department of its main customer. There was deference, and the Foreign Office always dictated the pace and direction of events. During Bridge's period, personal relations were sometime intimate, as when the British Ambassador in Chile wrote,

Things are rotten out here and for the moment there is nothing we can do for you. We haven't got the Chileans to pay for what has already been bought, and they certainly can’t afford to order anything else.

It has been a hard year and I am worn out with protests and requests. It is like banging one's head against a brick wall. 3

---


Alternatively, some officials grew irritated with the extra work which foreign arms contracts generated. After an unsuccessful and attenuated venture in Romania, an official of the Central European Department of the Foreign Office minuted 'The more we see of Vickers, the more helpless they seem'. The British Minister in Peking, Sir John Jordan, habitually 'bullied' and threatened H.B. Donaldson, Vickers agent there; and Vickers' supply of aircraft to China in 1919 caused considerable work to the British Mission, and made the influential diplomat Sir Miles Lampson a long-standing antagonist of Vickers. The Government was not squeamish in confronting unsuitable agents: when Vickers' representative who visited Argentina, Brazil and Chile in 1925 proved 'lackadaisal...'fresh' and far too pleased with himself', both the Foreign Office and Department of Overseas Trade told Vickers so plainly. They were equally outspoken when arms salesmen meddled in foreign politics, a practice which the firms themselves discouraged as bad business. Henry Drummond-Wolff (b 1899), Armstrongs' man in Greece and later a Conservative M.P., espoused the Royalists against the Venezelists (1923) so vigorously that his life was threatened, and his hurried departure was to Armstrongs' detriment. Another case was Major J.T.S. Barnes (b 1890), an old Etonian cousin of Lytton Strachey and British expert on Adriatic affairs at the Paris Peace Conference, who became an ardent supporter of Mussolini whilst Rome correspondent of the Financial Times, 1924-6. On the staff of Armstrongs' Puzzuoli Company (1925-7) and as Vickers' aviation salesman in north-east Europe (1930-3), he got 'the reputation of being completely mad', and conducted negotiations with notable erraticism.

1. C.H. Bateman, minute of 24 April 1929. FO 371/13695.
4. Lawrence Collier, minute of conversation with British Adviser to Latvian airforce, dated 8 January 1932. FO 371/16292. Barnes was Secretary General of the International Centre for Fascist Studies at Lausanne 1927-9 and Reuters' correspondent with the Italian Army in Abyssinia 1935-6. His two memoirs, Half a Life (London 1933) and Half a Life Left (London 1937) respectively cover 1892-1919, and 1921-3 & 1935-6. His entry in Who's Who was removed (1943) on account of fascist activity, and mis-states his year of birth, as was Barnes' wont.
Inevitably some of the men found by Vickers as willing to represent them in uncomfortable parts of the world proved mercurial, and the firm sought to maintain its 'excellent arrangements with the Foreign Office...and...reputation as straight and open dealers' by appointing established merchant houses or retired officers as arms salesmen.  
The latter category was typified by Brigadier R.E.T. Hogg (1877-1955), resident armament representative in Serbia 1923-5, with his artillery training and career in the early R.A.F.  

With the proviso that they could not favour the interests of one British firm against another, British diplomats usually supported armament firms abroad. Thus, in 1925, when Caillard wrote to the Foreign Secretary, Austen Chamberlain (whom he had known since they campaigned together for tariff reform twenty years before), asking that the Prince of Wales on a forthcoming visit to Argentina should support Vickers' current arms tender there, he was told that it is out of the question for the Prince of Wales to have any personal connection with this matter, but apart from this we shall continue to do all we can to endeavour to obtain the contract on behalf of your firm. 2  
One illustration of the reciprocal character of this relationship occurred in 1922, when Vickers received an arms enquiry from Hungary, to whom, as a former enemy, the export of armaments was prohibited under the Treaty of Trianon. They informed the Foreign Office, stating that they recognised this prohibition. 3  

As to diplomatic intervention in foreign armament contracts, one of Vickers' most experienced international arms salesmen, Lancelot Leveson, prepared a memorandum on this subject in 1930, with which Kinsman and other colleagues agreed.

3. FO 371/7631.
The British Naval, Military and Commercial Attachés are helpful with propaganda, but they do it in a dignified way as compared with their Italian and French colleagues who have been known to go and present the armament tenders of their countries in full uniform. In some countries the latter procedure is resented, but in many countries it helps...when it comes to actually negotiating the contract Italian and French attachés have no hesitation in...abusing their position in support of the firms in which they are interested and from whom, in some cases, they...receive commission.

The main handicap that we have experienced...is the unwillingness exhibited by the British diplomatic representatives to take full advantage of a political situation to reap the material gain...wherever a French Military Mission is sent any armament firm, other than French, has the greatest difficulty in obtaining orders whereas British Missions, while helpful individually, consider themselves to be temporarily in the service of the Government to which they are attached, compelled to give entirely impartial advice and not in any way to insist on their advice being taken. 1

In the same context, a British diplomat who served in Turkey, Spain, Roumania, Chile and five Baltic states wrote, 'however friendly French representatives may be...they cannot resist the temptation to intrigue against us when opportunity offers'. 2 The British Minister in Bolivia called his colleague from Paris 'a commercial tout', who 'was most annoyed when he failed to secure the order for armaments for Schneider's'.

1. L.I.G. Levenson, memorandum on Diplomatic Intervention in Government Contracts abroad, 14 January 1930. V. microfilm R.300. Levenson was brother of Admiral Sir Arthur Levenson (1868-1929), and went to Brazil on behalf of Vickers in 1946. It was not only French and Italian diplomatic attachés who had such links. In 1921, A.C. Temperley, British M.A. in the Hague, reported to the Director of Military Intelligence that Major von Dimer, previously Assistant M.A. to the German Embassy in the Hague, was now Skodas' agent in Holland—Skoda was on the verge of becoming 'universal provider to the Dutch Army' instead of Krupp. 'From a national point of view this would be a great pity'. Letter of 30 August 1921 in FO 371/7091. Levenson's conclusions were not novel. Falkner (letter to Lord Rendel, 5 March 1903), writing from Constantinople, commented on the personal friendliness of the British Ambassador, adding 'but English support is very much more lukewarm than that of any other foreign power'. Rendel box 1193.


The British M.A. in Romania and Greece told Bridge,

French interests and influence are strong, and are worked for all the French are worth. Their highest representatives appear to work on definite instructions to urge that specific orders are given to French firms—and the benevolence of the French God—or its displeasure—appear to depend on the result. 1

In 1930, during the London Naval Conference, the French Charge d'Affaires approached the Japanese Foreign Minister in Tokyo, 'urging Japan to hold out' against proposals for submarine limitation which the French disliked, and 'suggesting possibility of French credits as part of the bargain'. 2 Kinsman wrote of Uruguay: 'Schneiders do not depend much on their agents, but look to the French Government for assistance'. 3 Nothing better illustrates the aggressive foreign policy of Schneider than their partial colonization, in opposition to German penetration, of the Czech firm, Skoda.

Founded in December 1899, by 1914 the Skoda works were about half the size of Krupp's at Essen. About 93 per cent. of its war-time production fulfilled the needs of Austrian General Staff (with some going to Germany), and at the height of war, it employed 40,000 men in shops covering 150 acres. 4 During the Versailles peace negotiations of 1919, Benes, the Czech Foreign Minister, discussed the possibilities of west European capital replacing that of Germany and Austria in the Czech engineering sector with the French Ministries of Finance and Foreign Affairs and with representatives of Schneider. By September 1919, Schneider held 325,000 out of a total of 450,000 shares in Skoda, and a new board was constituted with French nominees replacing Germans and Austrians.

2. Telegram 91 of Sir J. Tilley, Tokyo, 22 March 1930. It is possible that the Charge d'Affaires was exceeding his instructions. Text in DBFP, 2nd series, volume 1, 265-6.
4. Despatch 878 of Lord D'Abernon, British Ambassador, Berlin, 12 November 1922. FO 371/7388. See also 'The Story of the Skoda Boom and Panic', article in Economist, 29 April 1911.
According to an account given by Skoda's director of Ordnance,

Baron Karl Skoda (1877-1929) was a garrulous drunkard.

He would be a good businessman if he did not lead a fast life...his married life is wrecked. He was not forced by the Government of Czechoslovakia to sell his holdings. He cleared out because he feared the workmen of his factory would rob him of his holding. There was unrest and a partial breakdown of discipline at the time of the general crisis, and a proposal was made by the workers for a forced sale to them of one-third of the shares, as well as a guarantee of 9 per cent dividend to them. The Czech element also declared against the German employer and foremen. All this alarmed Baron Skoda and induced him to sell his holding for 7 Million Francs...if negotiations were handled skilfully, the Schneider holding might be repurchased for between 150-200 million Czech crowns. 1

As Teichova writes,

The incorporation of the largest armament works in Central Europe into the Schneider combine corresponded with the intentions of French power politics and...constituted a decisive step towards... a foothold in Central Europe for further expansion into Eastern and South-eastern Europe...the first serious attack on German economic interests in the area. 2

Skoda's main works were at Pilsen, but all important policy decisions, including production and finance, were taken at Schneider's Paris office. Schneider's iron grip on Skoda contrasted with the limp grasp with which Vickers clutched at their foreign arsenals. The Skoda works expanded along the lines of a horizontal monopoly, which gradually dominated the whole Czechoslovak engineering industry, encroached upon the electrical industry and played a significant part in...foreign trade... through its commercial organisation, Omnipol. 3

In 1924 Skoda participated with the Czech Government in founding the Czechoslovak Armament Works at Brno (owning 21½ per cent. 1924-37), and operations were begun in Hungary, Romania and Yugoslavia.

3. Teichova, Munich, 202. On 'French propaganda of the most nauseating nature...with their Czech allies...to encourage the purchase of armaments from Schneider or Skoda' in Yugoslavia, see Despatch 380 of Sir H. Kennard, Belgrade, 10 September 1929. Text in DBFP, series la, 7 (1975), 9-10.
Skoda dividends rose steadily from 5 per cent. in 1920 to 28½ per cent. in 1930,1 and by 1937, after several increases of Skoda's capital, Schneider owned 46.49 per cent. of the joint stock capital of 220 million Czech crowns. In December 1938, three months after the Munich agreement had delivered Czechoslovakia to Hitlerite Germany, when Skoda shares were quoted in Paris at 565 francs, Schneider sold its participation in Skoda 'on fairly favourable terms to a consortium of Czech banks'.2

Schneider ruthlessly kept its Czech subsidiary as tributary. A General Convention between Schneider and Skoda (1922) protected French markets, and allocated to Skoda carefully defined markets in Eastern Europe, south American countries such as Colombia and Uruguay, and other countries such as Turkey and Persia. The French imposed on Skoda 'diversification of products which prevented thorough technical reconstruction and rationalization'.3 The Director of Ordnance at Skoda claimed (1922) that the Czech management at Pilsen is not at all satisfied with the position... the French firm gets all the advantages. Thus Schneider received the whole contract with the Hungarian Government concerning the port of Budapest... Worst of all, the French gave Skoda no orders from Poland. The arrangement made concerning patent rights acts very unfairly towards Skoda... all the patent rights of one firm are to be notified to, and registered by, the other, at the expense of the firm in whose country the registration takes place. Skoda has had to register 65 Schneider patents in Czechoslovakia; Schneider has had to register only 15 patents in France... The Schneider engineer representatives are very unpopular, being socially most offensive and arrogant.4

2. Teichova, Munich, 216; FO 371/22901.
3. Teichova, Munich, 213.
It is in the light of this organization that one can appreciate the remark of Eugene Schneider (1868-1942), that 'The War did not end with the Treaty of Peace'.

Skoda's were predominantly a Government contractor, with Army orders accounting for almost 70 per cent of orders received 1933-6. Although the State did not hold a direct capital investment in the works, the firm often secretly co-opted onto its board officials and politicians from the ministries giving Government orders, informing them of this confidentially and providing the directorships on their retirement from public life. Such arcanes by Continental armourers in their domestic dealings was widespread. In this connection may be mentioned Fritz Mandl (b 1900), head of the Austrian armoury of Hirtenberg (the centre of much dubious trafficking), who bought up the mortgages on the estates of Prince Starhemberg, and ran him financially.

Starhemberg led the Heimwehr, a Fascist terrorist organisation supported by Mussolini, which maintained the authoritarian Dollfuss as Austrian Chancellor in 1932-4. Mandl, in turn, received arms orders from the Heimwehr, and his factories were used by the Italians covertly to re-arm Hungary and Bulgaria with a view to encircling Yugoslavia. British armourers never desired this class of dealings with their Government. Another interesting case of a trans-national

2. Teichova, Munich, 205 & 207.
3. With Mandl's lead, Hirtenberg became 'definitely one large corporation', with 'fluid' but inter-related finances, working with the Steyr and Solothurn factories in Austria, the Nederlandsche Patronen Fabrik of Dordrecht and the German Rheinmetall group. See Despatch 263 from Sir H. Kennard, Berne, dated 25 November 1932 (with enclosures confirmed by Mason-Macfarlane, M.A. at Berne) in FO 371/15893.
combine, discreetly but officially encouraged by relevant governments, was Krupp's tie with Bofors.

The Versailles Treaty's prohibition of arms exports from Germany led to several firms establishing armouries abroad. In 1921 the Karlsruhe works asked the Swiss firm of Dornach to manufacture munitions for Greece, Mexico and the Balkans; other Swiss firms which manufactured German weaponry were Solothurn and Oerlikon, both notable machine-gun developers. But the outstanding illustration was the alliance between Krupp and Bofors. Around the time of the Armistice, Krupp contracted to supply the Netherlands Marine Department with twelve 6-inch guns for the cruisers Java and Sumatra; but in 1919, Krupp realised that the British were aware of the contract and cancelled it themselves. Then, between August and November 1919, Krupp exported 270 tons of gun steel to Holland. The contract was then placed with Bofors (a factory previously occupied in building for the Swedish navy, with little export background), the steel was exported to Sweden and the guns manufactured without delay in completing the cruisers. After this deal, armament plant was moved from Krupp's works at Essen, and the Swedes acquired Krupp's designs and other experience (30 skilled men were transferred from Essen to Bofors in 1921). Contracts for guns of various calibres were accepted from Japan, Holland, Spain and South America.

1. A.C. Temperley was British M.A. at the Hague 1920-4, and his autobiography, The Whispering Gallery of Europe (London 1937), has interesting references to 'the hot-bed of international intrigue' in Holland after 1918. Temperley was Military Representative at the League of Nations 1925-35 and Deputy Director of Military Operations and Intelligence at the War Office 1928-33, succeeding Liddell Hart as military correspondent of the Daily Telegraph, 1935. His memoir is a good account of the frustrations of disarmament summity.


