

ROYAL COMMISSION ON THE PRIVATE MANUFACTURE OF  
AND TRADING IN ARMS.

VERBATEN SUMMARY

of the

EVIDENS

presented by

THE UNION OF DEMOCRATIC CONTROL

July 17 and 18, 1935

WITNESSES:

The Rt. Hon. Sir William Jowitt, P.C., K.C.

Mr. R. McKinnon Wood, O.B.E., M.A., F.R.Ae.s<sup>1</sup>/<sub>2</sub>

Mr. J.D. Bernal, M.A.

Lord Marley, D.S.C., J.P., D.L.

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## INTRODUCTION

The Royal Commission on the Private Manufacture of and Trading in Arms was set up on February 18<sup>th</sup> 1935 with the following Terms of Reference:

1. To consider and report upon the practicability and desirability ( both from the national and international point of view ) of the adoption (a) by the United Kingdom along, (b) by the United Kingdom in conjunction with the other countries of the world, of a prohibition of private manufacture of and trade in arms and munitions of war, and the institutions of a State monopoly of such manufacture and trade.
2. To consider and report whether there are any stops which can usefully be taken to remove or minimize the kinds of objections to which private manufacture is stated in Article 8 / 5/ of the Covenant of the League of Nations to be open.
3. To examine the present arrangements in force in the United Kingdom relative to the control of the export trade in arms and munitions of war, and to report whether these arrangements require revision, and, if so, in what direction.

The evidence of the Union of Democratic Control was presented by the Rt.Hon. Sir William Jewitt, P.C., K.C., on July 17<sup>th</sup> and 18<sup>th</sup>. Expert Witnesses who appeared with him were:

Mr. Ronald McKinnon, O.B.E., M.A.,F.R.Ac.A., who was head of the Aero-Dynamics Research Department of the Royal Aeronautical Establishment at Farnborough from 1919 to 1934;

Mr. J.D.Bernal, M.A., Lecturer in Crystallography in Cambridge University and, in 1934, appointed Assistant Director of Research;

And Lord Marley, D.S.C., J.P., D.L., under Secretary of State for War 1929 – 1931.

The Minutes of evidence taken before the Royal Commission containing the evidence presented by Union of Democratic Control with illustrative diagrams, the speech of Sir William Jewitt and those of Mr. R. McKinnon Wood, Lord Marley and Mr. J.D. Bernal, have been published by H.M. Stationery Office, Adestral House, Kingsway, London, W.C. 2, and can be purchased for 12/-

In the following pages a verbatim summary is given of the evidence presented by Sir William Jewitt, together with cross References to the speech, which he made in presenting it to the Commission.

## S U M M A R Y

of the

Statement of Evidence  
submitted by the  
Union of Democratic Control  
July 17 and 18 1935.

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Part 1  
Terms of Reference.

### Preliminary considerations.

It was suggested that as the evidence put forward by the U.D.C. was compiled mainly by experts on various aspects of the industry, the Commission should ask for expert assistance in examining the documents, books and factories of the arms and munitions industry:

1. A complete list of arms and munitions factories abroad owned and controlled by British firms.
  - ( a ) Their production and organisation.
  - ( b ) Their relations, if any, with government of country were situated, e.g. Resitza Firm of Roumania, of which Vickers hold 27 per cent of shares, and the Roumanian Government 60 per cent.
  - ( c ) Costs for representative arms and munitions supplied to foreign countries.
  - ( d ) Books showing production and in the case of export the amount and destination of arms and munitions made by factories abroad.
2. Financial transactions with Foreign Governments.
  - ( a ) A list of loans and their conditions with which armament firms associated, e.g. Vickers and the Chinese loan.
3. Documents showing the method of distributing contracts by the British Government.
4. Information on licensing system.
  - ( a ) Full list of licences grated with names of firms and arms or munitions exported.

( b ) Full list of licences with names of firms and arms or munitions exported.

( c ) Correspondence of armament firms with the Government departments

Concerned , i.e. Foreign Office, Board of Trade, Admiralty, War Office, and Air Ministry re export trade.

5. British Officials abroad.

( a ) Consular reports re imports of British arms and munitions by country in which they are situated.

( b ) Consular reports of exports of arms and munitions by foreign factories of British firms.

6. Organisation of existing State Arsenals and Dockyards.

( a ) Their Present capacity.

( b ) Their Capacity for expansion.

( c ) Their methods of costing.

7. Officials of armament firms.

Agreements with leading officials, e.g. between Vickers Ltd. And Sir Basil Zaharoff and with Sir Charles Craven relating to military sales.

8. Press Departments.

Correspondence of the Press Departments of the main armament firms, especially of Vickers Ltd. and I.C.I. Ltd.

9. Vickers and Krupps.

Agreements between Vickers and Krupps relating to the use of patents during The war.

10. Subsidies from Government Departments.

Any arrangements with firms in lieu of a subsidy by which the firms receive the monetary effect of a subsidy, e.g. by the arrangement of a price which, over a period , includes what be the amount of the subsidy for that period.

11. Accounts.

The armour plate control accounts of English Steel Corporation, Beardmores and Firth Browns with explanatory notes as to how the figures entering those accounts have been built up.

12. Costings.

The original cost sheets for –

- ( a ) armament production and prices charged to the Government.
- ( b ) cost sheets showing how costs are made for armament and for commercial work.

13. Entertaining expenses.

Accounts of Abbey House, Barrow, and of sush places as the inspectors Dining Rooms at Sheffield.

PART 11

The Special Nature of the Armament Industry.

The special nature of the Armaments industry was pointed out, and especially the differences between the causes of a demand for armaments and that for other commodities.

1. A manufacturer of commercial goods who increases his sales in a foreign country does not, by so doing, increase his home demand; in the case of armament he does. If an English firm builds destroyers and submarines for a foreign government this tends to lead to a demand for an increase in the British Navy.
2. A foreign manufacturer who increases sales in his own country, does not by so doing increase the demand for the commodity in our country, but in the case of armament he does. If Krupps can persuade Germany to order more artillery, this leads to a demand for more artillery in England.
3. In the case of armaments the consumer is the state and has great wealth or resources; thus if the state can be persuaded that armament are necessary, they will be bought whatever the cost. But however necessary commercial goods may be, a maker cannot increase his sales among the poor.
4. In the case of armaments, the is the state and the usual methods of advertising are not efficacious; they can, however, be replaced by the interested parties working up a patriotic agitation. Lord Snowdon's speech on the Naval Estimates in 1914 made Members of Parliament aware of the way in which the Scare of 1909 was managed.
5. Thus, whereas the interests of ordinary men lie in peace and security, the interests of those who live by the sale of arms and materials of war lie in fear, insecurity and ultimately, in war.

PART 111

The Financial Aspect of the Armament Industry.

Superficial simplicity.

A careful study of the financial aspects of the armament industry reveals that advantage has been taken of every nuance and complication that the company laws permit, and that so far from the picture being one of the essential simplicity of a number of direct manufacturers of goods, we are dealing with a complicated

arrangement of trusts with their subsidiaries, financial and manufacturing, cartels, their interlocking directorates and agreements stretched out and embracing a series of firms, banks and connections both at home and abroad which are largely unsuspected by the public at large.

#### Ingenious Accountancy.

Balance sheets and profit figures are clearly valueless when dealing with trusts which are both vertical and horizontal. In such cases it is obvious that final profit figures and the payment of dividends may be sensibly diminished by the retention of substantial sums of money in the coffers of any one of the number of operating subsidiaries. Here the profits may be used for the purchase of property, stock or investments (frequently of an interlocking nature.). The profits may promptly be written down in the subsidiary's balance sheet to a fantastically low figure, and safely hidden from the view of the investigator.

#### The Transfer of Profits.

A popular method of transferring profits from one subsidiary to another is by the national sale of raw materials or half completed goods where firms like Vickers are linked up with firms producing raw or half-finished products as in the case of the English Steel Corporation. The prices are calculated in order to show the profits at those points desired by the trust concerned, or alternatively at rates which are arranged in order to leave substantial profit margins during the progress of the goods through the trusts.

Hence a submarine purchased by the British Government from Vickers-Armstrong's, to the English Steel Corporation and to the High Speed Steel Alloys Ltd., etc. which are all linked up as part of the Vickers group with a number of directors common to all who will have fees from each concern.

#### The Shelter of Nominees.

There is a common system in the financial world of registering large blocks of securities in the names of banks and individuals who are not the owners of the stock in question but only the nominees of the actual owners. Such registrations, of course, often only indicates that securities in question are being held by the bank as security against accommodation granted in the ordinary way of business and in other cases the banks may have acquired the securities between banks as owners and banks as nominees. But there is sometimes a more sinister application of this practice. The registration of large shareholdings in nominees' names may be carried out in order to hide from the public at large where the real control of the business lies.

#### Armament Finance.

Another phase of great importance is the influence of directors who hold directorships on a number of boards. This is particularly significant in the cases where directorates are in the armaments industry on the one side and the banking world on the other.

The linking up of the armaments industry and finance can also be observed in a study of loans made possible on conditions of reciprocity which bring profits to

the armament firms and certain poverty with uncertain security to the countries accepting the loan.

Government Bond issues in fact occur in the scheme of armament finance in a quite unexpected manner. Thus the 21,803 000 Chinese Government 8 per cent sterling notes 1925 – 1929 (China – Vickers Loan) were issued in 1919 by the Chinese Government to Vickers Ltd. in payment of certain aircraft and munitions of war. The details of these notes were communicated to Messrs Vickers Ltd. through the good services of the British Minister in Peking and H.M. Foreign Office and on receipt of these notes they were floated on the London Steel Market by Messrs Vickers Ltd. so that the armament firm received, by this means, payment for their goods in cash. In 1921 Vickers Ltd. announced that the service of this loan would be paid out of the surplus Chinese salt revenue, but objections were raised to these payments by the International Financial Consortium in China with the result that no coupons have been paid since June, 1922, and the bonds are now quoted on the London Stock Exchange at less than one-fourteenth of their original value.

Thus, the general investing public were victimised and it would seem that the British Government of that period were largely to blame in allowing such a thing to take place. It is clearly improper that the British Government should be used as a method of financing the sale of British armaments to foreign powers, particularly when the British investor is called upon, in the long run, to pay eleven – twelfths of the price.

#### Aircraft Finance.

Special attention should be paid to the financial aspects of the race in aircraft which is an outstanding feature of the armaments race today. Compared with the trusts which have been shown heretofore, the aviation industry in general provides at the moment a fairly simple field of investigation. In truth the aviation industry is at very much the same stage as the chemical industry was 25 years ago, and the heavy armaments industry 50 years ago.

