experimental quantities not exceeding one dozen (Appendix 6, Section II, paragraph (7)). A similar provision governed British Luma under its patent licence (Appendix 11). The effect of these provisions is that members of E.L.M.A. may not compete with each other by the production of different kinds of lamps without the consent of E.L.M.A. In addition, "Advertisements must not indicate that any individual make of Association lamp possesses any advantage over or is better than another" (Appendix 6, Section II, paragraph (9)), but numerous advertisements implying the superiority of particular brands are in fact widely used by E.L.M.A. members.

CHAPTER 10: LAMP COMPONENTS

134. The principal semi-manufactured components used in the making of lamps are listed in paragraph 6 and more fully described in Appendix 2. Before the 1914–18 war British manufacturers were largely dependent for their supplies of components on imports or, in the case of glass bulbs, on mouth-blown production. Between 1918 and 1939 members of E.L.M.A. developed the manufacture of components on a considerable scale. The British patent rights for the Westlake bulb-blowing machine, which originated in the United States, were acquired by a company sponsored by some of the members; and in 1919 G.E.C. and B.T.H. began to produce machine-blown bulbs in their respective glassworks under licence from that company.* In 1925 the same two E.L.M.A. members jointly promoted a company, Lamp Caps Ltd., to undertake the manufacture of caps. G.E.C. and B.T.H. also produced tubing and rod in their glass works, and they and other E.L.M.A. members greatly developed their wire-drawing capacity. The non-E.L.M.A. manufacturers did not develop the manufacture of components to any extent.

135. By 1939 the E.L.M.A. members were jointly almost self-sufficient. The producing companies sold very little to non-members, and Independent Manufacturers relied on imports, mainly from Europe. Primarily as the result of war conditions, the position has since radically changed. When in 1939 it became necessary to reduce imports, E.L.M.A. told the Board of Trade that as regards lamp components its members were "probably in a position to meet the whole requirements of the country from British sources". In 1940 imports from Europe ceased entirely, and during the war years, accordingly, the Independent Manufacturers became almost completely dependent on the E.L.M.A. members for their supplies of lamp components. From 1942 to 1945 the supply of lamp components and in particular glass bulbs and tungsten and molybdenum wire was controlled by the Government and there was an allocation system among all lamp manufacturers.† Although restrictions on imports have now been greatly relaxed, we are told that the prices of such components as are available from abroad are in some cases higher than E.L.M.A.'s prices and that the quality is not always satisfactory: there are some independent sources of certain components in the United Kingdom (see paragraph 142) but the Independent Manufacturers continue to depend very largely on E.L.M.A. members. One independent component manufacturer has suggested that this may be because E.L.M.A. members make the supply of one component conditional upon the purchase of another. We have found no evidence to support this view and consider that the sales of the component manufacturer concerned have been affected rather by the change in ownership of two former customers who, as Controlled Companies, can now buy their components from E.L.M.A. members at preferential terms (see paragraph 139).

* We are told by E.L.M.A. that all patents on the Westlake machine had expired by 1932.

† The allocation of tungsten wire and glass bulbs was subsequently resumed. Allocation of tungsten finally ended in 1948: the scheme for bulb allocation is nominally still in existence.

136. Many components of filament lamps were formerly covered by patents. In the patent agreement, made in 1921, between the two principal component-manufacturing members of E.L.M.A., G.E.C. and B.T.H., it was provided that the two companies should not sell patented components, other than glass, except to licensees: there was to be an agreed price for the sale of tungsten wire to licensees.

137. The Phoebus Agreement, which came into effect in 1925, contained a provision prohibiting the parties from giving " aid " directly or indirectly to manufacturers who did not share " the burdens and obligations " of the agreement (see Appendix 8, Article 12 (B)). The application of this provision to the supply of components was the subject of much discussion. The Phoebus organisation regarded the control of lamp components generally as one means of joint attack on the so-called " outsider " ; the parties therefore sought, first, to gain control of independent sources of supply of components by acquiring them or making agreements with the owners and, secondly, to prohibit or limit the supply of components by the parties to non-parties. The first part of this policy, although pursued from time to time over a number of years, appears not to have been particularly successful: we have no evidence that it was applied within the United Kingdom itself, but agreements made by the Phoebus organisation with some continental suppliers of components may have had some small effect on British independent manufacturers who relied on imported components. As regards the second part of the policy, at one time the British Group submitted a draft resolution declaring that the supply of lamp parts to independent manufacturers was totally prohibited by the Phoebus Agreement. The draft resolution was not adopted but in 1937 a resolution was adopted placing an embargo on the sale of certain components except to the parties and their licensees ; in general these were components for which no competitive source of supply was thought to exist, including electrodes, certain kinds of bulbs (particularly inside-frosted bulbs*), certain gases and tungsten wire. Components which were not prohibited could be sold to any independent manufacturer, provided a price was agreed by the parties who were trading in the territory where the independent manufacturer made lamps.

