

Bird sounds were introduced by Dr. R. G. Busnel, director of the Laboratoire de Physiologie Acoustique, France, who, in collaboration with Prof. H. Frings, of Pennsylvania State University, has recorded the songs of French and American crows to see if their sound signals were similar, or if they had evolved separate 'dialects' of their own. Dr. J. H. Elgood, Biology Department, Ibadan, Nigeria, played some recordings of the songs of Nigerian birds in the wild. Insect acoustics was represented by several workers. Dr. J. W. S. Pringle, Zoological Laboratory, Cambridge, played recordings made by him in Ceylon of the songs of several species of cicadas, and Mr. E. F. Woods, of the B.B.C., demonstrated his work on the sounds of colonies of honey bees, while developing an electronic device, the 'Apidictor', which can assist apiarists in detecting the onset of swarming in hives. Mme. G. Richard, Laboratoire de Zoologie, Rennes, demonstrated recordings of the underwater noises made by corixids, while Dr. W. Loher, Department of Zoology, Imperial College, and Dr. P. T. Haskell, Anti-Locust Research Centre, London, showed some results of their investigations on the stridulation of grasshoppers. Much of the discussion, both public and private, which developed out of the demonstrations was concerned with techniques and instrumentation, and it was therefore helpful that a number of firms, including Ferrograph, E.M.I. and Grundig, had lent apparatus for demonstration.

Time Rates of Wages and Hours of Labour

THE twelfth edition of "Time Rates of Wages and Hours of Labour", compiled by the Ministry of Labour and National Service (London: H.M. Stationery Office, 1958. 15s.net), contains the usual tables which show, for the majority of industries and occupations, the minimum or standard time-rates of wages, the dates from which these rates become operative, and the normal hours of labour. The rates of wages and hours of labour are those determined by voluntary agreements between organizations of employers and workpeople, or made by Joint Industrial Councils or other similar bodies, or by Statutory Orders under the Wages Councils Acts, the Agricultural Wages Acts and the Catering Wages Act. Particulars are also given, where available, of the basic rates for pieceworkers, the additional rates payable to shift and night workers, and, where they are known to exist, of the arrangements for a guaranteed weekly wage or period of employment. Three appendixes give details of rates of wages for young workers in a selection of industries, and of overtime rates of pay, and arrangements for paid holidays in the industries included in the main part of the volume.

Scientific Film Association

THE sixth annual report of the Council of the Scientific Film Association, for the year ended March 31, 1958 (pp. 12. London: Scientific Film Association, 1958), records an increase in membership from 324 to 404 during the year, and the six issues of the *Scientific Film Review* provided technical and distribution details on 335 films; similar information and a synopsis of content for a further 324 films; and full reviews or appraisals of another 451 films. Three catalogues were published during the year with detailed reviews and appraisals of 44 films on cerebral palsy, 100 films on education and 131 films on psychology and psychiatry. The film appraisal work is under continual development and a report on "The

Evaluation of Scientific, Industrial and Medical Films" previously published in the *Scientific Film Review* will shortly be re-issued as a pamphlet. The Association has dealt with a wide range of inquiries about films and film making, and besides arranging a varied programme of meetings, held a residential course at Kingsgate College in March on the use of films in supervisory training. As the national representative, it plays an active part in the work of the International Scientific Film Association.

Semi-conductors

A VALUABLE guide to the use of semi-conductor devices, compiled by a committee consisting of representatives of fifteen manufacturers of semi-conductor devices in the United Kingdom, has recently been published on behalf of the manufacturers by the British Radio Valve Manufacturers' Association (The Use of Semi-conductor Devices. Pp. iv+36. London: British Radio Valve Manufacturers' Association, 1958). It is intended to assist equipment designers to secure optimum performance and life from the devices, which consist basically of monocrystalline material. In the case of diodes and transistors the substances are either germanium or silicon, and in the case of photosensitive devices they include also compound semi-conductors such as lead selenide or indium antimonide. The booklet is divided into four sections dealing with, respectively, general considerations, for example, frequency limitations, ratings, temperature and high-energy effects, of semi-conductor devices; semi-conductor diodes; junction transistors; and photosensitive devices. The information given is very carefully and clearly set out. A detailed index allows easy and quick reference to any particular item discussed in the guide.

Low-Temperature Thermometer

EMPHASIS on low-temperature research, particularly low-temperature calorimetry, has highlighted the need for a thermometer which indicates low temperatures accurately and reliably and does not need continual calibration. Germanium can be doped with arsenic to produce a high and fairly constant temperature coefficient at temperatures near to the boiling point of helium, and a germanium resistance thermometer of high sensitivity and exceptional stability in the temperature range near to the absolute zero has been developed by J. E. Kunzler, T. H. Geballe and G. W. Hull of Bell Telephone Laboratories Ltd. The thermometer consists of a single crystal of arsenic-doped germanium, $0.025 \times 0.020 \times 0.210$ inches, with attached current and potential leads and supported in a strain-free manner in a platinum-glass enclosure filled with a small amount of helium. Temperature is determined by measuring the potential drop due to resistance when a current of approximately 10^{-7} amp. is passed through the germanium crystal. A typical thermometer had a resistance of one ohm at room temperature, 14 ohms at 10° K. and 216 ohms at 2° K., but both the temperature coefficient and the actual resistance vary widely with minute changes in the amount of doping, so that thermometers of differing characteristics can be made. Once calibrated the thermometer is reproducible to better than a few ten-thousandths of a degree at the boiling point of helium (4.2° K.) even after repeated cycling from room temperature to 1° K.