

more than doubled its production of standard cable, to a rate of 22 m. yards a year, and also introduced new products based on mineral insulated cable principles. The year 1956 was BICC's first full year of commercial production of mineral insulated cable ; in the first six months of 1966 sales of standard cable were at the rate of 24.5 m. yards a year. The introduction of 250 volt cable in 1964 and variations in the proportions of the different types of cables sold between one year and another and between the two companies make exact comparison difficult but there can be no doubt about the general trend in growth since 1946. In Appendix 2 we show in the form of a graph the volume outputs of standard cable in the period 1956-66 ; for this purpose we have aggregated the figures of Pyrotex and BICC, but have disregarded Glywed's.

21. Exports from this country were worth about £1½ m. in 1966, and in addition a substantial quantity of mineral insulated cable is manufactured overseas. Pyrotex subsidiary or associated companies manufacture in Australia, Canada and India. Manufacture by domestic companies is carried on to a lesser extent in France, Italy and USA, and BICC has recently sold manufacturing machinery to the USSR.

CHAPTER 2

Pyrotex Ltd.

Origins and development

22. Pyrotex Ltd. was incorporated in England as a private company under the name of P.T. Finance Trust Ltd. on 15th April 1936. The name of the company was changed on 31st March 1937 to Pyrotex Ltd., and on 28th July 1954 the company became a public company.

23. The company was formed for the purpose of manufacturing mineral insulated copper covered cable by a process which had originally been developed in France by the Société Alsacienne de Constructions Mécaniques, from whom Pyrotex had acquired exclusive patent rights for the manufacture and sale of mineral insulated cable in the United Kingdom and other parts of the British Commonwealth.

24. In 1937, with the initial assistance of the French experience, the company established a manufacturing plant at Hebburn-on-Tyne, and production of mineral insulated cable began there in the same year. The company says that demand grew rapidly, and that after the war substantial extensions were made to the Hebburn factory based on a completely new layout and incorporating much new plant and equipment. By 1951, when some of the original patents had expired, the company had developed an entirely new production process, which not only reduced direct production costs but also contributed considerably to increased production capacity at the Hebburn factory. In 1960 Pyrotex purchased an additional factory site and premises at Hebburn and transferred there some of the cable production and development work previously carried out in the main factory. In 1964-65, as a result of competition from BICC, Pyrotex began to diversify. Separate and independent manufacturing facilities were established

in this factory for stainless steel sheathed cable for thermo-electric and high temperature heating applications, and also for mineral insulated thermocouples designed for use in nuclear power stations.

25. In 1964, partly because of rising and unstable copper prices, which because of its large copper content affected mineral insulated cable more than other cables, the production of aluminium mineral insulated cable was established at a factory near Slough.

26. Much of Pyrotenax's requirements of the accessories required for mineral insulated cable are not manufactured by Pyrotenax, but are purchased from a number of sources. However, about half of the metal accessories are manufactured by Currie & Warner Ltd., of Birmingham, which in April 1966 became a wholly-owned subsidiary of Pyrotenax.

Overseas interests

27. *Canada.* A wholly-owned trading subsidiary (Pyrotenax of Canada Ltd.) was formed in Canada in 1949 for the distribution of mineral insulated cable there. Demand for mineral insulated cable in Canada grew, and in 1954 the Canadian subsidiary established its own manufacturing unit in Ontario.

28. *Australia.* In Australia a subsidiary company was formed in 1955 in association with the parent company's agents in order to distribute mineral insulated cable there. In 1958 a factory was established by another subsidiary in Victoria to undertake the manufacture of Pyrotenax products in Australia for the Australian market. Recently the group's interests in Australia were reorganised, and now consist of two companies with common top management. These are Pyrotenax (Holdings) Pty. Ltd., which is a wholly-owned subsidiary of the British parent company, and Pyrotenax Australia Pty. Ltd., the operating company, which is a wholly-owned subsidiary of Pyrotenax (Holdings). The group's factory in Victoria is the sole producer of mineral insulated cable in Australia, and branches for its distribution have been set up throughout Australia.

29. *New Zealand.* In 1955 the parent company obtained a substantial shareholding in Giles & Elliott Ltd. of Wellington, New Zealand, who had been sole agents and distributors of Pyrotenax products since 1946. In 1966 the company's shareholding in Giles & Elliott was increased to 37 per cent.

30. *India.* An Indian registered company, Pyrotenax India Ltd., was incorporated in July 1962, with the British parent company holding 50 per cent. of the issued capital. A factory was built near Poona and equipped with British machinery to manufacture aluminium sheathed mineral insulated cable. Production in this factory started in 1965.

