

voltages are becoming more and more prisoners to size'. It recommended that an independent arbitrator, acceptable to both the manufacturers and the Central Electricity Generating Board, be asked to inquire into the arrangements for placing contracts and fixing prices.

It is not my purpose to review the arguments and the conclusions of the Commission, the Court and the Select Committee, but the reader will find in their reports a wealth of useful background material for which space could not be found in this article. My excuse for setting out, by myself, on this well-trodden ground is twofold. First, I wish to focus more narrowly on the relevant economic analysis than did these reports. Secondly, I find myself in disagreement with the conclusions of the Monopolies Commission and with part of the Judgement of the Court. One hesitates to question the findings of these bodies, which, quite rightly, have great authority, but some comfort may perhaps be found in the fact that these are matters on which informed opinion has, in the past, suffered a good deal of fluctuation.

I shall be dealing with three quite specific types of electrical equipment, these being turbo-alternators with ratings of 30 megawatts or above, Grid switchgear and Transmission and Generator transformers all for 132 kilovolts or above.¹ I shall refer to these, for brevity, simply as 'turbines', 'switchgear' and 'transformers', or, collectively as 'heavy electrical equipment', but the readers will have to bear in mind that we are dealing with restricted types of equipment under these heads. (Roughly speaking, we are concerned only with the largest or 'heaviest' categories of each of the three kinds of equipment). The justification for grouping them for discussion is the fact that they are sold under similar conditions.

2. *The Structure of the Markets.*

Let us begin by listing the common features of the three markets that are relevant to pricing policy.

(i) The first of these is the predominance, in the home trade, of the nationalised Electricity Supply Authorities. Turbines, switchgear and the larger transformers are bought, in England, only by the Central Electricity Board, and, in Scotland and Northern Ireland, by corresponding bodies. On the manufacturing side, we find three firms in turbines, four in switchgear, and about a dozen in transformers.²

¹ Electricity is generated by boiling water to produce steam, which, when applied to a turbine, strikes metal blades fixed to wheels, thus causing the wheels and connecting shaft to move at a high speed. This mechanical energy is then converted into electricity by a generator. The various bits of equipment other than the boiler necessary to do these things are referred to as a 'turbo-alternator set' and are usually ordered together. It is efficient to distribute electricity at a voltage higher than that at which it is generated and much higher than that at which it is ultimately used by consumers. The equipment which steps up the voltage when electrical energy leaves a generating station, or lowers it as the current passes to the consumer, is a transformer. Switchgear is used at the points where electricity is stepped up to voltages suitable for the main transmission lines and where it is stepped down. Its functions are to connect or disconnect a line as required or to act as a safety device cutting off a current when there has been a fault. Thus it acts like domestic switches or fuses, though the high voltages with which it deals require it to be much more complicated.

² The turbine makers are Associated Electrical Industries, the English Electric Company, and C. A. Parsons. Switchgear is made by the first two of these companies, by the General Electric Company and by Reyrolle. Of the dozen or so firms making larger transformers none has a share of the total markets as large as twenty per cent.