There are signs today of agreements between the leading firms such as that between Armstrongs - Siddeley and Hawker Aircraft by which the resulting company, the Hawker – Siddeley Co. represents the first big military aircraft merger.

The speculation which now marks the shares of the public aircraft companies is very similar to the speculation which took place in the shares of the heavy armaments firms in the great naval race which preceded the last war, and since it is obvious that a great expansion is about to take place in the British Air Force, a large amount of financing will be required in order to fulfil the contracts which will be placed. Thus the aircraft industry is, at this moment, entering a stage in of financial exploitation by irresponsible and unsocial interests.

Competition is being unnecessarily sharpened by means of the interposition of the company promoter. Issues of shares have been made during the past six months based on an estimation of inflated profits, and by the utilisation of a favourable “Bull” market these shares have carried to substantial premiums.

## The Work of the Royal Commission.

No member of the Commission can have any doubts as to the important influence which high finance has exerted in the sphere of international affairs. The inter-connections of high finance and the armaments industry have already been exposed, but this is the first time that the unholy triangle of politics, arms and finance has been brought into high relief. Whilst regretting the intense labour that would be caused, it must be pointed out that the Commission's labours would be largely useless unless it is prepared to investigate the implications, to the fullest degree, of international banking in its relation to armament.

### PART IV.

#### The armaments and munitions industry.

##### Chapter 1. The Iron and Steel Industry.

This chapter deals with the geographical distribution of the iron and the steel industry and with its technical aspects, dividing the industry into the four main stages by which iron passes into steel, as follows –

- ( a ) Production of Pig Iron from Iron Ore.
- ( b ) Steel melting.
- ( c ) Working of steel.
- ( d ) Machine

##### Production of Armaments.

This section shows that apart from the clearly defined stages of steel manufacture which makes it practicable for a factory to undertake one operation only, there is also a horizontal division of manufacturing between commercial and armament steels.

It is after the ingot stage that arms steel commences to assume its formidable aspect, and whereas it was distinguished in the furnace by a greater amount of care being spent upon it, it now passes through certain operations which definitely separate it from the commercial steel.

A detailed description is given of the operations carried out in the production of armour plate, guns and shells.

A list is given of these sections of the English Steel Corporation Ltd. (controlled by Vickers-Armstrongs) which are exclusively engaged in the manufacture of armaments or overwhelmingly so, and a second list showing those in which there is a considerable amount.

##### Chapter 2. The Heavy Armaments Industry.

The first section of this chapter gives a detailed survey of the firms producing armament steel and concludes –



To sum up it will be soon that the firms which produce armament steel, and particularly Hadfields, the English Steel Corporation and Firth Brown, all of which are now larger and more important than Beardmores, the other firm in the group, are very closely linked together through common supplies of raw materials. Secondly that the English Steel Corporation, Beardmores and Firth Brown are connected either through the one holding debentures or shares in the other or else by sharing together the control of important subsidiary companies. It is quite evident by studying the financial link-ups between the heavy armament steel firms that there exists in fact an armament steel ring.

The same firms which control the armament steel business have the monopoly of the private manufactures of heavy ordnance. All heavy guns are made by William Beardmore, Vickers Armstrong or John Brown & Co. As has been shown Vickers Armstrong and William Beardmore are closely connected and the association between John Brown and Vickers is very close.

Then follows a survey of the firms making Small Arms, Tanks, Warships and Marine Engines. Their inter-connections and their connections with foreign firms and capital are given in detail, and the following is the summary (verbatim) at the end of the section –

The heavy armament industry falls into three main divisions -

- ( 1 ) the making of armour plate, armament steel, and ordnance.
- ( 2 ) navel shipbuilding.
- ( 3 ) small arms.

A fourth division might be given for tanks, but as they are made only by Vickers Armstrong, they can be conveniently considered under the first head.

The firms under the first head are: -

The English Steel Corporation (which is composed of Vickers Ltd., Armstrong Whitworth Securities and Cammell Laird).

John Brown & Co. and its subsidiary Thos. Firth and John Brown.

William Beardmore & Co. (controlled by Vickers).

Hadfield.

Of these the English Steel Corporation and John Brown are by far the most important, for everything except armour piercing shells which are almost exclusively made by Hadfields. All these four firms are bound together by subsidiary companies seeking for raw materials and John Brown and Vickers are further linked by the amalgamation of their stainless steel interests.

In the second class the number of firms is much greater. They can, roughly speaking, be divided into three classes, those which ships of all sizes, these which confine themselves to marine and engines and those which specialise in lighter craft. Among the first class are found in addition to Vickers Armstrong, John Brown and Cammell Laird; Scotts Shipbuilding & Engineering Co., which is new

for practical purposes exclusively an armament firm, only today building ships for the Navy; the Fairfield Shipbuilding Co., controlled indirectly by Kleinworths; and Swan Hunter & Wigham Richardson. Also in this class are Harland & Wolffs and R. & W. Hawthorn Leslie, which occasionally build for the Admiralty.

In the marine engineering class are only four important companies; the Wallsend Shipway & Engineering Co., which obtains only comparatively small orders and is controlled by Swan Hunter & Wigham Richardson; William Beardmore & Co. which is closely connected with Vickers; Parsons Steam Turbine Co. related to Vickers Armstrong; and Babcock & Wilcox boiler makers, which is an international firm with subsidiary companies in every country.

In the third class are John I. Thornycroft & Co. who specialise in destroyers and light craft for the Admiralty, and who at the moment are practically only building ships for the Navy, but who also do large motor bus and tractor business; Yarrow & Co. who are practically only building boats for the Navy at the moment and who have also important marine boiler works; J. Samuel White, whose orders at the moment are practically confined to work for the Admiralty and the Polish Government; and Alec. Stephens & Sons who do a certain amount of civil work but the majority of whose construction at the moment is for the Admiralty.

In the third class of small arms the most important producers are Vickers Armstrong, the Birmingham Small Arms Co., the Projectile & Engineering Co., and the groups represented by Gunmakers Association. Through subsidiary firms the Birmingham Small Arms Co. is connected with High Speed Steel Alloys and thus with Vickers and the other armament firms.

Thus, by far the most important firm in the heavy armament industry is Vickers which has drawn into its orbit Armstrong Whitworth Securities, William Beardmore, Cammell Laird and John Brown. This group, together with Hadfields, controls the output of steel for armament purposes and the members of the group dominate the naval shipbuilding and the small arms trade as monopolising the ordnance and armament plate business. Through the Anglo-International Bank, Vickers is closely linked with Schneider and the French armament group. Through their investments abroad the Vickers group is further connected with foreign armament firms and in order to obtain certain raw materials essential for armament work, Vickers and other members of this group have amalgamated their raw material interests, and have combined to obtain these raw materials with French and Italian armament firms.

### Chapter 3. The Chemical Industry.

The Chemical Industry manufactures two main groups of war materials, namely explosives and poison gases.

The general expansion of the chemical industry since 1918 has increased its war potential. The explosives section of the industry has likewise expanded, many of the intermediates, and particularly the relatives of the explosives proper, having far greater pacific markets than was the case. Intermediates are essential compounds required at various stages before the final product can be produced. Great profits are made in this branch, and particular regard should be paid to the fact that the exports of military ammunition rose from 1924 to 1930 by 32 per cent. to 50.6 per cent of the total manufactured, whilst 20.8 per cent of the high explosive manufactured by private firms is exported.

This analysis of the chemical industry takes cognisance of the fact that the major basis for poison gases, chlorine, is the product with legitimate pacific uses and that the intermediates and even the relatives of war explosives, are industrial needs. The industry is bound together fairly closely, and the points of possible diversion are debatable, but an attempt is made to show the most practicable forms of diversion, either for state control or for licensing of exports.

The details are given of the manufacture of materials in poison gas production. The primary raw materials essential are: -

coal, limestone, salt, sulphur, or sulphur compounds, white arsenic and bromine.

The immediate raw materials or industrial chemicals required are listed below: -

Common salt, Chlorine, Carbon monoxide, Bleaching powder, Picric acid, Sulphur or chloride, Ethylene or Alcohol, Acetylene, Arsenic oxide, Benzene, Methyl Sulphate, Bromine, Sodium nitrate, Sulphur Dioxide, Hydrochloric acid.

#### Classification of Chemical Warfare Agents.

The classifications of poison gases and the materials from which made is given as follows: -

<u>Agent.</u>	<u>Made from</u>
1. Tear Gases.	
( a ) Benzyl Bromide     ...     ...	Benzen, Bromine.
( b ) Xylyl Bromide     ...     ...	Xylene, Bromine.
( c ) Bromacetone     ...     ...	Acetone, Bromine.
2. Lung Irritants.	
( a ) Chlorine     ...     ...	Common Salt.
( B ) Phosgene     ...     ...	Chlorine and Carbon Monoxide.
( c ) Chloropicrin     ...     ...	Bleaching Powder and Picric Acid.
3. Vesicants.	
( a ) Mustard Gas     ...     ...	Sulphur Chloride and Ethylene.
( b ) Lewisite     ...     ...	Acetylene and Arsenic Chloride.
4. Toxic Smokes.	
( a ) Diphenyechlorearsine     ...	Benzene, Sodium Nitrate, Hydrochloric Acid, Sodium Arsenite, Sulphur Dioxide.
( b ) Methylddichlorearsine     ...	Sodium Arsenite, Methyl Sulphate.

#### Survey of Manufacture.

The manufacture of those poisons is completely dependent upon the heavy chemical industry for chlorine and hydrochloric acid. The heavy chemical industry required expensive plant and is not readily capable of expansion, but the

manufacture of the lethal substances from organics and heavy chemicals is very simple and does not require more than the normal equipment of any chemical works.

Few of the lethal substances have any commercial use, therefore the complete prohibition of manufacture raises no serious industrial problems. The existing chemical warfare station of H. M. Government is quite capable of carrying out the research necessary, and of preparing plans to utilise the existing chemical factories with trifling delay in time of war, so that, with exception to chlorine particularly and in a lesser degree phosgene, the problem of sale prevention should not exist in the minds of any reasonable persons.

As Chlorine Manufacture is of such fundamental importance a complete description is given of the manufacture. This is followed by a detailed description of Poison Gases.