After a prosperous start, Bofors were hit by the bad trade affecting armourers throughout the world. Their 100 kronor share stood at 122 kronor in 1920 and paid dividend for 1919-20 of six per cent; but their dividend was passed 1920-5, and in March 1923 the shares stood at 28 kronor. They then had prospect of orders from only three sources: field guns for Brazil, 75 mm. howitzers for the Dutch East Indies and 37 mm. infantry gun for Sweden. (In the first two cases, Vickers were in competition with them).

In February 1923 Leveson was shown freely over the Bofors works, and agreed with the British M.A. in Stockholm,

Little work is in hand, and the Managing Director is seriously concerned for the future of the company. Mr Leveson's opinion of the Bofors Factory is that it is a strong competitor with any foreign firm for Swedish orders, as it is quite self-contained as regards raw material, plant and modern designs; its plant is small, but sufficient for peace production of Swedish orders. It is not capable however of any large scale production of war material. Vickers are moreover considering the advisability of working through Bofors for the supply of Fire Control and Directing Apparatus for the Swedish navy, and for the supply of any armour-plating over 4 inches, which...Bofors...cannot produce. 1

Vickers, then, were sufficiently alive to potential Swedish competition that in 1923 they sent Leveson to explore the chances of working agreements; although when the offer of a world arms pool comprising Bofors, Schneider and Vickers, came in 1928, as noted in Chapter two, it was declined. In the expansion of 1927-8, Bofors had difficulty in raising capital to increase capacity, 2 and the firm had an unsteady position throughout the 'twenties, with little productive reserve.

Table 30 to show value of Ordnance orders on hand at Bofors' works, 1924-8.

<table>
<thead>
<tr>
<th>Year</th>
<th>Value of Ordnance Orders (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1924</td>
<td>888,000</td>
</tr>
<tr>
<td>1925</td>
<td>500,000</td>
</tr>
<tr>
<td>1926</td>
<td>533,000</td>
</tr>
<tr>
<td>1927</td>
<td>653,000</td>
</tr>
<tr>
<td>1928</td>
<td>2,250,000</td>
</tr>
</tbody>
</table>


Although the Swedish Government did not directly support Bofors, a high official of their Board of Trade was a Director of Bofors. Using German designs, Bofors were very much on leading-strings held by Krupp: one typical early contract for H.E. shell arose because the Essen firm owed Brazil some £400,000 which they had received around 1914 for war material never delivered. After Brazilian pressure for return of the money, a director of Krupp went to Rio in 1924, and in December, the Brazilian Ministry of War placed a contract with Haupt & Co., Krupps' Brazilian agents. Actual manufacturing was done by Bofors. By 1933, as Birch wrote after being beaten to a Bolivian order for ammunition, 'Bofors' influence is getting very strong everywhere, and someone is putting money behind them, I presume Germany'; though with the rise of Hitler, the Swedes limited the German role in Bofors.

Bofors was not the only case in which Krupp tried, with German Government support, to become trans-national. In 1925 Krupp arranged for a British merchant banker to approach the Foreign Office with the proposal that they transform themselves into an English holding company, in which old Krupps would take 45-50 per cent of the shares. The purpose of this manoeuvre was to improve their capitalisation and liquidity, and although an eventual minority participation by the French and Americans was envisaged, 'the German Government would prefer to deal in the first place with Great Britain'.

British Military Intelligence's reaction was to welcome Allied capital having a close interest in the firm, as likely to make secret and illegal arms manufacturing more difficult; though Birch, then Master General of Ordnance, thought British directors 'would not necessarily become aware of such...preparations', and thought British capital would be better spent on 'our own armament firms', 'now going to ruin'. He also found it 'very cheering' that Krupp were 'in financial straits...its value could be measured in Army Corps'.

The Secretary for War agreed with Birch, and after the Foreign Secretary had expressed his 'profound mistrust' of German motives, Vansittart officially rejected the proposal. German aims behind this episode are hard to reconstruct, and though Birch's doubts appear reasonable, it does seem that if the French had been presented with such an opportunity, they might have evolved a more imaginative policy with it than the British refusal.

1. Vansittart, minute of interview with Vivian Smith, 23 April 1925. FO 371/10756.
Another competitor for arms orders was Italy. Especially in the era of sham Caesarism after Mussolini came to power in 1922, the Italians sought to extend their influence by marketing cut-price armaments. A typical example occurred in 1925, when Britain was negotiating to supply surplus munitions to Lithuania. The War Office hoped to fund new purchases of equipment with the proceeds (channelled through B.S.A.), but were preempted by Italy, who sold Lithuania some 3,894 cases of rifles, 50,000 cases of ammunition and 56 cases of rifle parts. This material had been supplied by Britain to Italy in the Great War, and had not yet been paid for: Military Intelligence, in reporting the prospective sale, commented as soon as they reach their destination, we can demand payment from the Italians, and at the same time provide the Lithuanians with British equipment which they will have to maintain from this country. 1

But once the arms were in transit from Naples to Memel, it transpired that the Italians had sold them for less than four shillings per rifle, and for about one penny per round of ammunition. What rankled with the British was that it would be absurd to try to claim such small proceeds from the Italians, and also that the Lithuanian market for surplus munitions was 'definitely ruined' for the foreseeable future. 2

Italy was very forward in selling cut-price naval armament, and by 1930 was Britain's chief competitor in that market. The attraction of the Italian weaponry owed much to the long-term credits available, and nothing to superior technology.

1. Military Intelligence to Foreign Office, 22 January 1925. FO 371/10975.
2. Telegram 57 of Sir Ronald Graham, Rome, 26 February 1925. Minute of Charles Peake, 9 March 1925. FO 371/10975. British Munitions supplied to Italy during the Great War included 237,528 rounds of light gun ammunition, 831,035 rounds of heavy gun ammunition, 50,000 small arms, 100,648,560 small arms ammunition, 176,500 gun ammunition components, 50,000 rifles etc. Hist. of Miny of Munitions, vol 2, pt 8, Appendix 5 lists all British supplies of munitions to Allies, 1914-18.
One British admiral attributed the Italian grip on building for the epicene Romanian navy to 'the paper performance of Italian ships; and secondly, the greatly superior finish of the Officers' Quarters'.

The great Italian naval yards of Odero-Terni-Orlando are discussed on pages 299-302: here it is sufficient to note that they were one of the competitors which Runciman, President of the Board of Trade, had in mind when he said in 1933, 'It was well known on the Continent that British armament firms were in a dying condition'.

From the foregoing discussion, it will be seen that the Czech, French, German and Italian firms all enjoyed more intimate and aggressive co-ordination with their Governments' international policies than did Vickers in Britain. Indeed, in Britain, private armourers received two forms of negative discrimination from the Government, both of which greatly hindered them in competition for foreign markets. These concerned export licenses and export credit guarantees.

Legislation empowering the prohibition of armament exports is traceable as far back as the Tonnages and Poundages Act (1672). Under the Customs and Inland Revenue Act of 1879, which remained in force in our period, there was power to prohibit the export of arms by Order or Proclamation, but such prohibition had to cover export to all destinations. In 1900 the Exportation of Arms Act was passed, giving power to prohibit exports of arms to specific destinations: the powers were primarily intended to stop British forces, or forces co-operating with them, from having British arms used against them by the Boxer insurgents in China. This refinement of the 1879 Act also operated in our period.

2. P.A. (33), 1st meeting, 7 December 1933. Cab 27/551.
Extended powers, valid in wartime only, were included in the Customs (Exportation Restriction) Acts of 1914-18 but lapsed in peace. The Finance Act of 1921 extended the 1879 Act to munitions of every description, as well as to firearms and ammunition which were not war weaponry. This was partly done to meet the spirit of the Arms Traffic Convention, signed at St. Germain-en-Laye in 1919 by Britain and other nations but never ratified. Britain was also party to the Arms Convention, signed at Geneva in 1925 and conditionally ratified by Britain in 1930—which never operated, as it was not ratified by other principal arms-producing states. For the bulk of our period, from 24 March 1921, war material was under an Order which carefully defined fifteen classes of armament; a new General Order of 19 May 1931 added bayonets, swords, lances and aircraft to take account of provisions in the Ethiopian Arms Traffic Treaty, signed at Paris on 21 August 1930 by France, Italy and Ethiopia and ratified by all four countries. The Orders of 1921 and 1931 included for the first time provision for export licenses.

The operation of these Orders can be examined. In the period 1921-3 there were only seven cases where manufacturers were refused export licenses. In September 1926, B.S.A. was refused a license to export 5,000 .303 rifles worth £12,500 to Nicaragua on the grounds that Britain did not recognise the existing Nicaraguan government. In January 1927 Nobel's were forbidden a licence to export powder for rifle ammunition worth £3,500 to Britain's ex-enemy, Bulgaria. In September 1928 B.S.A. were refused a license to export rifles and cartridges worth £1,232 to an arms dealer in Afghanistan: the arms were not ordered by the Afghan government. In September 1929 Vickers were refused a license to export 12 machine-gun barrels worth £36 to a German arms firm, and similarly, in May 1930, a revolver worth £4 to a private Austrian citizen—on both occasions because it was trading with an ex-enemy country.

I.C.I. were refused a licence in June 1931 to export 100,000 tons of T.N.T. to the Cantonese Provincial Government which was in rebellion. Similarly, in October 1932, I.C.I. were refused a licence for rifle and machine-gun cartridges worth £13,000 ordered by the State of Sao Paulo, Brazil, where there was a revolution.

Table 31 to show number of licenses for export of war material issued and refused 1929-35.

<table>
<thead>
<tr>
<th>Year</th>
<th>Issued</th>
<th>Refused</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929</td>
<td>325</td>
<td>5</td>
</tr>
<tr>
<td>1930</td>
<td>411</td>
<td>3</td>
</tr>
<tr>
<td>1931</td>
<td>435</td>
<td>1</td>
</tr>
<tr>
<td>1932</td>
<td>410</td>
<td>3</td>
</tr>
<tr>
<td>1933</td>
<td>413</td>
<td>-</td>
</tr>
<tr>
<td>1934</td>
<td>413</td>
<td>7</td>
</tr>
<tr>
<td>1935 (a)</td>
<td>309</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: Minutes of Evidence, 340.
Note : (a) figures for 1935 up to 30 September 1935.

On five occasions, export licenses were granted, but revoked. While the minority Labour Government was in office (1924), B.S.A. were licensed to supply Soviet Russia with 200 newly manufactured Lewis guns worth £19,992, but the succeeding Conservative Government imposed an embargo on arms exports to Russia, and revoked the license in January 1925. In January 1927 a license granted to a London dealer to supply 250 Lewis guns to Nicaragua (War Office surplus worth £10,000) was revoked after ten days when, after doubts at Scotland Yard, it transpired that the guns were not destined for the Nicaraguan government. Following the decision of a new Labour Government in 1929 to suspend the sale of surplus Government arms to foreign governments, two licenses were withdrawn that December, permitting the Soley Armament Company to supply Latvia with War Office surplus Lewis guns, anti-aircraft guns and shells worth £18,000.

1. At the same time, in January 1925, the Government refused to renew licenses already issued to B.S.A. on Russian orders for machine-gun tools and spare parts worth £17,068; as also a contract between Russia and Vickers for machine-gun parts worth £9,100.
Finally in December 1932, following withdrawal of oil concessions by the Persian Government, a license to Vickers to export newly-manufactured practice bombs worth £1,056 was re-called. The case was reconsidered, and in February 1933, the license was re-issued. 1

A Cabinet Committee which examined the condition of private armourers in 1933 strongly recommended a change in the licensing system, 2 and this was accepted by the Cabinet in December. 3 They agreed, as the First Lord of the Admiralty said, that

the existence of a system of export licensing was the main deterrent to foreign purchasers...we had been internationally hoodwinked, as this system was self-imposed and...though...an example to other countries, had certainly frightened away possible purchasers. The present prosperity of Skoda and other Continental firms showed that while there were plenty of orders about, the amount coming to this country were negligible. 4

However, Ramsay MacDonald, the Prime Minister, thought the change proposed (to give open export licenses to approved manufacturers of national importance) would prejudice disarmament discussions elsewhere, especially as Britain had advocated specific licenses at recent international conferences; and afterwards he obtained a reversal of Government policy. Britain continued its unilateral practice of specific licensing, whilst giving a private assurance to the major armourers that the licenses would be given with the minimum delay, and would be revoked only exceptionally. This compromise was far from satisfactory: a private assurance was not a particularly impressive guarantee of continual supply to foreign customers.

Apart from the licensing system, Britain also operated foreign embargoes. The diplomatic representatives of the Western powers in May 1919 agreed in Peking not to supply munitions in China, a local embargo animated by the British Minister, Jordan.

1. This account of the licensing system is taken from Supp 3/43. There is a good deal about the principles governing sales of munitions to foreign governments in WO 32/4956.
3. Cab. 69 (33) conclusion 6 (a).
It proved inoperable, both because of the huge amount of arms coming over the border from Russia, and because it was systematically disregarded by Italy and Japan; yet Britain adhered to it until 1929. One result of the Chinese embargo 'was to foster the arms industry of the smaller States', especially Czechoslovakia, which seized hold of the vacant Chinese market, and retained a seriously competitive position in Far Eastern business well after 1929. The embargo on supplies to Greece and Turkey (1922-3) has been mentioned before. The most famous case was Britain's unilateral action during the Sino-Japanese War (1933), of which Birch wrote,

"The embargo in the Far East probably weakened our national defence, increased unemployment and made other nations laugh. What good did it do?"

The effects of stopping arms exports to China and Japan were listed by an official of the C.I.D. as

a) to help Japan, who alone have the stocks
b) to down our own industry
c) to get us unpopular with Japan and laughed at by all others.

Sentimental folly, with a nasty element of risk.

Barrow alone lost Japanese orders worth £500,000 during the fortnight of the embargo, which was an absolute failure.

Less famous, but more effective, was Britain's lead in 1934 of an embargo on supplying munitions to Bolivia and Paraguay. The British Cabinet had agreed in March 1933 not to join an embargo on these warring neighbours, unless the U.S.A. was party to it.

1. This is extensively documented in FO 228/3102, FO 228/3103, FO 228/3559; also FO 262/1551, FO 262/1267, FO 262/1604 and FO 262/1674.
2. Hankey to Neville Chamberlain, 2 March 1933. Cab 63/46.
5. Craven to Eyres-Monsell, 2 March 1933. V. microfilm R334. Cf Hankey to Runciman, 3 March 1933; Chatfield, First Sea Lord, to Ramsay MacDonald, 6 March 1933 (with enclosed Admiralty memorandum). MacDonald papers, PRO 30/69/1/519.
On becoming President in 1933, Roosevelt finally succeeded in obtaining powers from Congress to declare an embargo, and this he did on 28 May 1934. Thereafter, as the British Foreign Secretary announced on 4 June, licenses in Britain were held up, pending the conclusion of an embargo agreement. There was no formal embargo, and neither Vickers nor I.C.I. were prevented from shipping armament on licenses already granted. All the Foreign Office did was to delay indefinitely the issuing of current licenses. Whilst Britain maintained the embargo through the summer of 1934, Czech, Belgian, Italian and Japanese firms sent supplies to the two belligerents, and it was not until winter that the main manufacturing states, having taken advantage of the lack of Anglo-American competition, finally concurred with the embargo. By that time, the situation between Paraguay and Bolivia had altered, and in January 1935 Britain and the other Powers lifted the Embargo. This episode deserves larger discussion than is possible here: Britain rather played 'the part of the prying moraliser', and its self-denying ordinance did not stop the supply of munitions to the belligerents. Nevertheless, the Embargo bit during the last six weeks of 1934, and if it had lasted long into 1935, both Bolivia and Paraguay would have had difficulty in protracting hostilities.