138. This policy of the Phoebus organisation was reflected in the patent licences granted by G.E.C., B.T.H. and Siemens before the war. Aurora, B.E.L.L. and British Luma, as licensees, undertook not to supply any lamp parts, whether patented or not, to manufacturers not approved by the licensors† : in the patent licence to Crompton the undertaking not to supply was confined to filaments and tungsten wire but was afterwards extended to cover fluorescent powders. B.E.L.L. moreover, undertook not to make filaments.

139. This exclusive policy was not continued during the war, although the Phoebus resolution of 1937 was maintained and renewed annually, with modifications, by the parties to the New General Agreement of 1941 until 1946 when it was allowed to expire.‡ We are informed that the E.L.M.A. members consider the supply of lamp components to non-members to be governed by Article 12 of the 1948 Lamp Agreement, which is substantially similar to the provision in the Phoebus Agreement prohibiting aid to non-parties (see Appendix 9, Article 12). There is no formal resolution on the subject, but we are

* Inside-frosting is the method normally used for making pearl bulbs and at that time was protected by patents—see paragraph 75.

† For the provision in British Luma's licence, see Appendix 11.

‡ The prohibition on supply of inside-frosted bulbs had been withdrawn for some countries (but not the United Kingdom) in 1938. During the war it was provided that any party who was required by the British Government to deliver tungsten wire to a non-party should report to the Wire Committee of the parties which would decide the price.

told that the accepted interpretation is that bulbs, glass tubing and rod, caps, wire (on reels) and electrodes may be supplied without infringing that article; on the other hand members will not supply filaments except to fellow-members and licensees, and the same is true of fluorescent powders, the supply of which is still covered by the patent agreements between the members. The members continue the Phoebus policy of fixing common prices for the sale of such components as may be sold to any lamp manufacturer, but there are for most components different common prices for sale to (i) fellow-members, (ii) the Controlled Companies, (iii) British Luma and (iv) other Independent Manufacturers. In Appendix 15 (Table 4) we compare the prices for the main components on sale to these various groups of manufacturers, as submitted to us by E.L.M.A. in March, 1950. It will be seen that the Controlled Companies and British Luma normally enjoy a price advantage over the members, who in turn get rather better terms than the Independent Manufacturers (other than British Luma).

140. In justification of past and present policy, in so far as it has been and is exclusive, E.L.M.A. has said that "materials and components necessarily involved, particularly in the early days, 'know-how' and technique of lamp manufacture"; and the members see no reason why they should be expected, as a matter of course, to supply their competitors with pre-fabricated components. They contend, accordingly, that they have now gone far beyond what might be expected of them, in that they withhold only those components which embody vital techniques to a very substantial degree. They say, as regards the price differentials, that the additional cost for the Independent Manufacturer is only about one tenth of a penny per lamp.

141. It has been said to us by some Independent Manufacturers that it has been the policy of the E.L.M.A. members to hamper the trade of their independent competitors either by withholding supplies of essential components, particularly bulbs and caps, or by delivering the wrong types, particularly the wrong size of bulbs. Many, although not all, of these complaints relate to the period during and immediately after the war when the supply of materials was generally difficult*; the documentary evidence submitted to us confirmed that deliveries were in arrears or in some cases that the supplies delivered were not of the type ordered; it failed to support the contention that these conditions resulted from any deliberate policy on the part of the E.L.M.A. members concerned. It may be mentioned that a similar comment regarding the delivery of the wrong types of bulbs under the Ministry of Supply's bulb allocation scheme has been made by one of the Controlled Companies, while in 1941 the representative of one E.L.M.A. member complained that materials were being supplied to Independent Manufacturers to the detriment of E.L.M.A. members.† Although most of the complaints relate to the past rather than the present, Independent Manufacturers have repeatedly expressed to us uneasiness at their dependence on E.L.M.A. members for supplies of components, and particularly of glass.