### Lachrymators.

1. Benzyl and Xylyl Bromides ( $C_6H_5CH_2$ ., etc.).
  - ( a ) Properties – Both are colourless liquids boiling over  $200^{\circ}C$ . One part per million in air causes profuse lachrymation.
  - ( b ) Manufacture –
    - ( i ) Raw materials – Bromine and benzene or xylene.
    - ( ii ) Method. Mix and allow reaction.
  - ( c ) Commercial uses – None, but bromine is used in the dye industry for making lead tetraethyl, for medicines, and for photographic chemicals.
2. Bromacetone ( $CH_2Br.CO.CH$ ).
  - ( a ) Properties - A water clear liquid boiling at  $127^{\circ}C$ .
  - ( b ) Manufacture –
    - ( i ) Raw Materials. Acetone and bromine.
    - ( ii ) Method. Mix and allow reaction.
  - ( c ) Commercial uses. – None. Acetone is used largely as a solvent in the manufacture of explosives. It is also used in making chloroform. It is prepared ( a ) by passing the vapours of acetic acid through hot tubes containing a catalyst. ( b ) by bacterial decomposition of maize, and ( c ) from isopropyl alcohol.

### Lung Irritants.

1. Chlorine ( $Cl_2$ ).
  - ( a ) Properties. – A yellowish-green gas  $2\frac{1}{2}$  times heavier than air, soluble in water. Chlorine condenses to a liquid when its temperature is reduced to  $34^{\circ}C$  or when at normal temperature the pressure upon it increases to 100 lb. Per square inch. It is marketed as a liquid under pressure in strong steel cylinders, or in tank-wagons.

( b ) Manufacture. – This is fully detailed in the special description of this important process. Simply the process is to electrolyse a solution of common salt, chlorine gas coming off at the positive pole.

( c ) Commercial uses – Those are fully detailed in the special description. Briefly, as liquid chlorine for bleaching and sterilising and for the manufacture of bleaching powder, hydrochloric acid and many organic products.

( d ) Toxicity – Lethal dose  $2\frac{1}{2}$  milligrammes per litre of air, kills a dog in  $\frac{1}{2}$  hour.

2. Phosgene. ( $\text{COCl}_2$ ). Carbonyl Chloride.

( a ) Properties – a colourless gas; Liquifies at  $8^\circ\text{C}$ . Odour suggestive of green corn or musty hay. Is  $3\frac{1}{2}$  times heavier than air. Extremely poisonous 25 parts volume in one million parts of air is fatal. It is marketed in steel cylinders, at a pressure of 20 lb. Per square inch and normal temperature.

( b ) Manufacture:

( i ) Raw materials. Chlorine and carbon monoxide.

(The carbon monoxide is formed by the burning of carbon in a limited air supply. It is also a waste product of many processes. It is used for many pacific purposes, such as the production of formats.)

( ii ) Method.  $\text{CO} + \text{Cl}_2 = \text{COCl}_2$ . A Mixture of chlorine and carbon monoxide is passed through a box containing charcoal, which acts as a catalyst.

( c ) Commercial uses – Relatively small. Used for certain dyes, e.g. crystal violet. Also used in making synthetic essence of violets, to a smallish extent in making certain kinds of glass, and sometimes for exterminating and moles.

( d ) Toxicity – Eight times as toxic as chlorine. A dose of 0.3 milligrams per litre of air kills a dog in 30 minutes.

3. Chloropicrin ( $\text{CCl}_2\text{NO}_2$ )

( a ) Properties. – A colourless oil boiling at  $112^\circ\text{C}$  insoluble in and heavier than water. A very stable compound. Used for warfare in gas shells. It is a lachrymatory as well as an irritant.

( b ) Manufacture –

( i ) Raw materials. Bleaching Powder and Picric Acid.

( ii ) Method. By blowing steam through a mixture of bleaching powder and picric acid. Chloropicrin passes over with the steam and is condensed.

( c ) Commercial uses – These are very few though its use as a fumigant against insects has been suggested. Picric acid is however used as a dye and an explosive. It is prepared from benzene or carbolic acid by the action of nitro acid.

## Vesicants.

1. Mustard Gas. Dichlorethylsulphide.  $(\text{CH}_2\text{Cl.CH}_2)_2\text{S}$ .
  - (a) Properties – This is not a gas, but an oil boiling at  $200^\circ\text{C}$ . When pure it solidifies at  $14^\circ\text{C}$ . It is almost insoluble in and heavier than water.
  - (b) Manufacture. –
    - (i) Raw materials. Alcohol, sulphur and chlorine. From these are prepared ethylene and sulphur chloride which form the immediate raw materials for mustard gas.
    - (ii) Method. Ethylene is passed into a solution of sulphur chloride in previously prepared Mustard Gas. (This is the best and British method.)  $2\text{CH}_2 : \text{CH}_2 + \text{S}_2\text{Cl}_2 = (\text{CH}_2\text{Cl.CH}_2)_2\text{S}$ .
  - (c) Commercial uses. None. Of the raw materials ethylene is of great use in the organic chemical industry, and sulphur chloride used in vulcanising rubber.
  - (d) Toxicity – It is used as a vesicant, but the vapour is very poisonous – about equivalent to phosgene. The death rate however is very low, with trained soldiers only being less than 1 per cent of the cases treated.
  
2. Lewisite or “Dew of Death” - Chlorovinylchlorarsine.  $(\text{CHCl} : \text{CH} : \text{AsCl}_2)$ . Mixed with i - dichloredivinylchlorarsine. This poison was discovered just before the Armistice in 1918, but was not used in the war.
  - (a) Properties – A colourless or faintly yellow liquid of high boiling point.
  - (b) Manufacture:
    - (i) Raw materials. Acetylene, arsenic oxide, and sulphur chloride.
    - (ii) Method. Acetylene is bubbled through a mixture of arsenic chloride and aluminium chloride, the latter being a catalyst.
  - (c) Commercial uses – None. Acetylene is of great use to the organic chemical industry for the manufacture of acetic acid and solvents. Sulphur chloride is used for vulcanising and for artificial silk. Arsenic oxide is used for making catalyst, pigments, glasses and medicines such as salvarsal.
  - (d) Toxicity – This is a vesicant much worse than poison gas, since it is absorbed by the skin, rapidly causing death. It is also a powerful respiratory poison. It is six times more toxic than phosgene, a lethal dose being 0.05 mg/litre.

## Snoozing Gases.

1. Diphenylchlorarsine  $(\text{C}_6\text{H}_5)_2\text{AsCl}$ . Or Snoozing Gas or Blue Cross.
  - (a) Properties – A colourless solid melting at  $44^\circ\text{C}$ .
  - (b) Manufacture –

( i ) Raw Materials. Benzine, sodium nitrite, sodium arsenite, sulphur dioxide.

( ii ) Method – This is an extremely complicated method and series of reactions.

( c ) Commercial uses – None, but all raw materials have specific uses.

( d ) Toxicity – This material is sent over in shells, and upon bursting clouds of very fine particles of diphenylchlorarsine is formed. These penetrate any gas mask, which cannot stop fine particles, though it can by reaction stop gases. The subject snoozes so badly that he must remove the mask. He is then killed by other gases sent over simultaneously. In High concentrations the substance itself is dangerous.

## 2. Methylchlorarsine.

( a ) Properties – This is a liquid boiling at 132°C.

( b ) Manufacture – The raw materials are caustic soda, arsenious oxide, methyl sulphate and sulphur dioxide. Methylsulphate is a valuable reagent in industrial organic chemistry.

## Paralysants.

### 1. Prussic Acid and Sulphuretted Hydrogen.

Neither of those chemicals was used much during the War. Prussic Acid is a great commercial use in fumigation. Sulphuretted Hydrogen is not used commercially, and is not deliberately manufactured. It is a by-product in certain processes, and could be very readily manufactured.

These gases are those that were found to be the most efficacious, and capable of cheap manufacture in large quantity. In fact, however, during the last war thirty different gases were used by the belligerents.

## Explosives, Ammunition and intermediates.

Explosives are, in peace time, made in great quantities and exported to warring nations which have not yet advanced sufficiently in their civilisation to be able to control the more modern weapons of war. Thus they retain, for the purpose of this Inquiry, a greater importance than that of gases.

The manufacture of explosives covers a very wide field of chemical effort, much of which is completely free from any suspicion in the supply of armaments. These factories and processes are those which deal with the manufacture of intermediates, or of materials which are near relations of those in the explosive group.

The important explosives under review are cordite, the propellant, and T.N.T. or tri-nitro-toluene, the high explosive used for filling the shell. In addition to these we have many other industrial and military explosives, but most of them are based upon the use of some proportion of T.N.T

A list of the more important explosives is given as follows:

- ( 1 ) Sodium nitrate mixtures.
- ( 2 ) Barium nitrate mixtures.
- ( 3 ) Potassium nitrate mixtures.
- ( 4 ) Ammonium nitrate mixtures (electronite, ammonite, etc.)
- ( 5 ) Chlorate mixtures.
- ( 6 ) Perchlorate (permonite, cheddits, etc.)
- ( 7 ) Nitrotoluenes (T.N.T. etc.)
- ( 8 ) Nitrophenols.
- ( 9 ) Picrates.
- (10) Nitroglycerines.
- (11) Dynamites (nitro-glycerine with various earths)
- (12) Nitro-celluloses.
- (13) Guncotton.
- (14) Fulminates.
- (15) Nitro-starches, etc.

Other sections deal with the commercial uses cellulose nitrates, the intermediates for explosives, the synthetic ammonia or nitrogen fixation industry, with details of Billingham, the great I.C.I. plant.

The manufacture of small Arms Ammunition is dealt with separately. The major portion is manufactured by I.C.I. Ltd. through their subsidiary company I.C.I. (Metals) Ltd. and mainly at the Kynoch works in Birmingham.

#### The existing Organisation of the Chemical Industry.

The existing organisation of the chemical industry is divided into the following groups for the purpose of the Royal Commission: -

- ( 1 ) Heavy Chemicals.
- ( 2 ) Dyestuffs.
- ( 3 ) Explosives.
- ( 4 ) A portion of the "Fine Chemicals".
- ( 5 ) A portion of "Cellulose".
- ( 6 ) A portion of "Paints and Varnishes".

The major firms engaged in these industries are: -

Heavy chemicals:

- ( i ) Imperial Chemical Industries Ltd.
- ( i i ) Charles Tennant & Co. Ltd.
- ( i i i ) Spencer Chapman & Messel.
- ( i v ) The Sheffield Chemical Co. Ltd.
- ( v ) W. Blythe & Co.
- ( v i ) F.W. Berk & Co.

Dyestuffs Industry:

- ( i ) Imperial Chemical Industries Ltd.
- ( i i ) Williams (Hounslow) Ltd.
- ( i i i ) Charles Tennant & Co. Ltd.
- ( i v ) British Alizarin Co.
- ( v ) The Mersey Chemicals.
- ( v i ) Oxley Hird Ltd.