To reiterate, with this export licensing system, and occasional recourse to embargoes, Vickers could do next to nothing abroad without the consent of their Government. They could not have been more tightly tied to official policy if they were bound with hoops of steel.


Since 1921 it has been literally meaningless to talk about the 'immorality' of the private manufacture of armaments, because throughout that period, private armourers have had to put all exports through a Government licensing system—of which, significantly, General Lawrence was in favour. Government has absolutely scrutinised every such export. Such Government supervision reduced almost to nothing the possibility of irresponsible exporting, and (as the example of the Greek naval programme of 1923 showed) the British Government was significantly less opportunistic in such matters than other manufacturing powers.\footnote{1}

Another discrimination which mattered enormously was that under the Trade Facilities Act (1921), Export Credit Guarantee were prohibited in the case of munitions (though the prohibition did not extend to armed aircraft, or their parts). Vickers pleaded constantly for the repeal of this prohibition. It was mentioned in most of the Chairmen's speeches to the annual general meetings and in many of the group's dealings with Government. The Army Council wanted the relevant Section of the Trade Facilities Act to be repealed,\footnote{3} and in April 1931, the President of the Board of Trade in the Labour Government made enquiries, with Cabinet sanction, whether Baring's or other merchant banks would furnish assistance to armourers equivalent to the 1921 Act. This idea made no progress, and British firms continued to labour under a great disadvantage. Italy, France and other manufacturing powers had an opposite policy.

\footnote{1}{Minutes of Evidence, 367.}
\footnote{2}{This emerges very distinctly from the documentation of the Bolivian-Paraguayan embargo. One of Hankey's fears of embargo proved groundless: that Britain would lose 'the supreme advantage conferred by sea-power', viz obtaining munitions from abroad during major wars, by the U.S.A. or other nations demurring from such supplies and citing British embargo precedents in the thirties. Hankey to MacDonald, 24 February 1933. MacDonald papers PRO 30/69/1/519.}
\footnote{3}{Sir Archibald Montgomery-Massingberd, C.I.G.S., to Lord Hailsham, Secretary for War, April 1933. WO 32/3338.}
As Benoit has written,

Defence firms...are accustomed to investing a large amount in preparing bids and accepting low-margin initial orders as a way of getting essential experience...which will later qualify them for larger and more profitable orders. They usually operate under limited profit potentials...but...with...flexibility in the estimating of costs. 1

Continental firms often received assistance from their national Governments in landing the initial, low-margin orders—including export guarantees, conditional loans to the foreign purchasing government or subsidies. Thus in 1931 the French Government guaranteed to the Sauter Harle Company some 70 per cent. of all payments due from the Romanian Government on mines (whether manufactured in France or Romania), and provided Sauter Harle with facilities to take payment from the Romanians over seven years. This was usual French practice. 2

On other occasions, alluring financial terms were offered in conjunction with associated financiers. If the Austrian small-arms firm of Steyr was exceptional in being 100 per cent owned by the Credit Anstalt Bank, 3 nevertheless continental competitors consistently beat the British to initial and replacement orders by the involvement of bankers in foreign marketing policy. As the Foreign Secretary wrote in 1929, 'loans by foreign Governments and financiers [are] the most potent instrument in deflecting orders from this country'. He urged that British banks should pursue 'a less exclusively financial policy and one more calculated to facilitate the capture of foreign markets by British industry'. One disadvantage met by British banks 'vis-a-vis their competitors in raising loans for foreign countries' was the 2 per cent stamp tax on the bonds of such loans raised in Britain. In April 1927 Barings' agents in Argentina reported that the Minister of Finance required a loan of £3,000,000 for naval armaments.

The Argentines were willing to undertake that two-thirds of the total would be spent in Britain: on Barings explaining that the British stamp tax made it impossible for them to accept the loan, Argentina actually offered to leave half of the loan's proceeds with Barings for three to five months at two per cent. Barings remained unwilling to help, and the Argentines eventually accepted a loan of 100 million pesetas from Spain. 1 The British Ambassador in Buenos Aires commented,

Spain got the loan and sold two destroyers. We, for the sake of £30,000, lost £30,000 stamp duty, lost the loan, lost prestige and lost £2,000,000 of work definitely promised. 2

The same Ambassador complained apropos the collapse of British trade in Argentina that 'our firms prefer to stay at home and wait for business to come to them, in the intervals of their golfing weekends, instead of sending their principals out here', and warned that Britain must 'attack this market root and branch, horse, foot and Vickers-Armstrong artillery, with all the resources at our disposal, or...lose the little that is left of what once was ours'. 3 Though Vickers were superior in their foreign selling organisation to such a competitor as B.S.A., 4 their export drives often reflected Docker's comment, 'We are ill-organised as a people...the three great divisions of the business world—industrial, mercantile and financial—pay little regard for one another's interests'. 5

3. Despatch 79 of Sir Malcolm Robertson, Buenos Aires, 24 March 1928. FO 371/12737. Robertson resigned from the Diplomatic Service in the following year, to become Chairman of Spillers Ltd., the flour manufacturers (1930-47). In 1927 Robertson was involved in a remarkable affair when he declined to support a Belgian group, using Dudley Docker as a British front, in the Argentine railway business; despite pressure from Cunliffe-Lister, President of the Board of Trade, who had been promised a directorship by the Belgians when he left office, and backed Docker, without his civil servants knowing anything of the matter. See Dannie Heineman to Lloyd-Greame, 24 November 1924. SWIN 2/4. Sir M Robertson to Cunliffe-Lister, 13 April 1927. SWIN 2/12. Docker to Cunliffe-Lister, 8 April 1927 and R.L. Craigie, minute of 23 April 1927, in FO 371/11959.
4. See Pollen, memorandum on B.S.A. selling organisation, April 1921 University of Warwick Mss 19A/1/2/43.
5. Economist 7 February 1914.
Another criticism is valid. Correlli Barnett, commenting on British foreign policy in this period, has written of 'parsonical belief in the powers of moral reprobation... accompanied by an equally parsonical dislike of "immoral" forms of pressure, such as bribery, threats or force', adding that there was 'insufficient understanding of the bargaining process' and over-reliance on the 'meeting of minds in good faith'.

Any generalisation courts contradiction, but Barnett's remarks frequently seem applicable to the conduct of British overseas salesmanship, whether by those representatives who did forsake their golfing weekends, or by the diplomats who often had to rescue such trade negotiations. The British often seemed to shrink from the more ruthless requirements of international salesmanship.

It now remains to look at Vickers' armament business, in a time of failing British power, through the experiences of the foreign arsenals launched before 1914, and their post-war equivalents. These arsenal projects proved as unstable as did the exporting patterns of finished armament. Although the earlier overseas arsenal schemes which Vickers pioneered (and from which Falkner of Armstrongs baulked) rendered major benefits to the developing Powers by way of technological education, Vickers had received only moderate returns from their investments before the complete disruption of 1914-18. There follow accounts of Vickers-Terni, Japanese Steel and Canadian-Vickers. In the first case, Vickers' subsidiary was wrecked by war-time upheaval, and after the negotiation in 1922 of new technical agreements, Vickers looked if not for large profits, at least for technologically educative exchanges. Instead they met bad faith from a nationalistic and mounting hostile government, and liquidated their position ignominiously.

1. Barnett, Collapse of British Power, 242
In the second instance, Vickers' foreign interest survived 1918 profitable and in tact, but naval work shrank drastically after the Washington Conference, whilst London proved too far away to influence an arbitrary Asiatic management. This company, too, was borne away by nationalism irreconcilable with British interests. Finally, in the case of the subsidiary in a British dominion, the war disrupted its finances before an orderly programme of expansion was achieved, and after a period of chaos and adversity, Vickers sold their holding in 1927. These three projects illustrate that Vickers had not the capital to fund the foreign factories in an aggressive or innovatory way. By the middle of the 'twenties the whole idea had become not just anachronistic, but seriously detrimental. Countries such as Japan or Spain were not merely becoming self-sufficient in armament, but competitors in foreign markets; whilst Jenkinson was dis-satisfied with the supervision exercised from Vickers House on such foreign operations.

No-where was the change more outstanding than in Spain. In 1922 the King had received Dawson and Buckham in audience, and Zaharoff was right to call Vickers 'the most gratia foreign firm in Spain'. But after the retirement of H.J. Speirs (1857-1935), General Manager at Ferrol 1909-25, senior management was put in Spanish hands. d'Eyncourt 'greatly feared that under complete Spanish guidance the work will deteriorate...and defects and accidents may occur which naturally the Spaniards will seek to attribute to defects in the design' (for which the British firms of Brown, Armstrong and Vickers would remain liable under the technical agreement). He wondered whether Armstrong should not withdraw from Spain:

1. Birch to Lawrence, 3 Jan 1928. V. microfilm R.334.
We have had a great deal of work in our Design and Drawing Offices, which has been fully paid for and given a good profit; and further this work has enabled us to keep employed a good many first-class draughtsmen, sometimes during slack periods, men...whom we should otherwise have had to discharge. The connection has also brought us a good many orders for items which the Spaniards are unable to manufacture themselves, e.g. armour and big guns over 8"...Our connection with Sociedad has given us a standing in Spain of which full advantage should have been taken, but of which Vickers...availed themselves more...Vickers have a far larger holding in the Sociedad...evil...has been done by the teaching of the Spanish Arsenals to do special warship and mercantile work so that they can actually compete for orders with the British firms...though the Latin South American countries may wish to favour Spain, the cost of building in Spain is considerably greater than here. 1

After 1932 the Spanish had exchange difficulties in remitting fees to Vickers in Britain, and the re-organisation of Sociedad (1933-4) led to the resignation of many heads of department, and managerial 'rebellion' of some 'virulence'. 2 According to Birch in 1930, 'Spain, always our best customer in the past, has not spent a peseta on any of our new models in the last three years. Our agent there says that they will adopt our tanks and probably our anti-aircraft gun, but only when the exchange [rate] is more favourable'. 3 Sociedad's net profit for 1931 was £1,653 and for 1932 only £294, and Vickers' interest in the company was already run down before the outbreak of the civil war prevented the appearance of the 1936 accounts. Just as in Italy and Japan, national feeling militated against Vickers' position in the arsenal, and the political trouble became not worth the possible profit. This opinion was taken particularly by Jenkinson, whilst it was perhaps family sentiment which made Douglas Vickers, as the longest serving director, the most reluctant to dispose of the foreign holdings.

1. d'Eyncourt, memorandum on Sociedad of 11 July 1927. A.W. papers, C.21. The teaching of the Spanish arsenals in this special work had, of course, been stipulated by the Spaniards in the original contracts.
They could not justify the work they caused Vickers House, and as Tables 32-6 largely suggest, dividends received from them controvert Brockway's claim that 'armaments are a magnificent business proposition'. The foreign arsenal schemes failed in a context that was never expected for them. The projections on which Albert Vickers had based the Edwardian schemes disappeared beyond recall with the events of 1914-18. The Great War not only developed manufacturing expertise in previously backward Powers, but created international surpluses both in existent war material and in productive capacity. Perhaps most significantly of all, it spread doctrines of total industrial mobilization in wartime besides which Albert's national arsenals were small beer. But before Vickers could accept and act on the evidence before them that they should withdraw from unprofitable projects with major powers, they first attempted to supply bespoke schemes to the secession states after the break-up of the Dual Monarchy.

VICKERS IN ITALY

Vickers involvement in Italy centred around the Terni foundry and steelworks founded in 1884 by V. S. Breda. A recent historian of Italian industrialization has described how 'the Italian iron and steel industry arose as a highly speculative financial enterprise, projected by experienced public contractors who were assured of political support as well as military orders and were financed, insofar as there was solid capital in their first ventures, by bankers and stock promoters rather than by investors versed in industrial problems'. Terni was the industrial protégé of the Italian navy, and V. S. Breda constantly argued that national security and self-sufficiency impelled the existence of a national steelworks.

1. The Bloody Traffic, 36.
2. Webster, Industrial Imperialism in Italy 1908-15, 53. I rely heavily upon this source for my account of Terni up to 1914.
Allegations of financial chicanery were made, and it does seem that Terni failed to become, in 1884–1914, as Breda said he intended, 'the centre of an industrial system that could emancipate Italy from foreign suppliers'.

The first equipment installed at Terni came from Schneider, and the Navy insisted upon autarky, so that Armstrong had to get the steel for their gun foundry, Pozzuoli, at Naples, from Terni—it was highly priced and frequently defective. By the time Breda died in 1902, Terni had become synonymous with high-level political operations and its close relations with the Italian navy must be understood in these terms. The Orlando brothers (whose father, a self-made Risorgimento nationalist, had erected a naval works at Leghorn) subsequently bought control of Terni, together with the Banca Commercials of Milan and Attilio Odero; and this group set about structuring a steel-trust which 'operated in an unco-ordinated and technically unsound fashion, trusting in tariffs and government contracts to save them from the working of economic natural selection'—and which was thrashed by the price-cutting tactics of the German international steel syndicate, the Stahlverskverband.

Odero, the Orlando and Breda alike were highly politicised government contractors, and their business was at the heart of national controversy, with the original Terni plant manufacturing armour-plate whilst Terni-Orlando-Odero's shipyards built warships. Italy typified the countries in which Vickers entered such projects: 'a dyarchy, in which power was shared, in an undefined way, between a parliamentary middle-class and a traditional military monarchy', and where 'all major... business groups were expansionist, often beyond their means'.

1. Webster, Industrial Italy, 57.
2. Webster, Industrial Italy, 67.
3. Webster, Industrial Italy, 9.
4. Webster, Industrial Italy, 338.
The head of Schneider though his Italian partners were all 'voleur et assassin'; Falkner characterised Italian industrial development as 'Archane rivalries and personal animosities with all their attendant bitterness and terrible cutting of prices', and called his own attempts to unify the warring interests 'the greatest service which has been rendered to Italy'.