142. There is some independent production of tungsten and molybdenum in the United Kingdom and a subsidiary of Thorn makes lamp caps, while presumably there is potential competition with E.L.M.A. members in the production of tubing and rod from the general glass industry (see paragraph 144). The production of machine-made glass bulbs (other than miniature bulbs) on the other hand is virtually a monopoly of G.E.C. and B.T.H. who, working in close co-operation, have been producing about 200 million

* There has been some renewal of these complaints recently, coinciding with the renewed scarcity of raw materials.

† It was explained to him by the Chairman of E.L.M.A. that this was largely due to meeting Government wishes.

machine-made bulbs a year. This quantity has not always been sufficient to meet all demands, and G.E.C. and B.T.H. have now jointly promoted a company, Glass Bulbs Ltd., to operate two Corning Ribbon machines of a kind which has for some time been in general use in the United States. The output of these two machines when in full operation* is estimated at 450 million bulbs a year. The potential output of these machines, together with such Westlake and Ohio machines as may be retained for making special types of bulbs, is thus far in excess of the present requirements of the United Kingdom lamp industry and should be fully adequate for some time to come.† A possible saving of the order of 15 per cent. to 20 per cent. in the cost of production of bulbs has been mentioned by E.L.M.A., subject to uncertainties about the cost of installing the new factory and plant and to full capacity working.

143. As will be seen from Appendix 15 (Table 4), E.L.M.A. members at present sell clear bulbs to Independent Manufacturers at the same price as to members but they charge a higher price for pearl bulbs. The proprietors of Glass Bulbs Ltd., G.E.C. and B.T.H., recognise that their monopoly control of the production of machine-made glass bulbs involves special responsibilities. In 1947, they gave undertakings to the Ministry of Supply to supply bulbs produced by the new plant to all lamp manufacturers " without discrimination ". At our suggestion Glass Bulbs Ltd. has recently written to the Ministry to clarify its intentions as to selling prices. We reproduce the letter at Appendix 12 ; it will be seen that the company proposes to sell bulbs made on the new machines at preferential prices to its proprietors and to the Controlled Companies, but that there is to be no difference in the prices charged to other manufacturers, that is to say the remaining members of E.L.M.A. and the Independent Manufacturers, including British Luma.

144. In addition to the complaints concerning the supply of components which we have considered above, it was alleged during the debates on the Monopolies and Restrictive Practices (Inquiry and Control) Bill that E.L.M.A. had " persuaded the glass industry to keep out of the manufacture of electric lamp bulbs and glass tubing for other manufacturers ".‡ Both E.L.M.A. and those of its members who make glass have denied that this allegation has any truth and say that on the contrary they have given technical assistance and advice to members of the glass industry wishing to manufacture cathode ray tubes and tubes for fluorescent lamps. They point out that in fact two independent concerns, including one of those to whom they have given technical assistance, are at present making tubes for fluorescent lamps. We have ourselves seen no evidence to support the allegation: we note only that an approach was made by G.E.C. and B.T.H. to dissuade C.W.S. from laying down plant for the production of tubing for fluorescent lamps on the ground that existing capacity in the United Kingdom for the manufacture of tubing was sufficient to meet all demands: the E.L.M.A. members offered instead to meet the requirements of C.W.S. from their own production on very favourable terms. The special circumstances which have left the machine production of glass bulbs entirely in the hands of E.L.M.A. members have already been described. As regards the tubing and rod which are used to make some of the internal parts of both filament and discharge lamps we have not seen evidence that any approach has been made to any general glass-maker by any Independent Manufacturer of lamps.

* It is understood that at the present time (June, 1951) only one machine is installed and in production.

† Both the old machines and the new Ribbon machines can be used for making other articles, including bulbs for radio valves. The figure of 200 million mentioned above is a rough estimate of production in recent years of bulbs for lamps: it is understood that about 50 million other articles have been produced with the concurrence of the Government. The figure of 450 million on the other hand is a rough estimate of the potential annual output of all articles by the two Ribbon machines.

‡ Official Report, Vol. 449, No. 105, Col. 2058.