

Meanwhile, Mr Palmer is confident that his committee has become a fixture on the parliamentary scene. The fact that the Select Committee on Agriculture has been cut short in its investigations does not worry him greatly. This session the science and technology committee has been re-appointed in record time, a success which he puts down to a typical piece of House of Commons committceanship. Apparently the chairmen of the various select committees have formed a liaison

committee, under the chairmanship of Mr John Boyd-Carpenter. As well as allocating funds to the various select committees (which saves a good deal of time and red tape) the liaison committee can bring pressure to bear on the Whips to get the select committees set up quickly. In the past, the Whips have often been dilatory, but now, with the liaison committee at their heels, they seem to have found new life. Clearly it takes a committee to beat the system.

Successful Research in Industry

INDUSTRIALISTS gathered at the Royal Society on November 19 to listen to representatives of some very successful companies talk about "Making a Success of Research in Industry". In this context, success of course means commercial success, as Professor M. J. Lighthill pointed out in his chairman's introduction, and the purpose of the day's deliberations was to discuss how a firm can best organize its research activities in the interests of commercial success. The meeting was organized by the society's *ad hoc* Committee on the Patent System and Patent Law.

Dr F. E. Jones of Mullard Ltd said that the proper place of research in industry is as part of a corporate plan formulated to ensure the long term viability of a company and involving everyone—in research, production, sales and so on—with responsibility for the success of the company. Research is vital to this plan; as well as market and operational research, and the development of new and better products, there is a strong case, at least in larger companies, for a programme of fundamental research. This provides a parallel to university research and helps to attract highly skilled young graduates who might otherwise be very difficult to recruit. Dr Jones said that ideally the research should be so fundamental that the young scientist does not realize that he has moved into industry. Later these recruits often realize that they are just as interested in the application of phenomena as in the phenomena themselves and may find other parts of the company's research programme more exciting than the purely fundamental work.

Mullard devotes a little over £0.5 million a year, one-third of its total expense on development, to fundamental research that has no immediate application and which is organized by the research workers themselves. The company finds many benefits besides the intake of bright young graduates who are drawn by the prospect of opportunities for pure research. Many of the patents obtained by Mullard come from its fundamental research projects.

The importance of integrating research into the other activities of the company was stressed by Dr J. G. Collingwood of Unilever Ltd, which represents what he calls multi-product marketing-oriented industry. The need for, and the size of, such a company's research effort depend principally on the sensitivity of products to technological change and the competitive position in the market. The efficiency of the research effort, once its size has been determined, depends not only on the controlled use of all research facilities, but also on a sound choice of projects and maximum speed in supply-

ing results. This requires close contact between research, production, marketing and other sections of the company.

Mr P. Docksey of British Petroleum Ltd talked about interrelations between petroleum research and company activities. BP deals with liaison between its operational and research and development departments by employing special coordinators. These are senior members of the research and development unit who are placed in the various operating departments where they are able to participate in day to day management. Coordinators are also in close contact with the leaders of research projects and are able to guide research along the lines most valuable to the operating departments. To carry out their liaison activities, coordinators need to be free from the immediate operating pressures of the departments concerned. They have no executive powers, but require remarkable characteristics; they must have a broad scientific background and a thorough knowledge of the company's operations and they must have worked at a senior level in experimental research.

The advantages of an interdisciplinary approach to research were argued by both Mr J. D. Rose of ICI and Dr M. Tishler of Merck, Sharpe and Dohme Ltd. Mr Rose illustrated ICI's debt to research with reference to the process for producing hydrogen for ammonia from naphtha, developed when coke was becoming too expensive to use, and the discovery of herbicidal properties of quaternary ammonium compounds, which has resulted in the production of such compounds as paraquat. In both cases all scientific disciplines were involved, and Mr Rose suggested that the best results are obtained from multidisciplinary teams formed to deal with special projects.

Dr Tishler said that in his pharmaceutical firm men and women from many different disciplines work together whenever necessary. He also stressed the importance of allowing the researchers freedom to solve problems in their own way, and to pursue interesting side issues. Top management needs to be patient with the research department; support must not flag in the more unproductive years. The senior research scientists at Merck have a considerable influence in the planning of research programmes from year to year, and Dr Tishler recommended that, like himself, scientists should be on the boards of companies. He also considered a collaborative relationship with universities—in terms of the interchange of personnel and ideas—to be very important to the health of industrial research.