

very recently, British manufacturers have been unable to offer high-performance oscilloscopes having trace brightness and amplifier band-width suitable for the display of single-pulses having fractional microsecond duration. This has meant that workers in such fields as nuclear physics and high-speed computing have either obtained equipment from North America or have constructed their own display systems. New types of oscilloscopes are now available from Messrs. Cossors, EMI, Marconi Instruments and Solartron. The cathode-ray tubes are mostly of the post-deflexion acceleration type and run at voltages of 6–10 kV., amplifier band-widths are 10–20 Mc./s., and the deflexion sensitivity at full gain is about 100 mV. per cm. This specification is adequate for all but the fastest applications, and for these, two manufacturers are offering oscilloscopes with distributed amplifiers having a band-width from

d.c. to 40 Mc./s. Messrs. Cossor and Heathkit showed kits of parts that can be assembled to make items of test gear such as valve-voltmeters and simple oscilloscopes. The kits normally employ printed circuits, which simplify the wiring, and can be assembled with semi-skilled labour. A wide variety of silicon devices are now available, and Messrs. Ferranti showed a range of silicon photo-voltaic cells; these have a response time in the microsecond region and have applications in equipments using modulated light. The new cells have a high conversion efficiency and in the larger sizes can be used as solar cells to provide electrical energy from sunlight.

This annual exhibition continues to be well attended and it provides an opportunity for scientific workers in the north-west of Britain to keep abreast of current electronic equipment and components.

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UNITED KINGDOM CIVIL SERVICE COMMISSION

THE ninety-third annual report of the Civil Service Commissioners, covering the year April 1, 1958–March 31, 1959, records an increase in the number of candidates successful in open competition from 13,057 to 14,616, but for the administrative class the number of successful candidates decreased from 39 to 37, though well above the 1956–57 figures, and some departments were short of recruits, although the number of unfilled vacancies is not large (Report of Her Majesty's Civil Service Commissioners for the period 1st April, 1958 to 31st March, 1959. Pp. 36. (London: H.M. Stationery Office, 1959.) 2s. 6d. net).

The Commissioners are continuing their efforts to attract a larger number of good candidates from the universities. Candidates in the limited competition for the administrative class further decreased in number. Recruitment to the senior branch of the foreign service was also disappointing, and the shortage of candidates for the statistician class persists. Less than 50 per cent of the declared vacancies as patent examiner have been filled and there was again a shortage of good candidates for scientific officer, engineering and draughtsmen posts, and many vacancies remain unfilled, particularly through a

dearth of physicists. Grave shortages remain in the telecommunications and other electronic fields; however, there was a small increase in the number of candidates in the senior scientific officer competition and most of the vacancies which had been notified were filled.

Applications in the assistant experimental officer/experimental officer competition remained remarkably steady and generally sufficient candidates were successful to meet departmental needs. The supply of biologists again exceeded the limited demand. The research fellowship competition continued to attract interest from workers in all fields of research, and thirteen candidates were offered the award. There is some evidence that it is becoming harder to attract good applicants for junior fellowships.

Results of interviews in Ottawa and Washington in April 1958 to select applications for research fellowships and scientific officer posts were less satisfactory than originally appeared likely, and in the event only one candidate joined the Service as Research Fellow and one as a senior scientific officer, although some well-qualified men appear to have been stimulated to return to Great Britain in the universities or in industry.

EUROPEAN NUCLEAR ENERGY RESEARCH

THE seventh annual report of the Netherlands–Norwegian Joint Establishment for Nuclear Energy Research*, describing the work of the Establishment during the period July 1, 1957–June 30, 1958, mentions that the research reactor, *Jeep*, was in almost continuous operation at 450 kW. during the year, with a total release of heat of 105.6 MW. days, but that the corrosive effects of the heavy water have grown worse and a minor leakage of heavy water occurred during April. The completion of the Halden boiling water reactor, which is an Institutt for Atomenergi project and which is situated inside a rock excavation near the paper pulp factory, Saug-

* Seventh Annual Report, July 1957–June 1958, of the Netherlands–Norwegian Joint Establishment for Nuclear Energy Research. Pp. 32. (Kjeller near Lillestrøm: Netherlands–Norwegian Joint Establishment for Nuclear Energy Research, 1959.)

brugsforeningen, will be delayed by about a year because of construction and design problems. The reactor tank was completed during the spring of 1958. The necessary amount of heavy water which was purchased from the United States of America is now stored at Halden, and part of the uranium ordered from Great Britain has been delivered. An agreement between Norway, Denmark, Sweden, Austria, Great Britain, Switzerland and Euratom, on the joint operation of the reactor, was signed by representatives on June 11, 1958.

Because of the higher demand for radioisotopes, and technical improvements in the production system, the number of isotope deliveries from Kjeller to customers outside the Establishment increased by 33 per cent over the previous year. The deliveries