- Explosives Industry:
- ( i ) Imperial Chemical Industries Ltd.
  - ( i i ) Vickers-Armstrong.
  - ( i i i ) H. M. Government.

For the sake of brevity, the list are not complete, and the minor branches are unspecified, but it can be stated that except for fine chemicals, I.C.I. dominates the chemical industries quoted, through in Paints and Varnishes it is probably second in its use of nitrated cellulose to Messrs Pinchin Johnson, who are paint manufacturers.

I.C.I. is in a controlling position in the chemical Industry.

The value of the industry in terms of capital, including heavy chemicals, Dyestuffs, drugs, fertilizers, soaps, explosives, artificial silks and those parts of the gas works and coke even plants engaged in by-product, recovery is of the order of £300 million and about 170,000 workers are employed.

Messrs Lever Bros. And I.C.I. together account for one half of the total. The commercial returns upon capital can be assessed from the balance sheets, accepting 6-8 per cent dividend for example; in the case of I.C.I., or alternatively one can analyse the true situation, and find that obsolescences are often unduly low, and that the profits made are to a considerable extent from the explosives group. Balance sheets of the individual I.C.I. groups are not shown in the Annual Report. Thus, though, I.C.I. is not primarily an armaments firm, yet force of circumstances (or of good salesmanship) its profits depend very greatly indeed upon the sales of high explosives and ammunition of which huge quantities have been exported to the Far East.

The survey brings out clearly the fact that the lethal substances and the explosives section of the industry can, with the exception of the type of products mentioned, be separated from the general body of the industry on its technical side. Such, however, is the horizontal and vertical nature of this great chemical combine that no analogy can be made as far as the very important financial aspect of the problem is concerned.

#### The Industry of Defensive Measures against gas attack.

As the gas mask is certain to be used in any attempt to protect the population or the armed forces against poison a short chapter is given on the production of gas masks.

It is not possible to evolve an efficient gas mask unless it is of the canister type. By that is meant that gas masks equivalent to the old P.H. Helmet (that is textile saturated with chemical) do not give any adequate protection, and it is necessary to have a canister type of mask which will embody wire and felt screens, and a container filled with activated carbon and a small quantity of chemical reagent.

These gas masks, of the type used as standard for industrial operations and for war purposes, are manufactured by Siebe, Gorman & Co. and are normally retained to industrial buyers at £2. 7. 6. each.

The apparatus may be divided into two portions, (1) the mask and inducting pipe, and (2) the canister.

It is quite possible to manufacture the canister, wire gauzes, felt, etc. in adequate quantities for the whole of our population with very short notice indeed, but the filling medium for canister, about 98 per cent of which is activated carbon, cannot so readily be manufactured. We calculate that the filling for 45,000,000 canisters would require 10,000 tons of activated carbon.

During the war there was a shortage of this material. The best raw material for the manufacture of activated carbon was found to be coconut shells, but it was found possible, towards the end of the war, to activate carbons of the anthracite type with a reduction in effectiveness to one-third or one-quarter of that of the carbon made from coconut shells. This better material was eked out in the proportion of one-third coconut shell carbon to two-thirds anthracite carbon in American gas masks.

Activated carbon has the property of absorbing poison gas to a tremendous extent in relation to its volume, and the small quantity of reagent used in conjunction with it would vary according to the types of gases met with. This chemical reagent (whatever it might be) could undoubtedly be manufactured in sufficient quantities.

It is not possible to calculate the renewal rates of these canisters. The absorption rate of the carbon is well known, but the actual amount of gas with which the canister has been in contact is not known, and replacements must be by rule of thumb or time period methods.

If we presume that monthly changes of canisters were found to be necessary, a total quantity of 120,000 tons of activated carbon would have to be manufactured per annum, and this is an undertaking that calls for high technical skill and knowledge which only be carried out by government organisation.

The quantity of rubber necessary to make the inside lining of the gas mask and the tube itself would be the order of 10,000 tons for 45,000,000 gas masks. And that quantity of pure rubber could undoubtedly be secured.

It is absolutely necessary in any attempt to protect the population by means of gas masks to provide an efficient type, and not to leave the population subject to the advertising genius of irresponsible and unscientific manufacturers of makeshift apparatus.

It is an appalling thought that if gas mask protection is left to commercial enterprise money will be able to secure efficient protection, whilst those without worldly wealth would be left to inferior equipment.

Any scheme of defence against gas will undoubtedly involve the production of a vast quantity of gas mask. In our opinion the government should have the monopoly of such production so that profiteering in the supply of materials considered effective in certain circumstances of gas warfare should be eliminated.

#### Chapter 1V. The Aircraft Industry.

The aircraft industry has now become an armaments trade. Its main work

has always been predominantly military, and under the new expansion programme of the Government the military function becomes overwhelmingly the chief one. As "The Manchester Guardian" of May 24, 1935, states, "The Manufacturing side of the air industry thus becomes little but an enormous war arsenal".

Like the other branches of the armament industry, the aircraft industry is closely allied with ordinary commercial enterprises. It has its connections with the motor car and small boat industries and depends for high grade materials on firms engaged in producing heavy armaments.

The development of the aeroplane is very dependent on the work of state research and experimental establishments and the direction of the Air Ministry with which the firms work in constant contact. Its work is mostly one on government contract to fairly full specification and under detailed regulations and supervision. It risks little of its own experimental effort. The Ministry appears to follow a deliberate policy of keeping all its bigger and older units alive. This factor makes its position very different from that ordinary competitive commercial enterprise.

An Account follows of aeroplane construction, and a list of the main raw materials of construction. The industry is largely fed by the high grade steel and light alloy industries. In the components and necessities there are many links with motor car production and connections with the scientific instrument industry and wireless industry.

#### Research and Technical Development.

The experimental work is done about half and half (in cost) by the private industry and by public service. The Industry builds all experimental aeroplanes and engines, mostly at public expense. This work is naturally less profitable than production orders. For the smaller classes of war planes it is usual to have competitive models built to a common specification by a number of contractors. The fortunes of firms swing to and fro with their successes or failures in these competitions; the single-seater fighters at one time supplied by Armstrong Whitworth and Gloster are now supplied by Hawker; but aeroplanes are produced by other than the designing firms.

The industry has produced in the last ten years about 160 experimental aeroplanes, of which roughly one third have been adopted as pattern for equipment. The industry does little research. Six firms have small wind tunnels, but this number is likely to be increased in the near future. Short Bros. Have a tank and Vickers (Aviation) Ltd. and Supermarine have access to the large Vickers tank at St. Albans. The industry's wind tunnels are much used to give guidance in design, but they are rather perniciously staffed and therefore liable to misuse.

The major aeronautical laboratory is the Royal Aircraft Establishment, covering almost every aspect of research into technical improvement; aerodynamics, engine, structural, material, instruments and radio. It has now five wind tunnels, one of which is large enough for full size tests; a tank for testing seaplane models; and a high altitude test chamber. The second laboratory is purely aerodynamic and is the section of the National Physical Laboratory. It has eight wind tunnels, of which one circulates air compressed to a high density which reproduces full scale phenomena with a reduced scale model. Some research is conducted with seaplanes at the testing station at Felixstowe.

The expenditure on the Royal Aircraft Establishment is of the order of half a million pounds a year, of which about one-third is classified as “research” and two-thirds as “technical development”. It contains the Airworthiness Department, responsible for framing regulations and methods of computing strength and safety. At one time it largely duplicated the firms calculations, but most firms, and all the Air Ministry contractors, are now “approved” and their calculations accepted. Contact between the Ministry Aircraft Establishment and industry I maintained by Resident Technical Officers.

The Royal Air Force has testing stations with partly civilian staff, at Martlesham Heath and Felixtowe in Suffolk. Aeroplanes for the Air Force are thoroughly tested and their performance carefully measured.

### The Markets.

The total home demand for civil aircraft at present is probably of the order of half a million pounds per annum. (Statistics of the export trade were given at the end of the chapter.) No distinction between military and civil supplies is available, The figure for 1933 are much the same as the average for the ten years 1924 to 1933. It will be seen that we have exported on the average 270 aeroplanes at an average price of £1,900 (with engines), 500 engines at an average price of £850, and £570,000 worth of spares, the total value of exports of aeroplanes, engines and spares, being about a million and a half. Most of this is presumably military supply to foreign and dominion government; less than one-third is exported to the Dominions. It will be noticed that there is a big demand for British engines for installation in foreign aircraft. To summarise, the 1934 market may be divided into:

	Million £	
Royal Air Force	...	6
Export trade	...	1.5
Homo Civil	...	<u>0.5</u>
<b>Total</b>		<u>8.</u>

A table is then given of the contribution of the 11 main aircraft factories And 4 engine factories to the equipment of the Royal Air Force in 1934 in number of squadrons supplied:-

Equipment of R.A.F. Reserve and Auxiliary Force in 1934.

Aeroplanes. Designing Firm	Number of Squadrons.	
	Smaller Aeroplanes.	Larger Aeroplanes.
Hawker Aircraft Ltd.	31	-
Fairey Aviation Co. Ltd.	17	-
Handley Page Ltd.	-	1
Armstrong Whitworth Aircraft Ltd.	1	-
Vickers Aircraft Ltd.	2	9
Supermarine Aviation Works Ltd.	-	4
Bristol Aeroplane Co. Ltd.	9	-
Westland Aircraft Works	14	-
Short Bros. Ltd.	-	1
Blackburn Aeroplane & Motor Co. Ltd.	-	4

Boulton & Paul Ltd. . . . .	-	1
Engines	Single	Multi
Designing Firm	Engined	Engined
Rolls-Royce Ltd. . . . .	30	4
Bristol Aeroplane Co. Ltd. . . . .	25	7
D. Napier & Son Ltd. . . . .	9	10
Armstrong Siddeley Motors, Ltd.	8	1

PART V.

The International Ring of Firms of Armament.  
Finance and of Raw Materials.

It is essential that the Royal Commission should have access to all agreements and other documents relative to the international associations of British armament firms. A list was given therefore of certain agreements between foreign firms or subsidiary companies and Imperial Chemical Industries Ltd., Vickers Ltd., Napiers Ltd., and the Bristol Aeroplane Co, respectively. Further it was suggested that agreements by the War Office with the Soley Armament Co. and B.S.A. Ltd. should be made available.

In reply to the statements made from time to time that there is no international armament ring today, particulars of the Steel Manufacturers Nickel Syndicate were given in detail as follows:-

Extract from the Annual Return of the Steel Manufacturers Nickel Syndicate Limited made up to the twenty-first day of October, 1914, showing the names, addresses and occupations of the shareholders, together with the number of shares held by each.