31. *USA.* Pyrotenax has licensing arrangements with the General Cable Corporation and with Edwin L. Wiegand Co. of Pittsburg for the production of Pyrotenax products in the United States. These arrangements are due to expire in February 1968. The agreement with Edwin L. Wiegand Co. provides that upon its termination Pyrotenax and Wiegand will consider setting up a joint manufacturing unit in the USA if the market prospects appear

to justify it. Wiegand also has an agency agreement with Pyrotenax of Canada under which it sells the Canadian product in the USA pending the setting up of such a manufacturing unit.

32. *Italy.* In 1961 the company completed an agreement, jointly with the two original French licensors, for manufacture and marketing of Pyrotenax products in Italy, for a term of twelve years.

Capital structure

33. At 18th November 1966 (the date of the offer by BICC) the issued capital of Pyrotenax was £1,556,321, of which £1,541,634 was in ordinary stock and £14,687 in 'A' shares (which have since been converted into ordinary stock). At 30th September 1966 the ordinary stock was held as follows :

	£	£	%
ICI Group			
Midland Bank Nominees Ltd. ...	143,750		
Imperial Chemicals Insurance Ltd. ...	124,999		
	<hr/>	268,749	17·3
A. Reyrolle & Co. Ltd.		146,724	9·6
Société Alsacienne de Constructions Mécaniques		72,139	4·7
		<hr/>	<hr/>
		487,612	31·6
Other stockholders		1,054,022	68·4
		<hr/>	<hr/>
		1,541,634	100·0
		<hr/>	<hr/>

An issue of £500,000 debenture stock was made in the second half of 1966, shortly before the merger with BICC was first considered, partly for the purpose of providing immediate working capital and partly for extending production facilities for aluminium mineral insulated cable and for a new central warehouse.

Purchases

34. The principal material purchased by the company is the copper used for both the conductors and the sheath of most mineral insulated cables. Before the merger the company obtained the greater part of its requirements of copper rod from Imperial Metal Industries Ltd., a subsidiary of ICI, and all its copper tubes from Yorkshire Imperial Metals Ltd. (YIM), in which ICI has a 50 per cent. interest. The balance of its rod requirements was obtained from Enfield Rolling Mills Ltd. (a subsidiary of Delta Metal Co. Ltd.) and Thomas Bolton & Sons Ltd. (a subsidiary of BICC). The method of purchasing tubes was this. Pyrotenax instructed YIM to book specific weights of copper at firm prices, and the copper was then held by YIM until it was called for by Pyrotenax. It was then delivered to Pyrotenax in the form of tubes, the conversion into this form having been done by YIM. The cost of the tubes to Pyrotenax was, therefore, a combination of the original cost of the copper and the cost of conversion. Five different sizes of tubes were purchased and the conversion cost varied from size to size. During

the first six months of 1966 the conversion cost of tubes ranged from £131 to £144 per ton with an average cost of about £135 per ton. Pyrotenax told us that it had for some time been dissatisfied with the price it had been paying to YIM for tubes and that it had been seeking a reduction or an alternative source of supply. It said, however, that it was limited in the latter objective by the fact that the two major alternative suppliers were already competitors in the manufacture of mineral insulated cable.

Distribution and sales

35. From the beginning Pyrotenax followed a policy of selling as far as possible direct to users and to electrical contractors. Mineral insulated cable was new to electrical contractors and the company believed that its selling efforts should be directed to the men who would actually handle the cable. For this reason Pyrotenax did not originally rely on wholesalers for the distribution of its cable. However, when the trade had become sufficiently familiar with its products, Pyrotenax in the year 1945-46 appointed wholesalers carrying stocks throughout the country, and later, when competition from BICC began to be felt, the company found it desirable to strengthen its distribution arrangements by setting up its own depots in the main industrial centres.

36. In the United Kingdom Pyrotenax now has a considerable sales force in addition to the ninety-four persons engaged in the Central Sales Department at Hebburn, and maintains nine branch offices and seventeen storage depots, employing a staff of 118, and carrying stocks of cable and accessories. At the majority of these branches and depots and at the works at Hebburn technical staff are available to advise all types of customer; in addition the company offers training facilities in the use and installation of mineral insulated cable to contractors and their staffs. In the year ended 31st March 1966 the cost of the outside sales activity, including the sales force and the operating costs of branches and depots, amounted to some £216,000. Overseas, the company states that during the past five years it has attempted 'marketing and sales coverage on a world-wide basis'. It has branches or agents in over forty countries throughout the world.

