

Metallography", which discusses the applications of the electron microscope and of electron-probe microanalysis. Dr. Howard K. Warner contributes an account of metallurgy in Australia which will be of great value to any member who contemplates taking up an appointment, teaching or industrial, in that continent. The presentation of the journal is most attractive and the illustrations excellently reproduced, the whole being a credit both to the Institution itself and all those responsible for its appearance.

### Science in the School Library

A NEW edition of "Science Books for a School Library" has been published by John Murray for the Science Masters' Association (1959. 3s. 6d. net). It contains in its 54 pages three large sections on biology, chemistry and physics, of about 150, 100 and 100 titles, respectively, and smaller lists, on the history of science, astronomy, geology and meteorology. The final section is a list of books suitable for a secondary modern school science library. About half the entries have been reviewed in *The School Science Review*, and the number of the issue is given. Annotations are attempted in a rather half-hearted way, and the need for brevity is no excuse for "a readable book", "a well written history", "a most interesting book", or "packed with information". One wonders why J. B. Conant's "On Understanding Science" is in the chemistry section and hopes that all schools are able to afford Singer's "A History of Technology" (5 vols., £42). The list will be of great use to new schools setting up a library for the first time, or as a check list for an established library. Both users and the editors of the next edition would find of great interest two similar works—"The A.A.A.S. Science Book List" (American Association for the Advancement of Science, 1959) and the National Book League's "Science for All".

### Tunnel Diodes

IN a recent press release, Standard Telephones and Cables, Ltd., announced the development of a new semiconductor device known as a tunnel diode, believed to be the first of its kind produced in Europe. The main feature of tunnel diodes is that they exhibit a marked negative resistance characteristic, which is likely to have important applications in radio circuit technique. The fact that a germanium diode made of very highly doped material can exhibit a negative resistance for a small applied voltage (100–200 mV.) was first reported by L. Esaki (*Phys. Rev.*, 109, 603; 1958). The results of a theoretical and experimental examination of tunnel diodes as devices for use at very high frequencies were described by H. S. Sommers, of the R.C.A. Research Laboratories, Princeton, U.S.A. (*Proc. Inst. Radio Eng.*, 47, 1201; 1959). Diodes with a negative conductance of 1 mho have been made and these oscillate at frequencies above 1 kMc./sec. when incorporated in a special microstrip mounting of low series impedance. Apart from its use as a self-excited oscillator, the tunnel diode, when mounted in a coaxial or microstrip line, can be used as a switch with an operating period of a few milli-micro-seconds. It is believed that a different approach to electronic circuit problems is necessary in order to exploit fully the application of these tunnel diodes; and it is with the object of assisting circuit design engineers to gain experience of these that samples suitable for use at frequencies up to about 5 Mc./s. are being made available in Great Britain by Standard Telephones

and Cables, Ltd. Development work is proceeding rapidly, however, and it is expected that devices with a more advanced performance will shortly become available.

### High-atmosphere Research in the Meteorological Office

THE importance of the continuous study of conditions in the highest parts of the undissociated atmosphere (between about 30 and 100 km.) is now recognized among meteorologists. To further such studies, the Meteorological Office has set up a new assistant-directorate, with responsibilities for both theoretical and experimental research. It is intended to investigate the composition and physical state of the atmosphere up to about 100 km. with special balloons and, it is hoped, small rockets. In addition, the new unit will take over the present design studies for meteorological observations from the second *Scout* satellite. Dr. R. Frith, formerly assistant-director in charge of research in atmospheric physics, has been placed in charge of the unit.

### James Clayton Prize, 1959

THE James Clayton Prize for 1959 has been awarded to C. Bernard Dicksee, for his pioneering and subsequent development and research work on the high-speed compression-ignition engine, and Prof. G. Fernie Mucklow, for continuous research and experimental work into the propagation of pulses (wave action) in gases, and problems connected with the internal combustion engine. This Prize is awarded annually to a member or members of the Institution of Mechanical Engineers, who contribute most in the year to modern engineering science by way of research, invention, experimental work or a treatise or paper on a modern engineering subject, or originality in engineering design, or by service to engineering.

### The Corday-Morgan Medal and Prize

PROF. C. KEMBALL, professor of physical and inorganic chemistry, the Queen's University of Belfast, has been awarded the Corday-Morgan Medal and Prize for 1958 of the Chemical Society, in consideration of his contributions to the study of heterogeneous catalytic reactions. The award, consisting of a Silver Medal and a prize of 200 guineas, is made annually to the chemist of either sex and of British nationality who has published during the year in question the most meritorious contribution to experimental chemistry, and who has not, at the date of publication, attained the age of thirty-six years. Applications in respect of the award for 1959 must be received by the General Secretary of the Chemical Society, Burlington House, Piccadilly, London, W.1, not later than December 31, 1960, and for the award for 1960 before the end of 1961.

### Nature Conservation: Postgraduate Diploma Course

THE social, economic and political problems arising from the results of a shortsighted policy for land use have been painfully obvious for a long time. Practical object lessons on a vast scale can still be seen in many parts of the world. Conservation involves the long-term study of land use, and one of the main problems is the prediction of the immediate and ultimate effects of any programme of agriculture or resource exploitation. The solution to these problems will provide the means for avoiding the disasters of the past. One of the main difficulties has been the lack