No. 71255/29.

Registered 119410, 25rd October 1914.

Rich, Herbert Elihu, Birkdale, Sherwood Park Road,  
Sutton. Accountant.

Thaine, Philip. Vickers House, Broadway, Westminster. Secretary.	1
Coffin, John Thomas, 3, Crockerton Road, Upper Tooting. Secretary	1
Robinson, James G. 16, East Sheen Avenue, East Sheen, S.W. Accountant.	1
Cammell Laird & Co. Ltd., Cyclops Works, Sheffield.	
Steel Manufacturers. . . . .	125
Vickers Limited, Vickers House, Broadway, Westminster.	
Steel Manufacturers. . . . .	125
Tressidder, C.M.G., Capt. Tolmie John, "Trefusis", College Road, Upper Norwood.	
Steel Manufacturers. . . . .	125
Sir W.G. Armstrong Whitworth & Co. Ltd., Elswick Works, Newcastle-on-Tyne.	
Steel Manufacturers. . . . .	125
Fried Krupp Aktiengesellschaft, Essen/Rhur, Germany.	
Steel Manufacturers. . . . .	125

Schneider & Cie. Le Creusot, France,	Steel Manufacturers.	...	125
Der Dillinger Huttenweke, Dillingen/Saar, Rheinpreussen,	Steel Manufacturers.	...	118
Societa Di Terni, 11, Piazza Venezia, Rome.	Steel Manufacturers.	...	125
Witkowitz-Berghau und) Witxkowitz, Austria.			
Eisenhutten Gewerkschaft)	Steel Manufacturers.	...	125
Compagnie des Forges de la Marine, St. Chamond, France.	Steel Manufacturers.	...	125
Compagnie des Forges de Chatillon Commentry,			
19, Rue de Rochefoucauld, Paris.	Steel Manufacturers.	...	125
Hadfields Ltd., Hecla Works, Sheffield.	Steel Manufacturers.	...	125
William Beardmore & Co. Ltd., Parkhead Forge, Glasgow.	Steel Manufacturers.	...	125
Osborn, Thomas George, 156, Erlanger Road, New Cross, S.E.	Private Secretary.		
Shields, John George, Vickers House, Broadway, Westminster.	Registrar.		
Tomlinson, Maurice, 34, Lynmouth Road, Fortis Green, N.	Cashier and Accountant.		

Extract from the Annual Return of the Steel Manufacturers Nickel Syndicate Limited, made up to the twenty-first day of March, 1935, showing the names, addresses and occupations of the shareholders, together with the number of shares hold by each.

No. 71255/56  
Registered 22<sup>nd</sup> March, 1935.

William Beadmore & Co. Ltd., Parkhead Steel Works, Glasgow.	Steel Manufacturers.	...	125
Bellwood, Charles Robson, "Cleveland", Abbotsleigh Road, Streatham, London, S.W.16.	Accountant.	...	1
Bishop, Charles Arthur (Lt. Colonel), 20, Challoner Mans. West Kensington. London, W.14. London			
Manager Thos. Firth & John Brown Ltd. and Director the Steel Manufacturers Nickel Syndicate Ltd.		...	125
Caswell, John Richard, 57, Lucien Road, Tooting Boc, London, S.W.17.	Commercial Clerk.	...	1
Chappell, Arthur Stanley, 20, Marham Gardens, Wandsworth Common, London, S.W.18.	Secretary, The Steel Manufacturers Nickel Syndicate Ltd.	...	369
La Cie des Forges de Chatillon, Commentry et Neuves-Maisons, 19, Rue de la Rochefoucauld, Paris, France.	Steel Manufacturers.	...	125
Durban, Alexander, "The Towers", Sandygate Road, Sheffield.	Director, English Steel Corporation Ltd. and the Steel Manufacturers Nickel Syndicate Ltd.	...	1
English Steel Corporation Ltd. , Vickers Works, Sheffield.	Steel Manufacturers.	...	124
Hadfields Limited, Hecla Works, Sheffield.	Steel Manufacturers.	...	125
La Cio des Forges et Aueries de la Marine Et d'Horccourt, 12, Rue de la Rochofoucauld, Paris, France.	Steel Manufacturers.	...	125

Menfort, Gaston, 106, Oxford Gardens, London, W.10. Managing Director "Afsa" Ltd., and Director The Steel Manufacturing Nickel Syndicate Ltd. . . .	1
Osborn, Thomas George, 120, Waller Road, New Cross, London, S.E.14. Company Secretary. . . .	1
Pritchett, Victor Frank George, "Tifty" Chestnut Avenue, Ewell, Surrey. Accountant. . . .	1
Scheider et Cio, 42 Rue d'Anjou, Paris, France. Steel Manufacturers . . .	124
Swann, Horace Edward, 38, Wiltshire Road, Brixton, London S.W.9. Commercial Clerk. . . .	1
"Terni" Societa for l'Industrias a l'Ellettricita, Via S. Giacoms di Carignazo 13, Genoa, Italy. Steel Manufacturers. . . .	125
Valentino, James Alexander Forsyth, 60 Sutherland Grove, Southfields, London, S.W.18. Assistant Secretary Vickers & Armstrong Ltd. . . .	1
Vickers-Armstrongs Ltd., Vickers House, Broadway, Westminster, London, S.W.1. Shipbuilders and Armament Manufacturers. . . .	? 240
Vickers, Douglas, "Chapel House" Charles Street, Berkely Square, London, W.1. Director, Vickers Ltd. and the Steel Manufacturers Nickel Syndicate Ld. . .	1
Young, James Reid, 6, Vincyard Hill Road, Wimbledon, London, S.W.19. Secretary, Vickers Limited and Director the Steel Manufacturers Nickels Syndicate. . . .	1

These documents prove, if any more proof were needed today, that the armament firms constitute an arms ring just as they did before the war. (For an explanation of these documents see Sir William Jowitt's remarks quoted on page 45 et seq.)

## PART VI.

### Government servants and the arms Industry.

One of the most serious abuses of private manufacture arises from the association of government officials and the arms industry. This association of government servants with the armament firms, both because the government is the only home market and because licences are required for the export market, is inherent in the system.

The knowledge possessed by government officials is plainly of great use to the arms industry, and it is a well-known fact that officials in the fighting services and in other administrative departments not infrequently pass on retirement, or before, into the service of those firms.

A list followed which gave the names of ex-Government servant working either as Directors or Technicians in the firms of Vickers Ltd., John Brown & Co. Ltd., The Fairfield Shipping and Engineering Co., J.S. White & Co. Ltd. Parsons Marine Steam Turbine Co., Birmingham Small Arms Co., Handley Page Ltd., Armstrong-Siddeley Development Co., Hadfields Ltd., Babcocks & Wilcox, Rolls Royce Ltd., D. Napier & Sons, General Aircraft Ltd., Boulton Paul Aircraft Ltd., Blackburn Aeroplane Co., Bristol Airplane Co., Fairey Aviation Co., Parnall Aircraft Ltd.

It was stated by the present Lord Chief Justice that it is not only necessary that justice should be done but that it should manifestly appear to be done. The Union of Democratic Control think that similar principles apply to this matter. When it is considered that the armament firms are dependent for business (either direct or by licensing) upon the British Government, it is surely most desirable that employment of an ex-government official by an armament firm should be made impossible.

A large number of Acts of Parliament dealing with interested parties serving in Parliament, on Local Authorities etc. have been passed to prevent any person being placed in a position in which his interest and his duty might conflict.

It is suggested that it is quite impossible to pretend that a government official is in that position if he is giving advice to the government on contracts with particular firms if he knows that at the end of his government service he may be offered employment by one of those firms.

It is not the least necessary to suggest or to prove corruption. It is sufficient to say that in public life opportunities for corruption are as far as possible prevented from arising and on this ground the U.D.C. suggests that if the Commission cannot recommend that the Armaments Industry should be taken out of private hands it should at least recommend that all government employees should as a matter of policy undertake never to take employment with any firm which has had government contracts or should forthwith resign his appointment upon any such contract being entered into.

This rule might well be general but in the case of the Armaments Trade having regard to the facts given in this part of the case and to the nature of that trade, there appears to be no answer to such a suggestion.

Then followed correspondence concerning the way in which the War Office recommended one of its officers for the firm of Jardine Engineering Corporation in China (the Sales Agents of Vickers) as a sales agent of arms and ammunition to the Chinese Government. (For the case of Lt. Cdr. Mayers see pages 46 and 47 of this summary).

A Statement concerning the TIMES correspondents who have acted simultaneously as Vickers Agents concluded Part VI.

PART VII.  
Present Arrangements in force in the United Kingdom  
Relative to the control of the Export Trade in  
Arms and Munitions of war.

The system at present in force is to require a licence for every consignment of arms exported. It must be pointed out that for the most deadly weapon – the aeroplane – there is an open general licence, issued for their export, the only exception being Abyssinia. This arrangement was based on a desire to foster the aeroplane industry even at the expense of the public interest both at home and in those many countries which import British aircraft.

This open general licence reveals an extraordinary gap in the British licensing system, and if aeroplanes are to be exported at all, they should come under a system of licensing. Further, in view of the convertibility of civil planes for military purposes, a similar licence should be imposed for civil aircraft.



With regard to all other licences, it is surely an axiom of an effective licensing system that all the statistics of export should be promptly and published. At the present time, they are not published except in reply to questions in the House Of Commons, which extract only incomplete information. Statistics showing the amount of goods exported and the countries of export are given in the three-monthly Board of Trade statistics, but this information is available only after the arms have left British ports.

Another example of the incompleteness of the present licensing system is indicated by the fact that the names of the firms never divulged. Sir J. Simon, on 7<sup>th</sup> December, 1931, stated with regard to export to China and Japan:-

“I should not in any event be prepared to divulge the names of the applicants for licences, which are always treated as confidential.”

Occasionally licences are refused, but incomplete information only is available in such refusals. During the four years 1930 – 1931, for example, 7 formal applications for licences to export arms were refused.

Those seven cases were described on the 9<sup>th</sup> May, 1934 in the following statement by Sir John Simon:-

“The consignees in the seven cases referred to were Government authorities in China (three cases) and in Brazil (two cases), a private individual in Austria, and a firm in Belgium. Various Departments are consulted before the issue of licences, and the decision to refuse a particular licence may be taken on the advice of any of those Departments.”