In 1905 Albert Vickers arranged for his firm to enter partnership with Terni in Vickers-Terni (which had authorised capital of £385,000, of which Vickers took £86,625). Vickers-Terni bought land at Spezia in 1906, completing there in 1910 a gun factory intended to provide every artillery need of Italy. Webster, citing a contemporary nationalist tract, writes in implicit criticism of Vickers, 'Italy had acquired a substantial military-industrial complex without shaking off her dependence on the foreign arms makers'; but only the blindest nationalist could expect Italy to attain 'military self-sufficiency and great-power status in the arms race' within twenty years of beginning industrialisation, as Webster later admits. Criticisms of Vickers-Terni's production were often instigated by their rival, the Ansaldo yard, in which Schneider were associated, and usually originated in quarters that were scarcely disinterested. In Trebilcock's description,

The procurement agencies of minor military (and economic) powers were seldom competent to evaluate the weaponry offered by the advanced industrial nations. The comic-opera navies and vaudeville armies of the pre-war years did not immediately assume a mantle of authority in weaponry matters when they lacked it in the field or battle squadron...the industrial record...contains the armourers' own charges, inevitably less public and less publicized, against government mismanagement, corruption or prevarication...those offences must energetically alleged against armament manufacturers were, in fact, frequently the fault of governments.

2. Webster, Industrial Italy, 104 & passim.
3. Webster, Industrial Italy, 352-3.
Under the Terni agreement, Vickers were to receive 10 per cent of the annual profits of their joint subsidiary, but (as in the projects elsewhere), 'business...was hardly established on a profitable basis by 1914'.

Italy entered the war in 1915 on the Allied side, and got considerable experience from war production. However with the cessation of hostilities, Italy had an armaments surplus, and Vickers-Terni little prospect of work. Vickers had an annual return on their investment in Vickers-Terni of 7½ per cent until 1920, but in 1921 the company passed its dividend and had to shut the works at Spezia and Leghorn. They were hit by immense extra taxes and by general post-war conditions, and losses swallowed all of Vickers-Terni's reserve fund and share capital, until only 206,337 lire were left. Similar conditions hit Armstrong's Naples gun works, Puzzuoli, but whilst the Newcastle directors became paralysed in legal and accounting negotiations which lasted until 1926, Vickers swiftly re-negotiated their position.

By agreement dated 19 February 1922, the shell of Vickers-Terni was incorporated into the main Terni company, although as it was worthless, nothing was paid for its shares. Vickers' technical agreement with Terni continued, and Vickers held 11,933 Terni shares in February 1922. At this juncture Terni moved into exploiting hydraulic energy, fusing with the Carburino Co. to form Terni Societa per l'Industria e l'Elettricita. Terni was still controlled by the Milan financiers of the Banca Commerciale group, described by the British Ambassador as 'a cannibal octopus', and Birch wrote (1928), 'Terni (presumably supported by the Italian Government) are always trying to override our agreement with them...the situation is extraordinarily difficult. Italy in three years time is going to be our chief competitor, if our agreement with Terni is allowed to lapse'.

As to competitiveness, Italian yards, by the end of 1929, were engaged on building foreign warships worth £6,500,000 (29,615 tons) compared with foreign warships building in the U.K. worth £1,091,000 (9,970 tons). 1 Douglas Vickers commented

It would be very bad policy to sell our Terni interest; we should lose Italian Government business and part at an inadequate price with shares which must be made valuable before long as the results of the electric policy bear fruit. 2

In 1928 Douglas Vickers and S.V. Dardier, two of Vickers' nominees on the Terni board, discussed a new technical agreement with their co-directors in Italy; but the Vickers-Armstrong board decided against it (17 December 1928), and resolved that if a new agreement was not reached, the shareholding in Terni should be disposed of. When the Vickers agreements with Terni (which had become the Vickers-Armstrong agreements with Terni Elettricità) expired in 1930, no new agreement was entered into. At 23 January 1930 Vickers' holding in Terni was 16,596 shares of 400 lire each with a book value of £49,798. Electric Holdings had 15,664 Terni shares of 400 lire each with book value of £53,277. In November 1931 Vickers sold their entire holding in Terni to Electric Holdings for £49,798, thus recovering their book value but making a loss of £149,015: this consolidated the holding in Terni to 32,260 shares costing £112,269 with book value of £64,147.

By 1930 Terni's electrical and hydraulic energy branch accounted for 75 per cent of plant and works shown in its books, this being because the armament side was shown under another head, having been consolidated in the subsidiary company of Odero-Terni-Orlando.


The British orders were: one gunboat for Siam (Vickers); one flotilla leader for Yugoslavia (Yarrow); three gunboats for Colombia (Yarrow) and one depot ship for Chile (Vickers). In 1930 Odero-Terni-Orlando supplied one cruiser to Argentina, three Italian destroyers, two Paraguayan gunboats and several destroyers to Greece.

This latter company united the Terni shipyards with the ex-Vickers Spezia yards, and of about £500,000 work in its shops in January 1930, £330,000 was for foreign governments and about £120,000 were Italian artillery orders. Profit in 1930 was some £66,000. As to Italian armaments policy, it is indicated by the Head of their delegation to the London Naval Conference telling Vansittart that if he made any disarmament concession, he would 'be shot at the first station across the frontier' on returning.

After 1931 the Banca Commerciale group transferred their Terni holding to the semi-governmental Sofinda (Society for Financing Industry) which thus held 833,000 of the 1 1/2 million Terni shares. This transfer was part of a general attempt by Italian banks to increase their liquidity. On receiving Terni's results for 1932 (no dividend paid, as in 1931) Douglas Vickers wrote:

The steel works are short of work, the shipbuilding and armaments side is keeping up better and the electricity sales...are satisfactory as compared with other Italian companies.

He and Dardier resigned as directors of Terni, 15 February 1933, when Terni introduced a scheme of reorganisation, effective from March 1933, whereby its capital was reduced by half to 300 million lire, and 200 million lire of 6 per cent cumulative preference shares were issued. Vickers then began the gradual liquidation over two years of their Terni holding, which realised a total of £89,912. Douglas Vickers still favoured a working arrangement with Terni 'as our most serious competitors for marine armaments', but accepted that 'our little holding of some 32,000 shares will have no influence' in face of four-fifths Government control. Albert Vickers' successors had not had the cash to maintain their position in Italian industry; their power had steadily declined.

Table 32 to show the percentage dividend paid by Terni Elettricita to Vickers, 1922-33.

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>$6\frac{1}{4}$</td>
</tr>
<tr>
<td>1923</td>
<td>$6\frac{1}{4}$</td>
</tr>
<tr>
<td>1924</td>
<td>$6\frac{1}{4}$</td>
</tr>
<tr>
<td>1925</td>
<td>8</td>
</tr>
<tr>
<td>1926</td>
<td>8</td>
</tr>
<tr>
<td>1927</td>
<td>5</td>
</tr>
<tr>
<td>1928</td>
<td>5</td>
</tr>
<tr>
<td>1929</td>
<td>5</td>
</tr>
<tr>
<td>1930</td>
<td>5</td>
</tr>
<tr>
<td>1931</td>
<td>nil</td>
</tr>
<tr>
<td>1932</td>
<td>nil</td>
</tr>
<tr>
<td>1933</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: Vickers file 244.

VICKERS IN JAPAN

The Anglo-Japanese alliance signed in 1902 (and terminated 1923), together with the role of the City of London in developing Japan, gave Britain an unapproached prestige in Japan in the early years of this century. It was therefore unsurprising that after Japan's victory over Russia in the war of 1904-5, Vickers signed agreements (7 March 1907 and 30 July 1907) with Armstrongs and Hokkaido Tanko Kissen establishing the Japanese Steelworks. The initiative for the erection of these works came from the Japanese Government, and the two British firms each took £375,000 out of the original capital of £1,000,000, increased in 1909 to £1 ½ million.


From the outset the British failed to master the complex forces at work within the zaibatsu (Japanese industrial combines). Despite a visit to Japan in 1908 by Albert Vickers and John Noble, the Japanese directors were 'far from coinciding' with their British partners' belief in 'absolute control by the Board over the purse and the necessity of discussion by the Board of the Company's policy before action is taken'. Vickers' agent in Japan lamented 'Control by the Board as we understand it we must give up all idea of...we cannot yet rely upon the estimates presented to the Board and as it is always difficult to ascertain who is responsible for the errors and omissions that have upset our calculations...the position is disquieting'. In 1909 Douglas Vickers and John Noble visited the works, and found that although 'no provision has been made for anything but heavy guns and general forgings', inefficient lay-out meant that the minimum necessary capital had risen by £500,000. Although the British firms paid their capital contributions promptly, the Japanese did not; whilst the works management (all of them 'partially trained mechanics' without any commercial knowledge, or British expert advisers) allowed machinery to deteriorate drastically. By 1913 their solid assets had 'recklessly depreciated', whilst certain orders-in-hand were creating 'a serious working loss' which was met by 'the secret application of reserves'.

Edwardian armourers worked to horizons of one decade, so that the agreements of 1907 expired in 1917, when they were re-negotiated. Under this arrangement, the Japanese Steelworks were the sole Japanese agents of all armament and commercial products of the two British firms: although a little time afterwards, Armstrongs covertly reached a new agreement with Japanese Steel, relating to armaments only, this was not known by Vickers until 1920.

In 1919 the Japanese Steelworks bought the Hokkaido Seitsetsu Company, known as the Wanishi Ironworks, from Mitsui. Wanishi was a pig-iron producer, and the reason for taking them into a Company specialising in high-grade steel and armament is unclear. Wanishi was an unsuccessful purchase, and Vickers never received dividend from it. Vickers had difficulty in fathoming the Japanese industrialists, and found Asia too far away to influence policy decisions. As their agent, Admiral K. Yutani, told Jenkinson, 'To understand a country it is necessary to touch the heart-strong of her racial spirit', and Vickers had no hope of doing any such thing.

The Armstrong board resolved in January 1920 that John Noble should go to Japan to negotiate the sale of Armstrong's entire interest in Japan Steel, as part of their policy to sell all realizable assets; and Noble spoke to Douglas Vickers, who promised to enquire about selling his Company's investment in Japan. But the Japanese Government was the object of Vickers' gratitude in 1920, because a Japanese order for armour-plate was then running, which covered the maintenance of the otherwise idle armour-plate plant. A picture of the works in 1922 survives from a visiting party of British naval officers who were escorted around by an Engineer-Lieutenant who had spent two years working as an apprentice at Barrow-in-Furness...we were all much impressed by the amount of work going on; the shops are extremely well-fitted, and the orderliness...of the yards in general was most noticeable. Nearly all the machines were British or American make, and almost everyone appeared to be in use; the quality and finish of the work seemed first-class.

In September 1923 Japan was devastated by an earthquake, and in the same year, Douglas Vickers and Glyn West agreed that their Companies would surrender shares in Japan Steel to the extent of any cash compensation received from the Japanese Government in the wake of the Washington treaty. Both British firms were anxious to have cash for other domestic operations, and thought the prospects for armament work were meagre. A representative of Vickers who went to Japan in 1926, to further negotiations about such compensation, reported,

the original Seikosho has ceased to exist as such, because in order to obtain any compensation from the Government, the gun plant had to become the property of the Navy. The compensation first proposed was reduced by a million yen, and this has left the Seikosho without any money for any purpose other than substituting the gun plant security by bonds.

Moreover, the old steel works were moved by the Navy to the vicinity of their naval arsenal at Hiroshima. In 1926 Japan Steel's business was divided roughly half between the Navy and civilian demands: this was insufficient to pay dividend, after allowance had been made for depreciation. (Whereas the old steel works had written off 8 per cent yearly, the Hiroshima company wrote off 3½ per cent yearly). Japan Steel attributed these 'poor' results to 'A tight stringency in the money market with a...consequence of slow progress...[in] reconstruction' after the earthquake, and offered 'little hope' of trade enlivening 'in the near future'. By 1928 the value of the combined Vickers-Armstrong holding of 15,000 shares was only £150,000: on par value the sale of the Japan Steel shares to Vickers-Armstrong showed a joint loss to Vickers and Armstrong of £616,612.


The value of Japanese business to Vickers in the three years to March 1928 was worth some £400,000, and reflected the Japanese policy after 1918 to free money for the purchase of modern materials by reducing strength in men.  

In 1929 the Japanese Navy indicated that they wanted to separate Wanishi from Japan Steel, and various reconstruction were discussed during the London Naval Conference (1930), including a proposal whereby Vickers would buy out Mitsui. By 1931, when Japanese industry was 'at the bottom of distress', a new arrangement was reached: in September, the Wanishi Seitetsu Kabushiki Kwaisha was formed with capital of 19 million yen, and in December, the share capital of Japanese Steel was halved in number. Conversely, one share in the new iron works was issued for every two shares originally held in the steel works.

Table 33 to show re-organisation of shareholding (1931) of Japan Steelworks and Wanishi Ironworks—in million yen.

<table>
<thead>
<tr>
<th></th>
<th>Japan Steelworks</th>
<th>Wanishi Ironworks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hokkaido Tanko Co.</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Vickers-Armstrong</td>
<td>3.75</td>
<td>3.75</td>
</tr>
<tr>
<td>Mitsui Gomei</td>
<td>1.875</td>
<td>1.875</td>
</tr>
<tr>
<td>Mitsui Kozan</td>
<td>1.875</td>
<td>1.875</td>
</tr>
<tr>
<td>Japan Steelworks</td>
<td></td>
<td>4.0</td>
</tr>
<tr>
<td>total</td>
<td>15.0</td>
<td>19.0</td>
</tr>
</tbody>
</table>

Source: Vickers file 247

In 1934 the Japanese Government forced Wanishi to enter a new combine, Nihon Seitsetsu Kwaisha, which included six other companies and began business on 1 February 1934 with capital of 345,940,000 yen. Wanishi was already becoming principally a mining company: Vickers-Armstrong recovered, to 31 December 1934, some £85,690 (i.e. 57 per cent) of par value of £150,000 of shares which had been issued in 1919 to Vickers and Armstrong for their joint holdings.

Jenkinson did not find these manoeuvres satisfactory, not least because Vickers House found their holdings in Japan too small to influence policy, especially with the distances involved, the xenophobia in certain Japanese circles and the trickiness of Japanese management. Latterly, the dividends received were half the size of those at the start of the 'twenties, and although Vickers' disengagement was not completed until the forties, by the time of Jenkinson's death in 1935, the role of Japan Steel in the Vickers-Armstrong group had been reduced to small significance. This was less than twenty years after Albert Vickers had confidently sailed out to Japan. The Foreign Office in 1930 described how the British position in the Orient 'was originally built up on force' and 'maintained up to the Great War on prestige', but that it was now realised there 'that unless there is force behind it, mere prestige is another word for bluff'.

Table 34 to show dividends paid by Japanese Steel Works to Vickers-Armstrong 1928-34.

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage Dividend</th>
<th>Amount of Dividend £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1928</td>
<td>3</td>
<td>18,139</td>
</tr>
<tr>
<td>1929</td>
<td>3</td>
<td>19,883</td>
</tr>
<tr>
<td>1930</td>
<td>2 1/2</td>
<td>17,640</td>
</tr>
<tr>
<td>1931</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>1932</td>
<td>1 1/2</td>
<td>3,418</td>
</tr>
<tr>
<td>1933</td>
<td>5 1/2</td>
<td>11,320</td>
</tr>
<tr>
<td>1934</td>
<td>7 1/2</td>
<td>15,287</td>
</tr>
</tbody>
</table>

Source: Vickers file 247.

