

with mesons and the way in which research workers hope to produce these particles artificially with the synchrotron.

Throughout the meeting exhibitions of scientific apparatus and scientific text-books were well attended by members and visitors, and one large laboratory was used for displaying apparatus invented, improved and constructed by science masters and their pupils.

Visits were arranged to a well-known shipbuilding yard, to chemical, optical and engineering works, to the Scottish Central Film Library and to Yoker Power Station. The final visit of the meeting took place on March 31 to the Loch Sloy Hydro-Electric Station on the banks of Loch Lomond. Here the members were shown over the generating room and the control room, but owing to a heavy fall of snow the visit to the dam some distance from the Station had to be cancelled.

ELECTRON MICROSCOPY IN GERMANY

THE electron microscope was invented in Germany, and its subsequent development into a standard research tool took place almost entirely in German laboratories until the outbreak of the Second World War in 1939. A considerable volume of work continued to be published until 1944. Throughout this period a very marked rivalry existed between three laboratories (those of Siemens-Halske, the AEG, and von Ardenne), which led to the duplication and even triplication of many investigations, and undoubtedly hindered the development of electron microscopy in wider fields. New techniques, rather than fruitful applications, were pursued, and the urgently necessary critical comparison with optical methods was neglected. Later work in the United States, Great Britain and France took a more balanced course, and has led to important contributions, especially in bacteriology and metal physics. Societies for furthering the new method were founded early in both Great Britain and the United States.

After the War most of the electron microscopes in Germany were removed by one or other of the victorious Allies (in roughly equal shares) and research teams were dispersed. However, with characteristic diligence, the production of improved models was quickly recommenced and the new models were put to use in many researches. A new spirit of co-operation also became apparent, and the first conference devoted solely to electron microscopy was held in 1949, as a result of which a Deutsche Gesellschaft für Elektronenmikroskopie was founded. Its formal inauguration took place at the second meeting, held at Bad Soden in April 1950, the proceedings of which are now recorded in a special number of the journal *Optik**

The number and range of the contributions in this volume testify to the rapidity of the rebirth of the subject in Germany. Indeed, when the extent of the disorganization due to the War is taken into account, the volume and quality of the work reported are quite remarkable. Forty-two papers cover the theory and construction of the instrument, its specimen techniques and their application in physics, chemistry, technology and many branches of biology. Much of the work is in similar directions to that being

* *Optik*, 7, part 4-6 (1950): Report of Second Conference of the Deutsche Gesellschaft für Elektronenmikroskopie (Stuttgart). D.M. 7.

pursued elsewhere, such as the comparison of the electron with optical and phase-contrast results, the reliability of replica methods, and the study of the detailed morphology of bacteria and viruses. Some investigations of special interest deserve mention. K. Beyersdorfer has studied the structure of graphite oxide, and E. Zehender that of evaporated films of zinc and cadmium. An extended investigation is reported by G. Pfefferkorn of the surface of calcite, both of natural cleavage faces and after etching, while A. Schrader compares the optical and electron-microscopical pictures of pearlitic structures in various steels. H. König is investigating the effect of the electron beam on specimens, particularly those of a biological nature. The fibrous structure of the vitreous humour of the eye has been studied by H. Ruska, and the fine structure of nerves by A. Jakob.

The report as a whole, running to some 150 pages, will provide the specialist in electron microscopy with much that is new, and at the same time show the general reader the wide scope which it now embraces.

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BUILDING RESEARCH BOARD ANNUAL REPORT FOR 1949

TO those who have been fortunate enough to build since the War, whether house, office or factory, there is little to show that building research has continued. Plaster still cracks abominably, heating systems are too often poorly designed and inefficient, and plumbing seems as primitive and noisy as ever. However, the Director of Building Research makes it clear in his report for 1949* that these or related problems have received attention during the year, so that the shortcomings must be blamed on the unsuitability of materials readily available to-day, on poor craftsmanship or, perhaps, on the failure of the builder and manufacturer to reap the fruits of research.

The position seems to be different where monumental building is concerned. The Royal Festival Hall, on the South Bank site, London, has just been completed, and from what one has seen and from the account recently given by two of the engineers concerned, Messrs. E. O. Measer and D. H. New, in a paper read before the Institution of Civil Engineers, the results of researches in structures and materials were used and the staff of the Building Research Station were called upon directly to make surveys and to carry out investigations on the site so as to help in providing a successful solution to the difficult acoustic problem which naturally arose from placing a great concert hall in close proximity to Hungerford Bridge, which is a busy railway bridge crossing the Thames. It may be that the civil engineering contractor is more aware of the benefits to be derived from the adoption of scientific methods than the builder or, due to the higher proportion of university graduates employed by him, is in a better position to adopt them without loss of time. This state of affairs may have influenced the Building Research Board in its choice of problems, because it is clear from the 1949 report that a considerable proportion of the Building Research Station's effort is directed

* Department of Scientific and Industrial Research. Report of the Building Research Board with the Report of the Director of Building Research for the Year 1949. Pp. iv+60+16 plates. (London: H.M. Stationery Office, 1950.) 3s. net.