Assuming the private manufacture of and trade in arms, is it not enough to have prompt publication of detailed statistic for trade from the licensing of the order at the works final consignment to the receiving Government. There should be a License system which includes manufacture both state and private and this must be accompanied by an international organisation for the inspection of the industry on the spot in order to verify the returns which are made.

A system which demanded a licence for the manufacture, with full publicity and inspection would expose the accelerated arming of countries which invariably precedes a war. Thus, for example, the arming of Bolivia and Paraguay from 1928 onwards, when the dispute between Bolivia and Paraguay broke out, would have been known to the world before continuous warfare started in 1932. Similarly, the concentrated arming of China and Japan from 1929 onwards would have been exposed. It was little short of a farce to discuss an embargo, in the case of Bolivia and Paraguay in 1933, when the two countries were already fully equipped, and in the case of China and Japan when both countries were supplied.\*

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\*See page 38 – 39 of Summery for Sir William Jowitt’s statement.

The case of the Chaco is particularly notorious, as neither Bolivia nor Paraguay manufactured arms, aircraft or munitions. The war was therefore only possible because of the activities of arms manufacturers from the very countries which were supposed to be trying to stop the war. The prolonged delays in establishing an arms boycott and the leakages which continued afterwards across the Argentine and through the international rivers in South America, emphasise the need for a far more stringent licensing system, which is only possible if based on a state ownership and control of arms manufacture.

The licensing system is further incomplete as it does not include the export of chemical substances which are of military use only, and certain elements required for the manufacture of explosives.

But even these improvements in the British system do not remove the dangers inherent in the arms traffic. Nor do they remove the possibilities of British firms circumventing them. They do not prevent British firms manufacturing or finishing arms abroad and thus avoiding the licence system.

This manufacture abroad can take two forms:-

- ( 1 ) it can be done in direct subsidiaries of the home armaments firms, and
- ( 2 ) it can be done under licence in the works of foreign armament firms.

Further the licensing system does not cover, now indeed affect, the preliminaries to the placing of orders. Col. Colville admitted as much in a statement on 8<sup>th</sup> March 1933, when he said:-

“There is no regulation which requires arms manufactures and merchants to advise my Department immediately a foreign contract has been secured. The jurisdiction of the Board of Trade commences Only when application is made for an export licence.”

Another criticism of the present licensing system is that based on the fact that embargoes can and are in fact avoided in spite of it.

For example, an arms firm can sell to a third party, which can re-sell to the nations requiring arms. This happened in the case of Bolivia and Paraguay, although the British Government denied any knowledge of it.

Documents in the U:S:A: Arms Inquiry to light a number of such cases concerning China and Japan, Bolivia and Paraguay.

### Conclusion.

To summarise our criticism of the present system of licensing:-

- ( 1 ) It does not cover the export of aeroplanes.
- ( 2 ) It does not cover the export of chemical substances which are of military use only and certain elements required for the manufacture of explosives.
- ( 3 ) Information is only published after the arms have left British ports.
- ( 4 ) Information is inadequate. It does not give the names of the firms involved. It does not give particulars of cases where permits for licences are refused. It does

not cover manufacture nor the essential inspection which should accompany manufacture.

( 5 ) It does not prevent British firms manufacturing or finishing arms abroad and thus avoiding the licensing system.

( 6 ) It does not cover the preliminary unofficial inquiries made by prospective applicants.

Assuming the trade in arms, the following are essential reforms, but it must be stated that only the prohibition of the export of arms and munitions would remove the abuses inherent in such traffic:-

- ( 1 ) Publication of Licences.
- ( 2 ) Publicity for orders from state and private works.
- ( 3 ) Publicity for purchase by home and foreign governments.
- ( 4 ) Licences to manufacture and full publicity for such licences.

The suggestions for such proposals made during February 1935, were supported by all nations except Great Britain, Italy and Japan.

The Union of Democratic Control therefore hope that, as a contribution to removal of the present serious defects of the licensing system the Royal Commission will advise the British Government to support the aforementioned proposals.

#### PART V111.

##### The Practicability of the Prohibition of The Private Manufacture and Trade and The Institution of a State Monopoly.

The U.D.C. urge that quite apart from particular instances of inefficiency the system of private manufacture of arms inevitably gives rise to inefficiency. No suggestion for reforming these abuses can abolish these inherent tendencies. If they are to be avoided, the whole industry must be taken out of private hands.

It is not the function of the U.D.C. to make detailed proposals for producing An efficient war machine or to advocate nationalisation for that purpose. The U.D.C.'s objects do not include this object. It is the business of the U.D.C to demonstrate the widespread and inherent evils in the armament industry. The present system has been shown to give rise inevitably to inefficiency, corruption, secrecy and irresponsibility in national and international affairs, and finally plays a prominent part in fomenting war and national antagonisms.

Nevertheless, it has been thought advisable to give some indication of the general framework of nationalisation and control.

1. The Practicability of the Prohibition of the Private  
Manufacture and Trade in Heavy Arms and the Institution  
Of a State Monopoly.

It is plainly impossible without access to the documents and books both of the firms involved and of the government departments which deal with them, to put forward any detailed schemes of nationalisation. This is very much more the case when dealing with the heavy armaments industry, which has neither the trustified and monopolistic nature of the chemical industry nor the comparatively simple, though as yet un-coordinated units which characterise the aircraft industry.

The heavy armaments industry has already been described in some detail together with that of the main essential raw materials which are frequently under same control as that of the completed armaments. It has been shown that the firm of Vickers Ltd. dominates the industry and that this group is the centre of a complex group which has ramifications in this and in other countries, in firms producing raw materials and accessories, in banks and in other directions which give it a dominating influence.

Whilst in the chemical and aircraft industries the point was made that the plant used for producing commercial goods is capable, often with very little modification, of producing war goods, and that similarly in the aircraft industry, the same plant could be used for producing civil planes capable of use as military planes, and that aero engines could be used for either type of plane, in the heavy arm industry this interchangeability is rarely found. There is no peaceful use in a 16-inch gun and no one can pretend that a torpedo has any commercial utility.

The principle has already been adopted to a great extent of dividing the production of military arms from that of civil goods. Thus, in the Vickers group which, in view of its predominating importance, is in the memorandum taken as the basis for discussion, most of the railway wheel and axle business is done at Taylor Bros., armour plate production is centred at the River Don works, heavy castings at The Grimsthorpe Works, and tools at Openshaw. The forge departments at Darlington Forge, and Openshaw have been closed and forging operations centred at Sheffield, while the drop forgings works at Elswick and Attercliffe are being merged into one big department at the River Don works. The amalgamation of Vickers and Cammell Lairds railway interests took place under the Metropolitan Cammell Railway Wagon and Finance Co., and further move has been the formation of the Firth-Vickers Stainless Steel Co., absorbing the stainless steel business of Firth Browns and English Steel Corporation.

Arms which in the process of manufacture are produced separately from all commercial work from the time when the pig iron, scrap steel and alloy additions are charged in the steel melting furnaces, include the following:-

- (a) Armour plate for ships and tanks.
- (b) Armour piercing shell.
- (c) High explosive and shrapnel shell.
- (d) Air vessels for torpedoes.
- (e) Gun forgings.
- (f) Gun shields and barbets.
- (g) Communication tubes.
- (h) Castings for turbines, gun mountings, etc.
- (I) Ship castings.

Materials required for high explosive and shrapnel shell could be purchased

in bar or billet from outside sources and subsequent operations carried out in a government arsenal. But as far as the other articles are concerned, it is essential, owing to their size and their composition and the heat necessary, that they should be finished in the works where they are cast up to the final machinery stages at least. Thus, a separation of the manufacture of heavy arms from that of commercial steel goods, which is a practicable consideration, must assume the government's ownership and control of the steel works necessary for the manufacture of the war stores on numerated above.

The standard case will undoubtedly be put by the arms firms and possibly by the service departments associated with them that private manufacture is:-

- ( a ) essential for rapid expansion on the outbreak of war, and
- ( b ) more efficient.

With regard to ( a ) Dr. Addison has proved that on the basis of his experience during the last war, this is not true. Further, in his memorandum and in subsequent cross-examination he gave reasons why it was correct to assume that private firms would fail just as much in the event of another war to satisfy the requirements of expansion.

Dr. Addison also gave many illustrations of the inefficiency of private firms during the war period.

Representative examples are then given to show that the same inefficiency characterises the private industry today. Production of armament steel is taken as an example and discussed from the angles of works layouts, administration, material control, compromise in plant, general inefficiency, capital losses, budgeting and depreciation. The inefficiency and waste of a joint system of armament and commercial manufacture by private firms is demonstrated and it is maintained that a concentration of armament production under the control of the government is not only practicable but could be far more economical and efficient.

To sum up this statement of practicability regarding the heavy armaments industry:

The case of the heavy armaments industry differs from the other industries because it is the more closely linked with the oldest industrial factory system. While it has been clearly established in the review of this industry that on the technical side the heavy arms industry can be differentiated from the general body of industry, yet many of the works are very closely linked with engineering works. The works are scattered over a wide geographical area and associated with other sections, both for technical and financial reasons. The technical discussion given leaves no doubt that we can separate these sections. Therefore nationalisation of the armament section alone can occur. However, we are of the opinion that the complete nationalisation of the iron and steel industry is the only valid method of approach, because even if the armament section is nationalised, the position might arise in which this section dealing in highly specialised products would be under the control of a complete iron and steel trust which would be suppliers of the fundamental material for such products.

The type of control suggested must be safeguarded against such a state of affairs. This could be achieved by strict inspection of the books and works, etc., of the firms involved. The industry should be under the control of boards constituted as follows:-

- ( a ) Representatives from Government Departments concerned (technical,

administrative and financial);

( b ) Representatives of managerial and administrative sections from the works themselves.

( c ) Democratically elected worker representatives from the workshops involved.

( d ) Representatives of the ancillary non-military industries which are responsible for the raw material supplies.

The relations with research organisations must be carefully worked out for many reasons, but especially in order to see that military research is not carried out in the civil research or financed from the civil estimates, and also to prevent the type of technical inefficiency which is so prevalent in the privately controlled armament industry today.

This procedure would undoubtedly prevent the widespread corruption which been show to exist, increase the technical efficiency, and, as Dr. Addison has shown, reduce the financial cost to the country.

2. The Practicability of the Prohibition of he Private Manufacture of and Trade in Chemicals and Explosives and the Institution of a State Monopoly.

The problem of nationalisation as applied to the industry of chemical warfare, with its two main groups of poison gas and explosives, may be regarded as simpler than in the case of the aircraft industry and considerably simpler than in that of the heavy armaments industry. The industry of chemical warfare has been shown to be under the virtual control of one great combine, Imperial Chemical Industries Ltd.