1. V. file 234. Yutani retired as Vickers' agent at the end of December 1934, and was succeeded by Captain S. Yamada.
This truth is a primary theme of our study, and there is little doubt that Japanese perception of British imperial power coloured official policy towards Vickers' participation in Japan Steel.\(^1\) As Craven lamented in 1935, 'how difficult it is to manage a place properly when the Government can sail in...and pay a bonus on the number of babies born in the boiler shop etc. with the Company having no right to refuse'.\(^2\)

**VICKERS IN CANADA**

Shortly after B.S.A. had unsuccessfully sought to capture a new Dominion market in armament, in the form of an Australian national small-arms factory, Vickers secured another such market. With the passing by the Canadian parliament of the contentious Naval Service and Dry Docks Act (1910), Canada indicated a wish to establish its own armaments capacity. Vickers then undertook to erect on the St Lawrence river, at Montreal, a shipyard, together with engineering, boiler, electrical and auxiliary shops, in which the new Canadian navy might be built. This plant was run by a subsidiary, established in July 1911, called Canadian Vickers Ltd., whose President, Frederick Orr-Lewis (1866-1921; baronet 1920) was a Montreal industrialist and banker who had been involved in Vickers' Canadian operations since their outset in 1909.\(^3\) Three of the five other directors were members of the Lewis family, and were associated with the Canadian Liberal party. This was the cause of hiatus in orders: the Lewises did 'much wire-pulling and log-rolling' on Canadian-Vickers' behalf, and received a verbal promise of a building programme (of four cruisers and six destroyers) from Laurier's Liberal government.

1. For a good account of the reduction of British influence in Japan from a 'predominant position to one of a very modest character' 1908-31, see despatch 392 of Sir Francis Lindley, Tokyo, 23 July 1931. Text in DBFP, 2nd series, volume 8 (1960), 640-4.
3. Orr-Lewis died at Cannes after several months' illness, 1921, caused by the internal injuries he had received from an explosion during the sinking of the Lusitania, on which he was a passenger, in 1915.
However, in October 1911, Borden's Conservative party defeated Laurier, and was naturally disinclined to respect an oral promise by their opponents. 1 Thus, in August 1914, the only ship building at the yard was an ice-breaker, rather justifying Falkner's characteristically fatalistic comment that Vickers' Canadian subsidiary was 'merely one more in their herd of white elephants'. 2

Canadian-Vickers were about to issue Debentures on the London market when war erupted in 1914, and the issue was postponed. During the first half of 1915 Canadian-Vickers built ten submarines for the British Admiralty costing about £1,800,000 (which were the first to cross the Atlantic under their own power), and later built submarines and hulls for Italy and Russia. 3 Other Admiralty and Ministry of Munitions work followed, but the latter found some of Canadian-Vickers' prices 'fantastic': for 125,000 shell ordered in February 1915, they originally quoted 33 3/4 shillings, although they finally settled for 31 1/4 shillings per shell. This was more than double Austin Motors' price, in Britain, of 15 1/2 shillings. 4 Indeed, the British munitions authorities actually avoided putting orders with Canadian-Vickers, so that by 1916, Dawson was suggesting to Vickers' agent in Washington D.C. that they might 'pick up cheaply a factory' in the U.S.A., instal Canadian-Vickers' machinery and do work for the U.S. Government. 5

1. Memorandum on Canadian industry by Sir Percy Girouard, 10 October 1912. Girouard was Canadian-born. Cf General Report on Canada, 1912, by Neville W. Smith Carington and J. P. Davison. Both in A.W. box 164. Smith Carington was son of the Openshaw director of Armstrong and M.P. for Rutland from 1923 until his death in 1933. Davison had been apprenticed to Armstrong aged 16 (1893), and became a director during the crisis of 1925-6. Managing Director of the Whitehead works at Weymouth 1931-40, he died 1949.

2. Falkner to Rendel, 24 June 1912, A.W. box 164.


The events of the Great War had so utterly overtaken Canadian-Vickers that it was obsolete in concept and inefficient in practice.

Canada's munitions feat was such that by August 1916, orders amounting to $500,000,000 had been placed by the Imperial Munitions Board among some 400 Canadian firms. In 1914 no private manufacturer had ever made a shell in Canada, but by the Armistice, the Dominion had contributed more than 65 million shells, nearly 30 million fuzes, 47 million cartridge cases, 15 million primers and over 6 million forgings. This represented 90 per cent. of total expenditure on Canadian munitions amounting to about $1,000 million. The idea of one small private arsenal for the Dominion was swept into obsolescence by war-time experience, which everywhere showed 'that the real reserve for war is the whole of the manufacturing power of the country'.

The total amount of cash due to Vickers from Canadian-Vickers was £1,117,795 by July 1916, and it was to pay these debts that Canadian-Vickers issued in London (1916) debentures worth $4,721,150 guaranteed by Vickers up to £824,000. With this issue, Canadian-Vickers' capitalisation was $9,700,000, and it must have been with dread that they approached the post-war world, with a need to justify by earnings such capitalisation. The maximum capacity of the Montreal yards was (1920) about 75,000 tons, and although 63,200 tons were booked in January 1920, demand soon became exiguous. The Vickers board in London agreed (August 1921) that Canadian-Vickers should not launch into any new enterprise, but must restrict itself to ship repair business; upon which the General Manager of Canadian-Vickers wrote

1. History of Min of Munitions, vol 2, pt 4, 29. In July 1916 the output capacity of Canadian-Vickers was about 20,000 18-pdr or 13-pdr shrapnel per week, plus 12,000 drawn bodies for 12½" shrapnel and 2,500 drawn bodies for 5" shrapnel. Dawson to Sheridan, op cit.
2. Hist. of Ministry of Munitions, volume 2, pt 4, 35.
3. Hist. of Ministry of Munitions, volume 8, pt 1, 2.
that he loathed having to stand by and see unavoidable loss each year for some time to come, under existing conditions, and with our cash resources gradually getting less and less because...it is a physical impossibility to carry on without a heavy annual loss. The Debenture interest alone more than consuming any annual contribution to overhead that the Dock and ship repair business can make.

On the commercial end of the business we have already very considerably reduced our cost but...further economy in the yard cannot be made. 1

On reading this, Caillard commented 'What the Directors do not wish to do is to waste the Co's cash resources in experimental new enterprises of a speculative nature; but if anything good and certain were brought along, I imagine that they would be only too pleased'. 2

All this occurred at a time, when, as one Canadian leader wrote, 'Our people want more than anything else a demonstration that Britain is still what she was before the war'. 3 Instead, Canadian-Vickers limped along on profits from fabricated structural steel work which they obtained after buying the Phoenix Company in 1923. This line was inaugurated with a contract (1923-5) to supply a 2 million bushel grain elevator to Montreal port; 4 but overall, Canadian-Vickers had three years of very poor business (1924-7). In 1924, £3,250,000 five per cent. Mortgage Debentures were issued to redeem their seven per cent Notes and facilitate future financing, 5 but after the reconstruction of 1925-6, Vickers House judged the sale of the Canadian subsidiary as a priority. 6 In 1927, a syndicate of Canadians led by Frank Ross (1891-1971) purchased the entire Canadian-Vickers share capital of 50,000 shares of $100 each.

3. Lord Atholstan to Sir A Chamberlain, telegram 25 November 1924. FO 800/256.
5. Vickers papers, box D.87 (Debentures)
The syndicate re-organised this capital into 50,000 shares at no par value, and 500,000 preferred shares at $100 each with seven per cent cumulative interest, and re-sold them. Ross and his friends did handsomely out of this operation, but it dis-abled Canadian-Vickers. The works and dry docks were effectively bankrupt, and in the hands of the bondholders; the large bonded indebtedness remaining until the late 'forties.

The Canadian venture shows the Edwardian armourers identifying a new market in the shape of a Dominion which apparently wished to build its naval armament capacity. The armourers conceived a bold scheme, but had not secured a programme of orders before 1914: the outbreak of war disrupted the financial plan of the project, and the exigencies of war meant that its expensive specialist plant was hopelessly out-priced by civilian firms carrying much lighter overhead charges. With the onset of peace, pitiable few naval orders were obtained. Its parent company in Britain could not afford to finance other new lines of work, whilst their specialist skills and plant were not convertible to competitively-priced civilian lines. Before Canadian-Vickers was fifteen years old, it was half-ruined and had been sold out of the parent group.

VICKERS IN EASTERN EUROPE

In October 1918, during the month Churchill watched 'a drizzle of empires falling through the air', Zaharoff wrote to the London board

it is evident that the Peace Conference will create some half a dozen new autonomous and independent States, some of which will have many millions of inhabitants... The first thing that these new States will do will be to arm, and as half of them will have an outlet to the Sea, they will arm both for land and sea. We should be prepared, in conjunction with Banks and Financiers, to send representatives to these countries the moment they are free, and to offer them their first public loan, out of which we will of course be paid for the armament they will order from us. Although the Big Powers may insist upon these States not arming, nothing can prevent their arming, as they will claim it is for policing their own nation.

It was indeed to these new Succession states, formed on the edges of the
dead Hapsburg, Hohenzollern and Romanov empires, that Vickers
turned with new national arsenal projects. If such states were smaller
than the Imperial Powers armed by Vickers before 1914, they had the
same aim of seeking, through Vickers, to strengthen their national
identity, professional class and expertise in armament manufacture.
It is perhaps not coincidental that the three countries (Poland, Esthonia
and Romania) where Vickers started such ventures each had a common
border with Soviet Russia. These ventures were Vickers' equivalent
of Schneiders' purchase of Skoda, and the contrast between French
success and British disappointments is telling. Whilst the Paris firm
worked in close collaboration with their Government against German
capital penetration of Central Europe, Vickers received only discreetly
distanced encouragement from the Foreign Office. In all three of their
schemes, Vickers were bested by the French. It was not just that in
contrast to the Quai d'Orsay's support of Schneider, Whitehall politely
rebuffed Vickers' attempt to equate, say, their Baltic interests with
British naval policy. The French company demonstrated sharper
responses in foreign activity. The cash to back their decisions was
produced more easily, and they were certainly ruthless in cutting
Vickers from their markets. Vickers' most successful foreign
activities had been in Spain, and such was the determination of Schneider
to assault Vickers' foreign reputation, that when (against Zaharoff's
advice), Barker set up (1921) the Madrid Bus Company, under the
control of his feckless son Vere, Schneider established a rival operation
in a successful attempt to damage Vickers' standing in Spain. In Poland,
where Schneider and Vickers acted jointly for a time, the French were
always the leading partner of the initiative; whilst in Esthonia and Romania,
where Vickers acted unilaterally, both schemes were frustrated by
successful French intrigue.

1. On Madrid Bus Co., there is much in the Ostrorog papers, Cf.
Zaharoff to Jenkinson, 2 October 1927. V. microfilm R333.
Not only does it seem that it was possible to mislead Vickers in initial decisions of market identification, but it was also easy to out-manoeuvre them in subsequent developments. Schneider's rout of Vickers was not a sudden triumph. Already, by 1914, the French had become a worrying competitor, especially in the dexterity of the financial packages which they attached to arms deals; and after 1918, French acumen became even more sharp. The Estonian procurement officer who told Bridge, 'We want everything, everything, but it is principally a question of money', spoke for almost all of Vickers' armament customers; and the armourer who could furnish easy financial terms had a great advantage. In the absence of evidence about the relative talents of Schneider and Vickers management, the explanation for French primacy must lie with the policies of French government and financial institutions. Vickers had to contend with coolness in the City towards providing funds for armament development, whether at home or abroad, and with a reserved role by Government. Probably the French edge over Vickers originated from these differences, for certainly Schneider had greater acuity and financial flexibility.

The moving force of Vickers' Polish venture was a grand and self-important lawyer, Count Leon V. Ostrorog (1867-1932). Of Polish stock, he read law at Paris University, before settling in Turkey, where he became Judicial Adviser to the Ottoman Government (1909). His son, Stanislaus (1897-1960), married Zaharoff's younger daughter, and L.V. Ostrorog became Special Director of Vickers responsible for international legal affairs (1916).

2. Cf. Department of Overseas Trade memorandum on foreign credit and arms exports, 4 October 1930. BT 60/26/7.
3. Ostrorog to Sim, 7 February 1928. Ostrorog papers, box X. His most prominent services to Vickers were regarding the Deutsche Waffen patent case, and litigation with the Turkish Government over their seizure of the Ottoman Docks in 1914.

Stanislaus Ostrorog subsequently became a career diplomat in France, being posted as French Minister to Eire in 1946, and serving as French Ambassador to India and Nepal at the time of his death.
With the emergence of the new state of Poland, Ostrorog hoped to serve Vickers in other ways. In 1918 he entered discussions with the Polish representative in London about post-war Polish reconstruction. He proposed an Anglo-Polish Bank, with its central board and leading Financial Committee in London, and with a Director General in Warsaw, along with a secondary board of Polish capitalists and local advisers. He wrote that whilst 'industrial execution... must be purely British', an extensive share of the financial work must be given to Poles. Orders for the British syndicate would best be secured by instituting a local advisory committee, with seats for influential political men who would support British industry against external competition, but he warned:

The British Syndicate will have to deal neither with Hamidian Turkey nor with Tsarist Russia... Poland, as indeed all the countries which the triumph of the Allies has created, will be...a rather high-strung and sensitive democracy, very inquisitive and very outspoken, both in the Parliament...and in the Press... Government will be most distinctly...'Cabinet' government, its power depending on a majority in the Diet, and...on the sympathy of the Press. I doubt whether any man in Poland holding a conspicuous position would ever accept to sit on such a trading committee. Even if he did, he might, at any moment, lose his majority and therefore his influence...he could be replaced by a man of the new party in power, but then the first man would become a bitter enemy, and the second man would present no more chances of permanent influence than the first...especially in young democracies, no old diplomacy of interested politicians [will work].

Ostrorog was among the Polish delegates to the Peace Conference in Paris (1919) and in May his colleague, Chamiec, Economic Delegate of Poland, suggested to him that Vickers take over the Siemens electrical works and the Cracow oilfields, and launch cellulose factories. With this in mind, Vickers entered an agreement in June with a syndicate of Polish Banks.

1. Ostrorog, memorandum 23 Dec 1918. Ostrorog papers, Box W. This proposed bank was similar in structure to the Imperial Ottoman Bank & the National Bank of Turkey.