37. During the five and a half years ended in October 1966 the value of sales of goods manufactured in the United Kingdom (after deducting trade discounts and rebates but before deducting settlement discounts—see paragraphs 78 to 86) was :

Year ended	Total	Home	£'000
			Export
31st March			
1962	3,445	2,835	610
1963	3,394	2,848	546
1964	3,685	3,148	537
1965	4,170	3,491	679
1966	4,512	3,803	709
6 months to 1st October 1966 ⁽¹⁾	2,305	1,876	429

(1) The figures for this period include the sales of a subsidiary (Currie & Warner Ltd.) acquired on 1st April 1966.

38. The value of sales by the manufacturing subsidiaries in Canada and Australia* (see paragraphs 27 and 28) has grown in the past five and a half years as follows :

					£'000		
Year ended					Canada	Australia	
31st March							
1962	...	...	...	...	667	644
1963	...	...	...	...	727	739
1964	...	...	...	...	706	796
1965	...	...	...	...	695	938
1966	...	...	...	...	985	955
6 months to 1st October 1966					...	706	579

39. After the elimination of inter-company sales the figures for the group are as follows :

Year ended				Total		Home		Overseas		
31st March				group		%		%		
				sales		of		of		
				£'000		total		total		
				£'000		£'000		£'000		
1962	...	...	...	4,577	2,835	62	1,742	38	
1963	...	...	...	4,790	2,848	59	1,942	41	
1964	...	...	...	5,102	3,148	62	1,954	38	
1965	...	...	...	5,714	3,491	61	2,223	39	
1966	...	...	...	6,355	3,803	60	2,552	40	
6 months to 1st October										
1966(1)				3.534	1,876	53	1,658	47

(1) The figures for this period include the sales of a subsidiary (Currie & Warner Ltd.).

40. There were several increases in prices in the period of five and a half years, and the figures tabulated above do not therefore accurately reflect the increases in sales volume (this aspect is considered in paragraph 81). Sales in terms of both value and volume were higher in the six months to 1st October 1966 than in the corresponding period in 1965 but the effects of the general trade recession in the summer of 1966 were reflected in sales towards the end of the six months' period.

41. The company states that the patents covering the basic process of manufacturing the Pyrotenax type of cable expired in 1951 and 1952. Its existing, or proposed, patents are concerned with cable accessories and the method of their use for sealing cable extremities, with tools for installation, with improvements in manufacturing processes, and with development of the use of existing cables in new applications. In addition the company owns certain valuable trade marks.

Research and development

42. The company states that costs which can be firmly identified and classed as research and development 'have not so far constituted an unduly severe burden on profits, and with the exception of the stainless steel and aluminium cable projects . . . new products have been introduced at an apparently modest development cost'. However, the company adds that, except for

* Including some exports to them from the parent company in the United Kingdom.

the aluminium project, much of the physical work on product development has been carried out on the shop floor and the costs aggregated with and absorbed by those of production. Such costs cannot be quantified. Costs which can be identified as relating specifically to research and development, however, amounted to £52,998 in the year ended March 1966, £45,300 of which was in respect of salaries and wages. The company's research and development department consists of four sections (electrical, mechanical, metallurgical and chemical) and the company states that, although the types of work carried out in these sections vary, the main lines of development are as follows:

‘Improvements to the manufacturing process both by the introduction of new methods and by the consideration of new materials.

Design and development of new cables to meet customers' requirements.

Research into new applications for existing cables.

Design of improved cable terminations, accessories and tools.

The long term electrical testing of any new component or cable.

Investigations into failures of cable and accessories in the manufacturing process and on installations.’

CHAPTER 3

British Insulated Callender's Cables Ltd

Origins and development

43. British Insulated Callender's Cables Ltd. was formed in May 1945 for the purpose of merging British Insulated Cables Ltd. and Callender's Cable and Construction Co. Ltd., which were then among the largest electric wire and cable manufacturing companies in the United Kingdom. Both companies owned subsidiaries in the wire and cable field, both at home and overseas, and all of these were brought into the BICC group on its formation. The chairman of BICC told us that the basic reason for the merger of these two companies and the formation of BICC was the belief that size and efficiency were important, and that it was necessary to create a bigger unit that could stand up better not only to British but also to world competition.

44. Since 1945 the BICC group has expanded, and it states that it is now ‘the largest and the leading organisation of its kind in the world with complete facilities for research, manufacture and contracting in transmission and distribution of electrical energy for power and communication purposes’.

45. The group is concerned principally with the making of all kinds of electrical cables, but companies within the group are also engaged in construction activities, and in the processing and fabrication of metals. British Insulated Callender's Construction Co. Ltd. is engaged on, for example, installation of mains cables, overhead line construction, the erection of radio masts and towers, and railway electrification. This company has recently taken on certain wiring contracts, some of which involve the use of mineral