But just as in the aircraft industry civil aircraft may be converted to military aircraft, and the same factories and technical equipment used for both, so in the chemical warfare and explosives industry, chemical factories especially dye-works and factories connected therewith, can be very quickly adapted to the manufacture of poison gases. In the dye-works many of the intermediates are themselves lethal chemicals, which are capable of immediate use in chemical warfare, whilst others are intermediates from which lethal substances can be readily prepared.

The problem is rather different when the manufacture of explosives by the chemical industry is to be considered. The plant used for the production of industrial explosives and sporting ammunition is already separated to a great extent from that which produces military ammunition. But it is nevertheless correct to say that the differences between the pacific and military uses of explosives (excepting as propellants) are so ill-defined that it is difficult to separate them.

The following groups would seem to the be the natural ones for the control of the chemical industry:-

( i ) Dyestuffs (for dyestuffs, related organics, synthetic rubber, etc.)

( i i ) Syntheses (for ammonia and ammonium compounds, coal, oil, cements and all high temperature/pressure syntheses).

( i i i ) Explosives (for industry and military explosives, nitrocellulose, cellodion, lacquers, etc.)

( i v ) General Chemicals (for alkalis, acid, bleach, chlorine, and related organics).

( v ) Non-ferrous metals (for copper and similar non-ferrous metal tubes, sheets, strip wire, etc., and ammunition casings). This group is debatably

- chemical, but is included because of common ownership.
- ( v i ) Miscellaneous division (for handling the production of final materials discovered by the industry, from the intermediates supplied by the other groups, if these final products require exceptionally different mechanism and organisation).

Such a series of groups would have to be co-ordinated both for sales and production facilities with the following:-

- ( i ) Gas Works and Coke Oven Plants.  
( i i ) Oil Industry.  
( i i i ) Fermentation Industry.  
( i v ) Soap Manufacture.  
( v ) Cellulose Industry.

The problem of the export market has to be considered certain complications produced by especially in view of/the essential interchangeability of certain products.

A total of 20.8% of high explosives and propellant manufacture is exported and 50.6 per cent of the military small arms ammunition was exported in 1930 as against 38.4 per cent in 1924. Over 60 per cent in value of the present explosives manufacture is for purely military purposes, and these supplies are the most profitable. The value of the explosives industry is not exactly known, but it may be assessed at about £20 million with a personnel of 9.000.

In the case of poison gas, there are certain poison gasses which have commercial uses and others none. the details of poison gases and explosives are tabulated below; and the minimum requirements for supervision of the industry are given.

Considerations that we have borne in mind are the reasonable technical division in type of process, and the favourably low capital costs of pur proposal at this dividing point:

It is proposed:-

- ( a ) That all explosives (excepting black gun-powder) whether for industrial or military purposes be manufactured by the State from the raw materials and intermediates supplied by the private chemical manufacturers.
- ( b ) That the licences for export of all raw or semi-finished materials likely to be used in the manufacture of explosives or poison gases be issued by the State. A schedule gives the details of these commodities.
- ( c ) That the private manufacture of certain poison gases be prohibited.

#### Basic Methods for the Control of the chemical Industry.

The dangers involved in the private manufacture of arms are of an order that would justify the state monopoly of manufacture, and consider that the insurance against these evils is not to be considered as involving high capital outlay.

In order of advisability of control we would place:-

- ( 1 ) Explosives.  
( 2 ) Poison gases.

( 3 ) Intermediates.

To cover these materials, we have shown that it is advisable to establish a rigid public and efficient control in the following industrial groups:-

- ( i ) Heavy chemicals.
- ( i i ) Dyestuffs.
- ( i i i ) Explosives.
- ( i v ) Portion “Fine Chemicals”.
- ( v ) Portion “Cellulose”.
- ( v i ) Portion “Portion “Paints and Varnishes”.

These schemes of segregation are incomplete, but it is claimed that they afford a working basis for a more complete investigation in which the services of expert panels would produce more detailed results.

The type of control which seems to us to be essential would consist of boards on which were represented the government officials, both technical administrative and financial, representatives of the technical, managerial and office (accountancy) staffs, and also representatives of the workers elected democratically by secret ballot in the factories. If the complete nationalisation is not accepted then representation would be given to the investor. These boards would be in all cases of four main classes, Co-ordination (for different products for various factories, e.g. intermediates) National, Regional and Factory. All the management of the nationalised industries to be subject to Parliament so that debate could occur and questions be asked with regard to its position and management.

3, The Practicability of a Prohibition of Private Manufacture of and Trade in Aircraft, and the Institution of a State Monopoly of such manufacture and trade.

The industry is of a type and at a stage of development where the problems are fewer than in the heavy armaments industry, for example. The factories are all purely aeronautical and they are mainly dependent on government orders excepting de Havilland and the very small firms. The problem of civil aircraft, however, and their convertibility to military aircraft raises special issues for the aircraft industry. The production of civil and military aircraft might well be separated, but in our opinion the case for abolition of private trade extends to the civil as well as the military section.

The problem of adaptability raises vital problems from the international point of view and more particularly would seem to indicate the doubtfulness of any solution of the problem independently of a scheme for the international control of aviation. Any trade in transport planes may be a virtual arms traffic. The private trade in civil planes may easily stimulate rivalry in air fleets, and in so far as civil aircraft have, or can easily be converted to have, real war value, the private trade would be indirectly working for a race in potential armaments. It is true that there is some difference of opinion on the question of the convertibility of civil to effective fighting aircraft. The transport plane is immediately useful for indiscriminate bombing of cities in cloudy weather or with an effective escort. It can also be used for staff work and other transport purposes. It is not very readily converted to a gun-protected bomber, but civil planes can be designed with conversion primarily in mind, and it would be difficult to check this. The Air Ministry has ordered aeroplanes in convertible forms, and firms are increasingly producing planes which can be converted. Recent aircraft company advertisements have openly stressed the fact that their civil



machines are convertible to war planes.

It is neither our duty nor, our wish to put forward a detailed scheme for the nationalisation of the Aircraft Industry, or for the international control of civil aviation which would seem an essential corollary. Such a scheme could only be worked out on the basis of complete information which could only be obtained by access to the books and documents of the Air Ministry and the industry.

#### Research and Technical Development.

It is suggested that two distinct research organisations are required. One should serve the particular purpose of air force development, and the other would conduct general and fundamental research and aim at the development of commercial and civil aviation. While the first organisation would not normally publish its results, all investigations by the latter must be fully published and their laboratories and experimental plants open to inspection at any time. Close contact with both designer and user is essential. It is suggested that some method of organisation is desirable which would bring together, in deciding on technical policy, the Air Staff and the chief of design, production and research, for any scheme to be successful. It must be based on the proper co-ordination of knowledge and ideas in the fields of research, design, production and operation. It is this co-ordination which is defective at the moment, as it must be when the work is divided amongst the parts of a competitive private trade and a public service.

#### Design.

This is an age of mass production, and with the advent of metal construction aircraft can and must be subjected to such a technique. Design and production by a variety of relatively small firms does not lend itself to such a development, and already signs are not lacking that, even without nationalisation, production will soon be concentrated in a few large firms or combines. This process of rationalisation which is impeded by the present policy of keeping the maximum numbers of firms floating by dealing out the contracts for experimental machines (with the doubtful object of providing for expansibility in an emergency) could be vastly expedited by immediate nationalisation.

#### Patents.

Some consideration must also be given to the problem of patents. The home market in purely aeronautical inventions ceases with the nationalisation of design, production and sale. It is suggested that an Inventions Exploitation Board might be instituted to receive and stimulate the development of useful ideas and to adjudicate upon the value and the appropriate award. Such a board could also deal with the problem of the present revenue from overseas in royalties which, under nationalisation, would be the property of the state. Under the present system patents are commonly taken out in the names of a specified person or persons (generally regarded as the real inventor/s) and the company for which he works. The company in these cases probably reaps the lion's share.

#### The Export Trade.

There remains the problem of the export market which is almost entirely confined to military aircraft. The arguments used for the export of military aircraft are:-

- ( 1 ) That we need exports to obtain the necessary imports, and aircraft contributes to the total we can sell in the world;
- ( 2 ) that the export trade in aircraft assists our aircraft industry to meet efficiently our needs for national defence –
  - ( a ) by increasing the volume of its production.
  - ( b ) by the stimulus of competition that it provides.
  - and
  - ( c ) by increasing the potentialities of expansion.
- ( 3 ) That some big power must equip small powers, unable to equip themselves, in a world which still finds national armaments needed.

As regards (1), the contribution made by aircraft to our total exports is very small and might be disregarded if the question at issue were confined to aircraft; but it is more likely to present itself in the form of the general trade in arms which involves a bigger figure, although apparently not very big.

As regards 2 (a), since the increase in the total volume of aircraft production due to exports, including the Dominions, is only about 20 per cent., the effect of exports outside the Empire must be small, and better results would be obtainable by a concentration of our production on a smaller number of units; it is the production per unit which is the important factor in production costs. It is argued elsewhere that this concentration would increase the efficiency of design.

The 20 per cent increase in production due to exports does, of course, yield a corresponding capacity for immediate expansion in emergency, the most real advantage accruing from exports; but this advantage is not of great moment in the light of the actual figures.

But the argument that export stimulates competition, when applied to military aircraft, is clearly specious, and special pleading, as we have shown elsewhere. For the designs exported are old designs which have been successfully applied to our own service use.

As regard (3) this is an argument which is mainly based on the requirements of vested interests in private industry. And it may be asked whose interests are served when the small powers have been so equipped. The point is really the same as the general problem of relationship of small nations to other forms of armaments. It is discussed most fully in the section dealing with international control.

To sum up, any possible advantages which may be gained by the export of military aircraft are easily outweighed by the evils which have occurred as the result of such traffic in international affairs.

### State Control.

It is maintained that the prohibition of private manufacture of and in aircraft, and the institution of state control of such manufacture and trade would result in progress in invention and development in the saving of expense and in the achievement of a greater standard of efficiency. Only under some scheme, of which we have indicated the main technical problems to be considered, can there be the necessary centralisation of research, design and construction which is so obviously lacking in the present system.

The basis of the type of state control which seems to us to be essential

would consist of boards on which are represented the government departments concerned (both technical, administrative and financial), representatives of the technical, managerial and office (accountancy) staffs of the industrial units concerned, and also representatives of the general body of workers in these units, elected democratically by secret ballot in the factories themselves. If the complete nationalisation of the aircraft industry is not accepted then representation would be given to the investors in these industrial units. These boards would fall into four categories, namely, National, Regional, Factory and Research. Particular care should be taken to work out the representation of the various industrial units on the research and of the co-ordination of research council's work with routine industrial work. All the council to be subject to the control of Parliament so that their development and management can be fully debated and discussed.