2. Ostrorog, memorandum 26 May 1919. Ostrorog papers, Box W.
The Anglo-Polish Industrial Development Association was formed with effect from 1 July 1919, with Vickers acting as its technical advisers. Ostrorog took to Poland in August a party of Vickers' representatives including both of Zaharoff's sons-in-law, Captain Walford and Stanislaus Ostrorog, was presented to the Chief of State, General Pilsudski, and received support from the British Embassy in Warsaw. The Vickers party worked jointly with Pearsons, the civil engineering firm which had built the munitions complex at Gretna and the great tank assembly factory at Chateauroux. One insurmountable problem emerged: despite thirty per cent premiums on the German mark, German prices were five or six times cheaper than British in Poland. 'Competition with the Germans being impossible', Ostrorog proposed instead to use German machinery in new Polish factories and public works, financed by British and Polish capital, 'without ever allowing Germans to take any share in the technical, financial or administrative direction'. A month later, he repeated that the Germans under-cut everywhere but that he was being encouraged by officials to hope that British and Polish capital would soon control the electrical industry, and participate in the timber, match-making and rolling-stock industries, as well as canalizing the Vistula and building the port of Gdansk. By this time it must have been clear at Vickers House that it was unrealistic to take on the problems of re-constructing Poland when the reconstruction of Britain was so intractable. In December 1919 Poland was paralysed by a coal crisis, with 100,000 workmen unemployed in the old kingdom alone, and it was amid these disturbed conditions that Ostrorog's hopes for Vickers and Polish civilian industry died.

1. Dudley Docker subsequently cited this agreement as one of the major policy decisions taken without Board knowledge or concurrence. Memorandum of 7 November 1919. V. microfilm R275.
4. Ostrorog to Barker, 24 August 1919. Ostrorog papers, Box W.
5. Ostrorog to Barker, 11 September 1919. Ostrorog papers, Box W.
There was, however, a postscript. In the spring of 1920 Poland attacked Soviet Russia in an attempt to annex the Ukraine. This move, in opposition to British Government advice, almost led to the fall of Warsaw in June, and left the Poles in no doubt as to the danger of aggression against Russia. It was after this experience that, in November 1920, Schneider and Vickers entered their agreement with the Starachowice mining and metallurgy firm to develop the Polish firm as a national arsenal. This agreement was mentioned in chapter two, and is noteworthy as a combined Anglo-French device to off-load post-war surpluses of munitions capacity. Stanislaus Ostrorog represented Vickers in negotiations with the Polish Government, which undertook to place all munitions contracts for ten years with Starachowice. Neither Vickers nor Schneider supplied Starachowice with any cash to erect new plant, and it was intended to raise money by issuing debentures in London and Paris secured on the forests owned by Starachowice.1 In fact, these debentures do not seem to have been placed (in London, at least), and the aggregate of Vickers' Polish business 1920-5 was only about £57,000.2 Little about the working of the Starachowice agreement has been traced, but the major reduction of British participation vis-a-vis French in January 1926, suggests that it was not a success for Vickers. This is unsurprising, because for much of that period the British Government exasperated the Poles with a 'schoolmastering attitude, to put it at its mildest, that...appeared...pro-Russian, pro-German, pro-Czech, even pro-Lithuanian',3 and rendered improbable the strengthening of Anglo-Polish co-operation in the politically sensitive arms trade.

2. J.D. Scott, Vickers, 149.
The next Succession state in which Vickers became involved was Estonia, freed by the collapse of Imperial Russia. The White General, Yudenich, used it as a base for his attack, launched with British tanks, on Petrograd in 1919, and although a peace treaty was concluded between Russia and Estonia in 1920, the latter remained a front-line state against the Soviets. In the words of Admiralty Intelligence (1922), 'Estonia and Latvia live in terror of the Bolsheviks, and expect trouble from them sooner or later. They cannot exist without Russia, nor can Russia do without them, for they are the open door of Russia in the 'Closed season''.

One particular part of Estonia was strategically interesting. This was at Reval, where a big naval works had been erected before 1914 by the Russo-Baltic Company, an ally of Schneider. Standing at the head of the railway to Petrograd, Reval had ship-repairing facilities, a roadstead capable of taking capital ships in war-time, an enclosed harbour with seven fathoms of water at the quayside, extensive wharfage and storage, and was the only port in the north Baltic usable (with ice-breakers) throughout the year.

By an agreement dated Brussels, 2 July 1914, a French-Belgian financial group, including Schneider, lent Russo-Baltic some 5 million Russian roubles. Because there was no immediate possibility of recovering this debt following the breakdown of the yard's work after the Bolshevik revolution, and because the Russo-Baltic share certificates had disappeared into Soviet territory making general meetings at Reval impossible, the yard was put into local trusteeship in 1918-19.

2. The Russo-Baltic Company was properly called La Société Russo-Baltique de Constructions Navales and its parent company was Société Russe de Munitio ns et Armaments, with whom Schneider had a technical aid agreement.
This confusion was joined by a Russian speculator, C.A. Ovcharoff, who had obtained an option on about 52 per cent of Russo-Baltic's shares at five roubles each circa 1914, and who took up the shares when the rouble greatly depreciated in 1918. Ovcharoff later transferred his holding to a British limited liability company, Anglo-Baltic, which he formed in May 1920.

The Foreign Office were not prepared to support Anglo-Baltic against the French-Belgian creditors' group for control of Reval, because they considered Ovcharoff's firm British only in its registration. In 1921 Vickers and Anglo-Baltic began discussions, and in August concluded a ten year agreement whereby Vickers became sole technical advisers and purchasing agents for Reval. This agreement was one of the tightest...ever seen' at the Foreign Office, 'and bound the Anglo-Baltic hand and foot to Vickers'.

The Admiralty, Foreign Office and Board of Trade alike agreed that it was in the Anglo-Estonian interest that a British company should restart Reval. Emile Cohn, the manager responsible for Esthonia, wrote that Vickers entered the Reval negotiations seeking work for their British factories, but 'also guided by the necessity of safeguarding as lay in our power the higher interests of British influence'. Cohn told the Foreign Office privately 'that Schneider is waging a world-wide contest with Vickers over the armament question', and reported to Caillard 'most strenuous opposition from the French Foreign Office' to the arrangement whereby Vickers and Anglo-Baltic took a lease to work Reval from the local trustees, conditional upon employment being maintained.

1. On the constitution of Anglo-Baltic, see Dept Overseas Trade to Foreign Office, 6 May 1921. On its nominee shareholders, see Dept Overseas Trade to Foreign Office, 12 May 1921. FO 371/6732.
2. Oliver Harvey, minute of meeting with representatives of Dept Overseas Trade, Anglo-Baltic and Vickers, dated 23 June 1921. FO 371/6732.
5. Emile Cohn to Caillard, 15 September 1922. V. microfilm R346.
According to Cohn,

the French Opposition (which shows itself on every occasion under the cloak of a pre-war debt incurred to a Franco-Belgian group by the Russo-Baltic Co.) is in fact put forward at the behest of the French Foreign Office, which is not at all keen on permitting British interests to establish themselves in Reval, which place they look upon as having a very strong strategical influence on the Baltic. 1

The Schneider creditors became so aggressive that Vickers, in order to protect their technical agreement and to save the Reval yards from entering other hands through Anglo-Baltic's failure to maintain employment levels, were obliged to advance cash on contracts and to lend money to Anglo-Baltic and Russo-Baltic. On 13 April 1922 a meeting at Vickers House recommended funding Reval, in the next five to eight years, before profits might accrue, with £250,000; but wisely, on 19 April, Vickers Finance Committee only agreed to advance £50,000 against security of £50,000 worth of shares in Anglo-Baltic. (The rate of profit under the technical agreement was raised from five per cent to seven per cent, and buying commissions from two per cent to three). Two contracts then eventuated for Reval. The first, which was taken at a loss, and was worth £14,000 to Vickers, was for a railway bridge at Narva, en route to Petrograd. 600 tons of steel were bought from Germany at £8 per ton, which beat the British quotation of £12 per ton, but negated the aim for Reval to bring work to Sheffield. The second contract was for the Soviet locomotive orders which had been dangled before every armament firm in Europe since early in 1921, 2 and with which Ovcharoff had first lured Vickers. 3 The Russians placed a contract in Berlin for repairing 250 locomotives, for which the Deutsche Bank financed 1,600,000 gold dollars; and more than forty engines were sent to Reval as part of a contract worth £140,000.

1. Cohn to Caillard, 15 September 1922. V.microfilm R346.
2. O.St.C. Malley, minute of 15 July 1921. FO 371/6732.
3. Caillard to Anglo-Baltic, 1 July 1921. Copy in FO 371/6732.
Vickers guaranteed both the Narva and locomotive contracts up to £30,000, but it soon became obvious that they were being deceived in their participation. One of their London officials, visiting Estonia, reported in September 1922

I am suspicious of the way Ovtcharov keeps behind the scenes and feel that the Anglo-Baltic Company are merely dummies to hide his interests under British cloak and that your name is being used to persuade government that [works] are being acquired for British interests... government would not consent if they realized position... Ovtcharov's sole object is to get possession of works at your cost then approach you to purchase his interests or to finance undertaking to render technical agreement valuable. 1

Cohn, indeed, confirmed to Caillard

the Estonian Government have it firmly fixed in their minds that... Vickers are financially interested in the scheme...for the resettling of the Russo-Baltic...that the political significance to Reval from the Armament...point of view is...paramount, and the withdrawal of...Vickers... would have disastrous consequences upon the much wider view of the British interests in that part of the world. 2

Vickers were constantly confounded in their Estonian dealings. Anglo-Baltic's senior representative there was F.J. de Ramer, a Galician who had served in Kolchak's White Army and become a British citizen. His reputation was rascally, 3 and in July 1922, he locked out of their offices the two Vickers managers resident at Reval, Herbert L. Wonfor and George Barr (1879-1939), who had objected to his financial chicanery. 4

1. J.E.G. Leslie, British Consulate, Riga, telegram 31(R) of 8 September 1922 transmitting message of H.B. Steele to Vickers House. FO 371/8059. H.B. Steele was a solicitor and member of Vickers Legal Department who visited Estonia at this time.
2. Cohn to Caillard, 15 September 1922. V.microfilm R346.
4. Wonfor worked for Vickers at Barrow 1899-1920 and was joint manager for their Bristol Sales Depot before proceeding to Reval. In 1923 he joined the Ordnance Department at Vickers House, eventually becoming Manager. Special Director of Vickers-Armstrong 1933. Retired 1944. Died 1947. His son Robert was prominent in Vickers after 1945. Barr also came from Barrow, and was cousin of John Barr (1859-1940), a commercial manager of Vickers at Barrow until 1923, and his son Sir G.W. Barr (1881-1956), sometime Vickers shipyard manager at Barrow and managing director of Fairfield's of Govan. This George Barr left Reval 1923 and was sent to Japan after the earthquake there. Managing Director of Canadian-Vickers, Montreal, 1925-7. Retired around 1930.
Vickers' Estonian lawyer later wrote that the fate of Vickers' cash loans had been 'tragic', because with them, 'Vickers inadvertently had forged a weapon against themselves'. 1 Certainly they were not put to their intended purpose, and by October 1922, the locomotive contract was 'greatly delayed and...endangered through suppliers...refusing to deliver any more goods because they have not been paid for those already sent'. 2 Suppliers were then owed £26,000 and several banks some £85,000.

Dawson called at the Admiralty on 3 October, seeking a Naval subsidy to maintain Vickers at Reval, but was told that although there was official favour for keeping Reval's facilities under British control, the idea of a subsidy was 'quite unpracticable'. Although the potentially great value of the works was recognized, the Foreign Office regretted that it would be impossible for Britain to use Reval as a naval base in war-time without Russia treating this as casus belli, and occupying Estonia. 3 Despite this rebuff, Vickers were, in November 1922, still ready to advance another £10,000 to Reval, if lawyers advise Russo-Baltic can legally guarantee us repayment of security of works, stocks and all Russo-Baltic assets, all liabilities already incurred by us amounting to about £70,000, and all future advances and if complete control of works given us free from lease or Anglo-Baltic or Trustee or other control. 4

These steep requirements were predictably not met, and in January 1923, they telegraphed to Wonfor, 'Unlikely we shall proceed'. 5 In the summer of 1923 the affair entered litigation in Estonia which was protracted until the end of the decade. In September 1924 Caillard reported to Vickers' board an agreement whereby in full settlement of claims against Anglo-Baltic they received £60,000 in the form of six per cent debentures yielding interest at two per cent in cash and four per cent in new debentures.

1. Alexander Sakowski to Cohn, 4 August 1923. V.microfilm R346.
3. FO 371/8060.
These debentures ranked second after others held by the Estonian government, and payment under them did not begin until 1929. 1

Vickers' armament exports to Esthonia (1925-33) totalled only £18,203, although in 1934, after Birch and Bridge had toured the Baltic, Esthonia accounted for 30.7 per cent of Vickers' arms exports that year.

Vickers were absolutely uninterested when approached (1936) by a Paris businessman offering interests in the Reval yard.

What conclusions can be adduced from Reval? One tentative impression, implied in surviving documents, is that Caillard and Dawson, the directors steering Vickers' Estonian venture, over-relied on the advice of Cohn and other managers, whose career interests lay in launching an ambitious scheme which might seem to increase their weight and responsibilities within the group. There is little hint of detached appraisal of market possibilities, but some sign of the cheerful and capacious expansionism of the owner-managers. Secondly, neither the character nor the associates of Ovcharoff were impressive, and it suggests a certain desperation for foreign expansion that Vickers went in with him. Although they framed their agreement with him in ruthless terms, they somehow lacked the ability to enforce it. As Vickers' Baltic lawyer noted,

Estonia has the tendency to money-grabbing... From the beginning Vickers have been handicapped here... they have everywhere been afforded a friendly... reception, and that was all; these kind words never being followed by action.

The large interests here of the [Tsarist] State were simply superseded by small personal interests; everyone wanted to make money, and as much of it as possible. 2

1. Of the six per cent paid by the dividends, Vickers accepted that their lawyer Sakowski would extract $2 per cent of all sums received, and his colleague Ilmar P. Tannenbaum apparently got a further 3 per cent. If these agreements were actually adhered to, Vickers can only have recovered £5,000 out of the £70,000 advanced. Cf. V. microfilm R190.

2. Sakowski to Cohn, 4 August 1923. V. microfilm R346. Sakowski later represented Vickers in Latvia, where, as Russian-born, he was ill-received. See Joseph Addison to Gerald Villiers, 4 March 1929, in FO 371/13982; Lawrence Collier, note of conversation with British Adviser to Latvian Air Force, dated 8 January 1932 in FO 371/16292.
It is unlikely that the ineffectiveness, in situ at Reval, of Leveson, Wonfor and Barr was personal: they were well-regarded at Vickers House and rightly so. Probably it is more germane that their ostensible Anglo-Baltic colleagues were working against them and misusing Vickers' loans for that purpose; and that British diplomacy, though energetic in formal channels, would not resort to the pressure used by the Quai d'Orsay for Schneider. Whilst the British firm quitted Reval after less than two years and at a loss, the French drew twenty years' profits from Skoda and only relinquished industrial control after the Nazi occupation of Czechoslovakia. This reflects the different tempers of the British and French armaments trade. The intimate liaison between French Government and manufacturers which preceded the Skoda investment was in contradistinction to the few general discussions by Vickers with middle-rank officials over Reval. With the British Government's more limited perception of its Continental commitment, Vickers could never persuade Whitehall that the Estonian yards had political and strategic potential for Britain comparable to that equated by Schneider with Skoda and France. If Whitehall concluded that the speculative flavour of the Reval holding was utterly different from Schneider's Czech dominion, it was, of course, the official British attitude that made it impossible for a firm such as Vickers to attain any better opening than Reval.