### Conclusions.

In summing up this Part VIII certain basic schemes have been outlined for the guidance of the Royal Commission in considering the problem of practicability.

If a British Government wishes to have an armament industry free from the inefficiency and abuses inherent in private manufacture, they can have it by taking over the industry, but the detailed methods are for the Commission or the Government to provide, although the U.D.C. would find no difficulty in presenting such a scheme if they felt that it was their function to do so.

Since the Royal Commission may not see its way to accept these views, the U.D.C. in order to assist it in its work has put forward certain modified systems of control which have been worked out in consultation with technical experts. The approach may be summarised as follows:-

(1) Nationalisation of the Arms Industry.

- (a) Heavy Arms.
- (b) Chemicals and Explosives.
- (c) Aircraft.

Such nationalisation would have to be supplemented by control of the sources of raw materials, e.g. iron, nickel,

(2) Nationalisation of the Armaments Sections of the Respective Industries.

The problem of separation of the production and process from normal industrial work has been dealt with and it has been shown that the technical problems involved can be overcome.

(3) Control through Licensing, Inspection and Publicity.

If the industry is still left in private hands, it is possible to increase control by the following means:-

- (a) Improvement in the licensing system already specified in Part VIII.
- (b) Financial inspection and control.
- (c) Separation of the financial arrangements for war and civil research with full publicity.
- (d) Inspection and control internally by democratically elected workers in the firms concerned.
- (e) International inspection and control.

There is no remedy for these evils unless the whole industry is taken out of private hands. The abuses are inherent in the system itself. It is not the function of the

U.D.C. to provide a detailed scheme of nationalisation, but we believe that the evidence we have produced relating to the chemical, aircraft and heavy armaments industries gives some useful indications of the lines upon which a scheme of nationalisation might proceed. Our inquiries leave us no doubt that the technical difficulties of nationalising can be overcome if the Government wishes to nationalise. That the need is urgent that is no other way of removing the abuses of the present system we believe to be clearly and finally established.

Extract from speech by  
The Rt.Hon. Sir William Jowitt, K.C.,P.C.  
in presenting the proceeding evidence.

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The Steel Manufacturer's Syndicate (see pages 25 – 28).

The nickel situation is remarkable. There was founded in, I think, 1901, a company called the Steel Manufacturers' Nickel Syndicate. Its object, as expressed in its Memorandum and Articles, was to secure that prompt and satisfactory supplies of nickel should be available to all its members. The exact words are: "The object of the Company is the purchase and distribution among members of, inter alia, nickel cobalt and other ores"; and the Memorandum of Association provides for the distribution of assets in the form of specie. The original Directors were a gentleman called Sigmund Loewe, a Director of Krupps – he is returned in Somerset House only as a Director of Vickers – and Captain Tresidder, and Mr. Clark, and Mr. Noble, of Armstrong, and Mr. Boardmore of William Boardmore, Limited. (x) In the year 1914 at or shortly after the outbreak of war, its members were as follows; they are stated on page 32 of our case. Apart from various clerks who hold one share, and whom I will leave out and group with the main holders, you will see that the fifth name down is that of Cammell, Laird & Company. They are English; Vickers Ltd., are English; Tresidder is described as a steel manufacturer, but was Managing Director of John Brown and Armstrong-Whitworth; and then I will leave out some, if you will allow me to do so, until we come to Hadfields and Boardmore. There are six well-known English firms there, each of them with 125 shares. Then the Germans and French, who are also members, had an equal number of shares. The Germans you will see just under Armstrong-Whitworths. They are Fried Krupp Aktiengesellschaft, with 125 shares, then leaving out the next one. Der Dillinger Huttenwerke, with 118 shares, with a nominee which brings them up to 125 shares, and then there is one other German or Austrian firm, Witkowitz-Bergbau und Eisenhütten Gewerkschaft, Austrian steel manufacturers, with 125 shares. The French had a corresponding number; The Schneider Company, 125 shares; the Company des Ferges de la Marine, 125 shares; and the Compagnie des Ferges de Chatillon, 125 shares. So that the English on the one hand and the French and Germans on the other hand exactly balance; and the balance of the shares was held by an Italian Company, whose name you will find, the Societa Di Terni, of Rome, who, as I have said, are a company in which Vickers had, and I believe have, a substantial though not a controlling interest.

That was the position, you will see, at the 23<sup>rd</sup> October of 1914. The present position of the Company is worth looking at the moment, because it leads to obvious scope for inquiry. On the following page of the statement of evidence I would call your attention to this. First of all you will see the last three names, 248 shares, 1 share, (x) pages 25 – 28 of this Summery.

and 1 share; that is 250 shares. They obviously represent the old Vickers and Armstrong Whitworth. They each had 125 shares before, and now they have 250 shares between them. The first name is Boardmore again, and he has still got the 125 shares. The third name is Bishop. He represents what Tresidder did in the old thing; he has got his 125 shares as a nominee, of course. Then the English Steel Corporation, they are the same now as Cammell, Laird, in the changes that have been made; the English Steel Corporation have taken over Cammell Laird's interest; and Hadfields are still there. The three French firms are still there, the Ferges de Chatillon, the Forges de la Marine, and Schneider are still there. Terni, the Italian firm, have still got theirs, but the 369 shares which were previously hold by the Germans are now hold by Mr. Arthur Stanley Chappell, of 20, Marham Gardens, Wandsworth Common, S.W.18. He is Secretary of the Steel Manufacturers' Nickel Syndicate. Ltd., and that with the odd ones makes up the 375 shares originally hold, and it is obvious he is a nominee shareholder for somebody. At the moment we have no means of finding out what the holding is there; but the continuance of this Company shows, as we argue, certainly that at the outbreak of war, all the main arms manufacturers of the world were at any rate united together to make suitable arrangements to buy nickel and provide nickel for its various members. Today, in 1935, at the present time, the German shareholding has dropped out, and the Secretary of the Company holds what were the German firms' shares, no doubt in the interest of somebody. Who that somebody is I have no idea, and you may think it proper to make inquiries as to it.

Thus these arms manufacturers of the heavy arms trade are very closely linked together, and closely linked together not nearly nationally but internationally, indeed, they have all the outward signs and symbols of what we call an arms ring.

The case of Lt. Cdr. Mayers (See page 29).

Sir William Jowitt stated in his speech (x) :-

Any system which allows a man to be placed in a position where his duty and his interests may conflict is a bad system, and for that reason we call your attention to this state of affairs, and we say it is very undesirable that it should continue to exist, and we say that in certain cases it has given rise to trouble.

In that connection the case of Mayers has been quoted frequently. You will remember the position there. There was a man who had no corrupt motive. He has found guilty, but merely bound over. He had left his position, and he had taken with him certain documents which he had – plans – which he had in his possession as a government servant, and had taken them over with him when he was transferred to his new post in an armament firm. The matter has been dealt with in the American Inquiry, in Part I of the Proceedings, and this evidence is relating to an Englishman, and therefore is not subject to any bar under your ruling. It is Exhibit No. 172 (x) at page 438 of Part I.

Commander Craven is writing to Mr. Spear:-

“My dear Spear: I have purposely not written to you about Mayers because I thought it only fair and right that I should not do so until after the result of his trial. He appears at the Old Bailey next week and all I can tell you is that this case will be tried in Camera and that the change is a serious one.

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(x) Dated April 20, 1927

“ I have very definite assurances from Lord Beatty, from the Director of Naval Intelligence at the Admiralty, and from the Chief of staff of the Submarine Service (who was largely responsible for my taking Mayers on) that Vickers can in no way be implicated. Even when the trial is over I do not think I shall be able to let you know the whole story until we meet, which I hope will be before long.”

Then in the next Exhibit, No. 173:- (xx)

“My dear Spear: For your private information, Mayers has called me for the defence. I told the Admiralty I was afraid he would do so if they did not call me for the prosecution. However it will give the prosecution a chance of getting out of me exactly why I engaged Mayers, and I have so far received definite confirmation from Lord Beatty that, in taking Mayers, Vickers acted in the interests of the Admiralty and they apologize for the trouble they have landed us into.

“Lieut. Commander Cumming, who is a submarine officer of considerable standing has recently joined my staff.”

That is a case of a man definitely placed, by direct transference from government service to private service, in a difficult position in which he certainly made what the judge trying the case described as a serious error of judgment. But we ask you to say that these young man should not be put in a position where they can make serious errors of judgment of that sort.

Exports of Arms and Munitions (see page 31).

In this connection Sir William Jowitt said:- (x)

I have, and I think the Commissioners have, figures for the amount of arms and stores exported from Great Britain, and I have taken out the four countries which during the Disarmament Conference have been at war, China and Japan, and Bolivia and Paraguay.

Chairman: Were are you in fact taking these figures from?

Sir William Jowitt: These are official Board of Trade figures. To China in 1929 the export were £32,700 and by 1933 the last figure I have get, they have gone up to £223,524. The figures for Japan in 1929 were £129,696, and in 1933 £185,871. It seems that our largest export to Japan went in 1932 because we went up there to £321,801. In Bolivia in these years we were down as low as £26,466, but in 1933 we moved up to £331,666; and in Paraguay in the course of these five years we were as low as £437 in 1929, and we moved up in 1933 to £87,486.

There is not a shadow of doubt that quantities of military ammunition exported from Great Britain have vastly increased. If you take the number of cartridges, we did not export any in 1929, 1930 or 1931; but in 1932 we exported 500,000 and in 1933 we exported 15,850,000 loaded cartridges. That is to Paraguay. To China we exported in 1929 as low as 393,000 and in 1933 it has risen to 33,202,500. So that it is obvious we are exporting very large quantities to these countries and if you ask, as you no doubt will do, for another Board of Trade document, a Consular Report, you will find this statement in Document 27234 of 1932, dealing with Paraguay's foreign trade

for the first six months of 1933. After setting out the figures it says: “It is unlikely that any war material is included in this total, as these are frequently brought into the country secretly, being landed at various places along the river, and have not consequently passed through the Customs House.”

So that in considering the official Paraguay returns you must remember that these things as a rule not pass through the Customs House in the ordinary way, and the fact remains that it appears that that is an illustration of the way that goods may come into Paraguay, although they are consigned, let us say quite honestly, to a purchaser in Montevideo or Uruguay who makes arrangements to run the guns through, or pass them through to Paraguay.

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