Even more important to Vickers than Poland of Esthonia was Romania. As the Director of Naval Intelligence appraised in 1919, 'Apart from her natural resources and the commercial importance of the Danube, Romania is the backdoor into Russia, whose recovery may not be so long delayed as is commonly thought'.

Admiral Ottley, of Armstrong's, visited Bucarest in 1919, and commented that the 'wretched little town of Bucarest already owes half its ills (and they are many) to the ridiculous endeavours which France has made to impose Parisian culture upon an essentially primitive...civilization'. A British naval officer was sent to Bucarest in February 1920 to contend with the French Naval Mission there, and his report was equally jaundiced: 'the greatest difficulty I have to contend with is the unbounded optimism and cocksureness which permeates all officers...they have no conception of the high degree of technical training required for the satisfactory maintenance of modern vessels'. And the British M.A. in Bucarest, writing about an aviation order worth £120,750 placed in 1921 with the Aircraft Disposal Company, noted, 'the Romanians always imagine that in every business there is some political influence at the back of it, and they cannot understand an ordinary firm doing ordinary business in an ordinary way'. This contract proved a very good illustration of Romanian business methods, because although Aircraft Disposal received Romanian Treasury bills for a total of £105,000, none of the bills was met on the fixed dates on which they fell due, and each had to be renewed. This breach of the contract was at French instigation, and was carried off with insouciance; and should certainly have been a warning to any British firm contemplating further involvement in Romanian armaments.


5. There is mention of Symon's visit in V. microfilm X.247.

Douglas Vickers invented at this time an oil-well drill which he hoped the Romanians would wish to buy, and it is possible that Symon's visit was to push this new line. Cf the detailed and optimistic survey of Romanian commercial prospects by a special visiting commission from the Midland Bank in Midland Bank Review, September 1920.
Until recently Resita had been owned by the Austro-Hungarian State Railway Company, which owned 250,000 acres of forest in Transylvania, including steel works, coal mines, vineyards and other property. By the union of Transylvania with Romania proclaimed in November 1918, the Banat region, in which Resita lay, was transferred from Hungary to Romania, which latter country had had no steelworks before 1914. The Romanians disliked their only steelworks being owned by an enemy foreign company, and so nationalised it, whilst the Austro-Hungarian railways sold some of their holding to Romanians, and 50,000 shares costing £94,941 to Vickers. (In 1925 they received a bonus issue of another 100,000 shares. Their total market value of these 150,000 shares at 31 December 1928 was £160,061). Vickers' intention was to make Resita a centre from which they could sell artillery and industrial products in the Balkans,

following in this a policy which they had successfully adopted in Spain and in other countries...Vickers Limited looked upon Romania as likely to be of very considerable importance in the future in view of its large population and great potential wealth and Romania is almost certain likely to be a large customer for artillery material in view of the ever present menace on its Russian frontier. 1

---

Table 35 to show Dividends and Technical fees received by Vickers from Resita, 1922-8

<table>
<thead>
<tr>
<th>Year</th>
<th>Dividend Received per cent</th>
<th>Dividend £</th>
<th>Technical fees in connection with armaments, less expenses £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922</td>
<td>20</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>1923</td>
<td>30</td>
<td>3,526</td>
<td></td>
</tr>
<tr>
<td>1924</td>
<td>20</td>
<td>3,888</td>
<td></td>
</tr>
<tr>
<td>1925</td>
<td>30</td>
<td>2,750</td>
<td></td>
</tr>
<tr>
<td>1926</td>
<td>12</td>
<td>9,711</td>
<td>2,476</td>
</tr>
<tr>
<td>1927</td>
<td>12</td>
<td>9,562</td>
<td>2,299</td>
</tr>
<tr>
<td>1928</td>
<td>?</td>
<td>?</td>
<td>1,430</td>
</tr>
</tbody>
</table>


---

In 1920 Adalbert Veith, the Hungarian running Resita, entered discussions with Marshal Averescu's government about the erection of a Romanian national arsenal. A syndicate was formed to study the question, which the Romanian government insisted must be headed by Schneider. Others in the syndicate included the Steyr and Manfred Weiss companies, manufacturers respectively of rifles and small arms. Both Steyr and Weiss had a large quantity of unused plant left after the war, and the idea was that this would be transferred to the national arms factory. This idea attracted both Schneider and Vickers, whose participation would also be in the form of machinery and technical assistance; but Vickers, by its holding in Resita, managed to supplant Schneider. Douglas Vickers superintended negotiations with the Romanians, with the assistance of Zaharoff who visited Bucharest in October 1922. Vickers' agent in Bucharest at this time was Edward D. Madge, obstetrician to Queen Marie: apart from piloting her family into the world, he had no other engineering qualifications. Another important contact was Prince Barbu Stirbey (1872-1946), described by the British Minister (1929) as 'Perhaps the most enigmatic figure in Romania...a curious mixture of the grand seigneur and man of business'. Stirbey had a unique and important position mediating between the Liberal party and the Court, and indeed was prime minister ad interim in 1927. In the mid-thirties his opposition to King Carol led to exile in Switzerland after an attempt to poison Stirbey, although he returned to Romania to influence the transition of 1945.

1. Memorandum by Douglas Vickers of 14 December 1923. V. microfilm R284. Under the terms of the Treaty of St Germain (1919), the Steyr works was supposed to dismantle its armament capacity, although this provision was of course evaded.
2. FO 371/13695.
4. Stirbey's wife was the pro-German sister of his cousin, Prince Georges Bibesco (b1881), whose wife was the lover and biographer of the British Secretary for Air, Lord Thomson of Cardington. Another Bibesco cousin married the daughter of Asquith, the Liberal prime minister. One of Stirbey's daughters married Captain Edwin G. Boxshall, son of the late British Vice-Consul in Bucharest; whilst Stirbey's eldest sister, Louise, had married the Romanian Conservative politician, Marghilou, but had deserted him for the Liberal Leader, Ionel Bratianu, later prime minister of Romania.

Stirbey had received the German armistice with Romania in 1918. See Obituary in New York Times, 25 March 1946.
Vickers approached Romanian business with this phalanx, and with clear principles for co-operation.

In the first place, we think that the cost of the buildings and general plant should be provided by banks or select associations within Romania. A certain proportion of capital should be given us in return for our assistance in organisation, for the right to use our present designs and models, and for our future technical assistance and the benefit of experimental work on new types which we are both continually carrying on at home and which form as large a proportion as manufacturing our specialties. A percentage of the output should be given in consideration of this.

In the second place, we should ask that the new organisation should not be required to manufacture everything from the start; it should build up its experience gradually and, in the meantime, rely upon us for supply of parts to be assembled into the complete machines.

In the third place, the Government should give guarantees of orders to keep the works employed for a certain period, and failing that, should pay such a sum that would carry the expenses which are unavoidable when works are nearly ... closed down.

The works that are contemplated would have only one customer, so that some provision of this sort is necessary.

In the fourth place, we ought to insist upon complete technical control of the works. The Government will, no doubt, try to impose Romanian management, which, in view of the want of experienced... Romanian engineers, would probably be fatal...

These conditions should be obtained from any Government for such a project. In Romania, caution is particularly necessary, the Government being heavily in debt to their home manufacturers, and having on several occasions treated foreign capital very badly. 1

Douglas Vickers advised 'strongly against any direct financial participation in a national armament factory, which would be based on conditions remaining unchanged for many years'. 2

In October 1924, Tancred Constantinescu, the Minister of Commerce, proposed that Vickers and Resita take an interest in a proposed guns and ammunition factory at Copsa-Mica (adding 'Skoda et Creuzot desirant aussi à participer'), and that Resita and Steyr join to manufacture machine-guns and rifles at Cugir. 3

Douglas Vickers' sceptical reaction was that it would be greatly to the advantage of the Government, and would certainly suit Resita and Vickers better, if the comparatively small requirements of Romania were dealt with at Resita, with Vickers' help. The costs of the additional equipment would be much less than that of a new factory, and the yearly expenses also on a much smaller scale.

The Romanian Government are now talking of the erection of gun factories, rifle factories, explosive and aeroplane factories all at once. The total expenditure required...would tax the finances of a richer country than Romania. 1

The Romanian Government however refused to manufacture armament at Resita, because it was 'too near to the frontier' with Hungary, and had a work-force 'not purely Romanian'. 2 Despite these reservations, Buckham went to Bucarest in December 1924, to give technical advice to Veith in the latter's negotiations with Constantinescu. Although Buckham thought 'that his visit was very useful', 3 Vickers were alarmed to find that it coincided with one by Maglici, of Skoda, who presented a rival scheme.

In the face of Skoda's threat, Vickers now hurried into an agreement with the Romanians. On 29 January 1925 a Convention was signed in Paris by Constantinescu (for the Romanian Government), Veith (for Resita) and Douglas Vickers. This convention provided for the establishment of two factories in Romania—at Copsa-Mica and Cugir—to form the Copsa-Mica-Cugir Company (C.M.C.). Cugir was to be equipped for the manufacture of rifles, machine-guns and automatic rifles, and Copsa-Mica was to produce certain commercial products and guns up to a calibre of 305 mm., shells and tanks. The annual capacity of the two factories working 16 hours daily was stipulated to be 500 guns and accessories, 100,000 rifles, 500 machine-guns and 2,000,000 shells with fuses. Vickers and Resita were both to supply machinery to reach this productive capacity, with the British also supplying technical assistance and training Romanian personnel.

The new Company was constituted for forty years, with the Government guaranteeing 7 per cent dividends to Vickers and Resita 1925-35, and 6 per cent dividends, 1935-65. The Government also undertook to place all armament orders with C.M.C. for the duration of the agreement, provided their prices did not exceed 5 per cent of outside competitors'. Vickers were also to receive 75 million lei in cash, and a share-holding in the C.M.C. (which was capitalised at 300 million lei) commensurate to the machinery they introduced. As in the Polish arsenal, Vickers were exporting their depreciation, and installing it in a national factory overseas. Douglas Vickers told Caillard,

Experience of putting similar machines into order indicates that half the cash payment [of 75 million lei] would be more than sufficient to enable this to be done... we [will] be left in the end with £30,000 in cash and shares for the balance on which the Romanian Government guarantees 7 per cent... Romanian shares, even with that guarantee, are not of much value, but the surplus machinery, after all, brings nothing in to us, and is losing its value year by year. 1

Caillard replied from Monte Carlo, where he was holidaying with Zaharoff,

We both think that the terms you indicate are quite favourable to Vickers, since the cash payment initially runs us against any risk... the shares in a Romanian Company—even one in which the Government is a large shareholder—are not... valuable in sterling; but they bring value in other ways— and after all, the natural resources of the country are great, it won't always be badly governed, one may hope. 2

It is noteworthy that the Paris Convention was signed before any details of capital subscription or the Constitution of the proposed C.M.C. Company had been determined, and that Douglas Vickers repeatedly emphasised that the British were solely interested in providing technical assistance and machinery, not cash, in Romania.

When the Constitution was published it vested all managerial power of C.M.C. in an executive committee, which was independent of the Board of Directors, and to which Vickers applied in vain for representation.

The total value of machinery to be supplied by Vickers was £320,000, including a profit of £130,000; although in the event, machines worth only £263,000 had been supplied by March 1929, and their book value at that time, including reconditioning costs, was £190,000. Trouble soon hove in view.

Table 36 to show arms orders placed by C.M.C. in England, together with Vickers sales expenses 1925-28.

<table>
<thead>
<tr>
<th>Year</th>
<th>Arms orders placed in England</th>
<th>Sales Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925</td>
<td>£43,916</td>
<td>£1,330</td>
</tr>
<tr>
<td>1926</td>
<td>710</td>
<td>3,511</td>
</tr>
<tr>
<td>1927</td>
<td>21,971</td>
<td>4,040</td>
</tr>
<tr>
<td>1928</td>
<td>2,068</td>
<td>3,167</td>
</tr>
</tbody>
</table>


The Copsa-Mica site later proved 'entirely unsuitable' for an arsenal; whilst the Cugir factory was 'absolutely without interest' for armament work. The Valuation Commission appointed in accordance with the Paris Convention to value the machinery exported from Erith by Vickers consistently practiced 'stupid obstruction', apparently at Skoda's instigation. The first issue of capital in the C.M.C. was a failure, after press criticism which Boxshall attributed to Skoda, and when a further issue was attempted, 'in an utterly incomprehensible way' the Romanian authorities ignored Vickers' subscriptions of 30,000 shares.

1. The Constitution of the Copsa-Mica & Cugir Company was published in Bucarest, 1 April 1925. Copy in Douglas Vickers' papers. Vickers' first nominees on the C.M.C. board were Buckham and Baron Jean Stircea, Master of Ceremonies at the Royal Court, although in practice, Stirbey's son-in-law Boxshall kept a watching brief.
The Romanians steadfastly ignored all technical advice offered by Vickers' resident engineer there, Blackburn, and at one stage in 1926, formed plans for an expansion of the plant which would have made it the largest arms factory in the world. The management was 'introduced for political reasons', and there was no co-ordination of finance, personnel or material, with decisions given verbally only. Under the original understanding, Vickers were to receive for their technical assistance, in quarterly instalments, percentages of $2\frac{1}{4}$ per cent, 5 per cent and 7 per cent on the value of their machinery delivered and installed; but as many of the C.M.C.'s factories were uncompleted, such machinery was left to decay in storage, and Vickers did not receive the installation percentages of 5 per cent and 7 per cent. Moreover, the Romanians flouted the two main provisions of the Paris Convention, by placing armament contracts with Skoda, and by failing to pay, or delaying for years, C.M.C's guaranteed dividends. Much of this disruption was attributable to Skoda, and in 1928, despite 'the possible conflict of interest between Vickers and Skoda', Birch and Douglas Vickers discussed with Skoda their admission to the C.M.C. on the same terms as Vickers. Although this originally had Governmental consent, political intrigue prevented the scheme's ratification. Matters continued on an almost farcical level until February 1929, when Vickers were able to terminate their technical responsibilities in return for the cancellation of the percentage remunerations to which they had contractual rights.

This dis-engagement was only partial, as they still had substantial holdings in both C.M.C. and Resita. Difficult negotiations for their sale to Skoda were interrupted in 1931 by the collapse of the Credit Anstalt Bank of Vienna (Resita's main creditor), and Vickers had to enter an international syndicate (with Austrian and Romanian banks and steel-owners) to support the Resita share price. Max Ausnit (1888-1957), an enterprising Jewish Anglophile, now became Resita's managing director, and eventually provided the means for Vickers to extricate themselves from Romania. A technical agreement running 1934-9 between Resita and Vickers was followed by an understanding whereby the arrears of technical expenses due to Vickers from C.M.C were paid by Resita to an interest-bearing account for Vickers' benefit in the Resita books. Also in 1934 Ausnit formed a Monacan holding company (C.E.P.I.) in which Vickers received 5,960 shares worth 1,000 French francs each in return for their holding in the Resita share syndicate valued at £73,100. In 1937 Ausnit agreed to buy by instalments Vickers' C.E.P.I. holding for £49,294, and this continued until 1939. In this necessarily compressed account of the Romanian venture, it can only be added that Ausnit (who was probably the deus ex machina which led to the British guarantee of Poland in March 1939) was subsequently imprisoned for the breaches of currency law in his arrangement with Vickers, although in 1944 he escaped from Romania in a stolen German bomber, and became a zip manufacturer in New York.

2. D. Vickers to Reid Young, 12 December 1932. V. microfilm R190.
   D. Vickers to Jenkinson, 6 October 1933. V. microfilm R332.
   Memorandum on Monacan Agreement, 10 February 1934. V. microfilm R319.
   Reid Young, memorandum of 20 July 1935. V. microfilm X247.
   Boxshall to Yapp, 19 April 1933; Boxshall to Reid Young, 21 November 1936; J. Waddington to Reid Young, 23 November 1936. V. microfilm R21.
   Vickers received the following dividends from C.E.P.I. 1934: 3 per cent; 1935: 3 per cent; 1936: 4 per cent; 1937: 3 per cent; 1938: 3 per cent; 1939: 6 per cent.
4. New York Times, 19 January 1957. See Simon Newman, March 1939: the British Guarantee to Poland. Oxford 1976. Chapter six recounts how a bogus report from the Romanian Minister in London that Germany had presented his country with an ultimatum led to the guarantee of Polish sovereignty. The Minister is stated (p 117) to have been 'probably' prompted by Ausnit; this probability hardens towards certainty in view of Ausnit's intimacy with his co-religionist, the King of Romania's mistress, and from his character as suggested by his dealings with Vickers.
The Romanian affair was probably the most influential experience on Vickers' foreign policy between the wars. Its great frustration came to represent for the Vickers board the illimitable trouble which would arise if the policies of the Edwardian owner-managers were repeated. Buckham, Birch, Craven, Dawson, Douglas Vickers, Reid-Young and other directors all journeyed at different times to Bucarest, and were not slow to absorb its lessons.

Though Douglas Vickers showed a very proper caution of the Romanian business mentality, he allowed Constantinescu to hustle him into the Paris Convention of January 1925 by the appearance of a Skoda man in Bucarest during Buckham's visit of December 1924. Despite the evidence of Romanian behaviour during the Aircraft Disposal contract, Vickers were nevertheless amazed by the insouciance with which the Romanians flouted the letter and spirit of their undertakings; nor had Vickers any obvious recourse. Though Stirbey told the British Minister at Bucarest in 1929 that he thought Vickers had been supine, it is difficult to know what more the British firm could have done to protect itself. In 1922 the Aircraft Disposal Company had told the Romanians, 'in all our transactions with other Governments of the world, we have not yet met a similar case' of dishonesty, and Vickers could have said the same. They were aware of this possibility from an early stage of their involvement in Resita, and it was a measure of their desperation to get rid of depreciated plant, and to win foreign work, that they chanced the Romanian risk. Boxshall was among Vickers' most energetic and alert representatives, but his troubles were a bye-word to Bridge: Romania does not show Vickers management in weakness, so much as pulling very long odds against the French and losing.

2. Dawson to Lawrence, 17 May 1928. V. microfilm R321.
'When political considerations are involved in any degree', wrote Douglas Vickers, 'the French always seem ready to find money at a price'. The C.M.C. Company proved to be the last venture of its sort by Vickers in Europe, though it was less than twenty years younger than, say, Sociedad, with its similar conception of combining artillery with industrial work. There was an ominous timelag between the Spanish and Romanian schemes, and market readings had meanwhile become quite different.

What conclusions are to be drawn from these eastern European ventures? First, that the years immediately after the Great War, were inauspicious for launching new arsenal projects. Vickers had to contend with outbursts of national pride which were sometimes preposterous, whilst the financial and social disorder in central Europe after 1918 made an industrial development of this class very hard to manage. Surplus capacity and the depreciation of the mark meant that competition with French and German interests was even keener than before 1914; and though British Government departments showed that they were aware of the political possibilities of economic penetration by British firms of the succession states, they were markedly less Bushful than the Governments of the major Continental powers. Many of Vickers' difficulties originated with the refusal of minor powers to accept that the firm did not enjoy the close collaboration with national policy which characterised most of their foreign competitors. Other troubles were purely the product of British financial organisation, which could lead to the beating of Vickers. As Zaharoff noted in 1924, 'my experience for many years past was that whenever any of our money has gone abroad, we did not easily see it again'; and many of Vickers' foreign client-states were anxious to enmesh their cash. The sums which disappeared into Reval or Romania mattered enormously to a firm as short of capital as was Vickers; as did the heavy writing down of so many of their overseas investments.

Quoting his own words to Prince Stirbey.
Caillard and Jenkinson both found that Vickers' holdings in foreign armories were impossible to realise at a profit, and difficult to liquidate at all; whilst the group's experiences in Italy and Japan force the conclusion that their foreign holdings were too small to influence policy, and barely sufficient even to return competitors' technical expertise in Britain.

The radicals' suspicions about these projects are not of central importance, it transpires. Vickers failed to get much profit or expertise from the foreign arsenal schemes in which they were involved; and contrary to legend, Copsa-Mica or Reval do not show Vickers jacking up armament prices with Schneider, or getting fat dividends for their shareholders, or any of the other black arts attributed to them. Instead, Vickers emerge as consistently slower at intrigue than their competitors, very handicapped by 'the divorce of finance from industry' in Britain, and regularly higher in the contract prices. Auden and MacNiece in their 'Last Will and Testament' bequeathed to Vickers,

The Balkan conscience and the sleepless night we think
The inevitable disease of their dangerous trade.

Vickers had, indeed, Balkan conscience, sleepless nights and dangerous trade, but in each sense, antithetically to the images conjured in radical mythology.

1. Sir Austen Chamberlain, Memorandum on Foreign Trade and Finance, 16 February 1929, op cit A fuller discussion of British exporting is not possible here; but it is of incidental interest that Sir Victor Wellesley's memorandum of 1 December 1930 proposing a politico-economic department within the Foreign Office was drawn up in consultation with Dudley Docker. Its recommendations were adopted 1932, but Wellesley's ideas seemed so shocking that the Head of the Civil Service, Sir Warren Fisher, reacted: 'Sock him on the jaw'.
CONCLUSIONS

The demands which are made on industrialists are not always fairly appreciated by outsiders. While there is nothing exceptional in industrialists having to confront immediate and profound change, the scale of the peacetime transfers of 1918, and the relative lack of management theory, were together unprecedented. It would be easy to expect too much from the industrialists concerned.

At a time when they were physically and emotionally exhausted they had to determine what was suitable evidence on which to base planning; how it was to be collected and how analysed; who should participate in the ensuing discussion; and whether there was balance between the financial and technical input. They also had to anticipate what external forces might limit the capacity of Board and management to implement the strategy agreed. Even today, when management organisation is better understood, the answers to such questions can be elusive. Sixty years ago they were beyond all but the most sophisticated industrialist, always supposing he had previously had the time to puzzle out the appropriate guidelines for himself.

The three armouries each adopted different programmes. Vickers aimed to become an engineering and electro-techological trust, entirely self-sufficient in the products which its industrial operations supplied to one another. BSA alleged they had the aim of the widest mass production of a small number of products (though embarrassingly little evidence of this eventuated). Armstrong wanted to turn from industrial manufacturing to civil engineering.

We have seen that Vickers only sketchily deliberated before settling the direction of their dash for postwar growth; and they only recovered stability under the guidance of financial experts whose participation in industrial management was something of a rarity in Britain. These specialists achieved comprehensive reforms through the process of mergers. Before 1914 Vickers found success in extrovert policies such as marketing aggression and their self-confident commercial gamesmanship intended to prove to competitors
'what fools they were'. With those markets more adverse after
1918, their costs more uncompetitive and the outward opportunities
correspondingly reduced, it had to become introverted, seeking
future stability through rationalisation. 'You want a pusher like
Dawson who will go everywhere and buy everything', Lord Fisher
told Churchill in 1915, but twenty years later Craven was warning
Harold Macmillan, 'much waste is caused... by excessive
individualism'. It was a considerable achievement for any company
to re-orientate itself so absolutely and so effectively.

BSA and Armstrong succeeded in no such transformation.
Though less impetuous in their diversification policies, many of
their most important decisions were settled, literally preemptively
of their Board, by engineers such as West or Martin possessing
little financial sense. With Murray, Rogers or Pollen representing
the height of their financial expertise, neither company was able
to organise a sound programme of recovery from their immediate
postwar failures. Both remained recognisably the Newcastle and
Birmingham companies which had existed before 1914, whose product
lines made integrated marketing impossible and whose directorates
reflected their pre-war weaknesses. Consequently they perished.

Vickers has in this century been a microcosm of British
Imperial history. A commercial cavalier like Albert Vickers,
supporting Joseph Chamberlain and propelling his company to an
international eminence in the most difficult areas of heavy and
precision engineering, was a product of Imperial optimism. His
world vanished in the Great War, and Dawson's generation had to
hand Vickers' strategy to an accountant like Jenkinson to whom one
Treasury official attributed an 'amalgamation complex'.

Indeed, Jenkinson's 'rationalisation', as developed by Vickers in 1925-9 became high national policy. Government financial strategists such as Niemeyer and Peacock (with their Vickers-Armstrong directorships) seized upon industrial rationalisation as the main hope for economic growth in these years before the depression of 1929 when it had already become clear that the return to the Gold Standard was not the panacea that had been hoped. The restructuring of Vickers in the twenties was every bit as representative of that period as the speculative boldness of the Edwardians.

This is not the limit of Vickers' significance. D.C. Watt has written of the failure of self-confidence which hit the armed forces of the continental powers in the aftermath of the Great War. The revolution in warfare and the recoil from many traditional characteristics of fighting men rendered the armed forces doubtful, hesitant and unconfident. Something of this demoralisation overcame the armourers. 'It has been very galling to be classed with white-slavers and drug-traffickers when one has been doing one's duty in helping the defences of one's own country', one industrialist told Hankey, 'it has been detrimental to the morale of the staffs'. Even disregarding radical criticism, the indistinct official policy which led to the unpreparedness of 1932 must have been demotivating.

Unmistakably Britain could no longer afford the cash or find the potential will to put behind the force that maintained British power. Though the importance of the Washington naval disarmament treaty can be over-stated, it was nevertheless a most significant staging-post between the two world wars whose financial cost broke Britain's imperial status. The Vickers directors are described as having pangs 'that their own greatest days lay in the past' by 1918, and already much evidence existed that the same judgement was applicable to Britain as an industrial and international power.

2. Scott, Vickers, 141.
The belief of the present Chairman of Vickers, Lord Robens, that Britain's future lies less in manufacturing competition, and more in the provision of services and expertise, signifies the direction of events in this century. Vickers are fortunate to have survived to consider such decisions. Fifty-five years ago survival was by no means certain for the chief private armourers of a country which was already being called the Carthage of the North Sea.
BIBLIOGRAPHY

1. Primary Manuscript Sources.

VICKERS HOUSE - Vickers microfilm collection.
Vickers papers, boxes of legal agreements.
Douglas Vickers' papers (concerned with Romania).
Count Ostrorog's papers.
Canadian-Vickers papers.
Vickers Historical Records collection (working papers assembled during compilation of J. D. Scott's official history).

PUBLIC RECORDS OFFICE

Admiralty papers
War Office papers
Air Ministry papers
Cabinet papers
Ministry of Supply papers
Ministry of Munitions papers
Treasury papers
Foreign Office papers
Board of Trade papers
Ramsay MacDonald papers.

TYNE & WEAR PUBLIC RECORDS OFFICE

Armstrong, Whitworth papers
Papers of Lord Rendel.

HOUSE OF LORDS RECORD OFFICE

Papers of Sir Patrick Hannon.

UNIVERSITY OF WARWICK

Birmingham Small Arms papers.

NATIONAL MARITIME MUSEUM

Papers of Sir Eustace Tennyson-d'Eyncourt
Papers of Sir Herbert Richmond.

CHURCHILL COLLEGE, CAMBRIDGE

Papers of Lord Hankey
Papers of Lord Swinton.
Papers of Reginald McKenna.

MINISTRY OF DEFENCE LIBRARY

Annual Reports of Director of Army Contracts.

CAMBRIDGE UNIVERSITY LIBRARY

Papers of Lord Baldwin of Bewdley.
Papers of Lord Templewood.

UNITED NATIONS LIBRARY, GENEVA

DEPARTMENT OF TRADE & INDUSTRY

Collection of Registers of Vickers shareholders in depository at Hayes, Middlesex.

CHURCHILL PAPERS, CHARTWELL TRUST.

I am grateful to Mr Martin Gilbert for supplying me with copies of Sir Winston Churchill's papers relating to the Royal Commission on the Private Manufacture of and Trade in Arms (1935-6).

2. Primary Printed Sources


Roskill, Stephen W., Naval Policy Between the Wars. 2 vols., London 1968-76.


Watt, Donald Cameron, Too Serious a Business. London 1975.


Bacon, Sir Reginald, From 1900 Onward. London 1940.
Brockway, Fenner & Mullally, Frederic, Death Pays a Dividend. London 1944
Chaput de Saintonge, Rolland A., Disarmament in British Foreign Policy. London 1935.
Davis, George T., A Navy Second to None. New York 1940.
Dennis, Peter, Decision by Default; Peace-time Conscription & British Defenc


Documents of British Foreign Policy 1918-39, series 1 and series 1a.


Firth Ltd., Thomas, One Hundred Years in Steel. Sheffield 1938.


Lewinsohn, Richard, The Man Behind the Scenes: the career of Sir Basil Zaharoff, the 'Mystery Man of Europe'. London 1929.


Murray, H. Robertson, Krupp and the International Arms Ring. London 1915.

Neumann, Robert, Zaharoff the Armaments King. London 1935.


Nichols, Beverley, Cry Havoc. London 1933.


Pratt, Edwin, British Railways and the Great War. 2 vols, London 1921.


Trebilcock, R. C., 'British Armaments and European Industrialization 1890-1914' Economic History Review, XXVI (1973)


4. Periodicals.

Arms & Explosives. A well-informed and objective trade-paper which ceased publication in December 1920 after running for 28 years.

The Economist.

Engineering.

Flight

Investors' Review

The Statist

The Times

Vickers News. The first series was published in two volumes from October 1919 until September 1920. It was intended for the information of customers and the commercial press as part of the new civilian trades organisation. It was discontinued as an economy measure. The second series recommenced July 1924 and continues to the present day, although publication was suspended from March 1942 until August 1947. It was circulated by subscription as a staff magazine throughout the group, and in the period 1924-42 was produced to a remarkably high finish.