Low-Voltage Electron Diffraction Tube

A SEALED-OFF cathode ray tube for demonstration of electron diffraction patterns at low voltages (6,000–7,000 volts) has already been described by me¹. We have recently carried out experiments with this tube at lower voltages and have found that the electron diffraction patterns are quite visible on the fluorescent screen down to 4,000 volts and just visible down to 2,000 volts. Photographic records of electron diffraction patterns could therefore be made using electrons of only 2,000 volts energy.

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¹ *J. Sci. Inst.*, **15**, 138 (1938).

Definition of Research Department Administration

I HAVE no desire to resuscitate or discuss law court cases in the correspondence columns of NATURE; but in the summing up of a recent case, which many readers of NATURE will have followed, the judge made the following statement: "Nobody suggested that [the plaintiff] was anything but a thoroughly, perhaps exceptionally competent person in his scientific work, but [the defendants] said that his incompetence lay in his failure to administer his

department properly, that is, to keep an eye on finance and to see that the machinery of the department was running with reasonable smoothness" (*The Times*, July 22, 1938).

Quite independently of this particular law suit, and with no implication in respect of the judgment, I think that most lay readers would infer that this represents a correct and adequate definition of the duties in research department administration. It will be sufficient in NATURE to mention the framing of research policies, allocation of problems to the right people, co-ordination, inspiration and the maintenance of a happy atmosphere as among the prime functions of the head of a department as such. Moreover, the evidence in this case indicated that this extended definition was applicable to the department in question. My principal point, however, is that there is a widespread tendency to regard administration as merely the supervision of office routine. Any unnecessary perpetuation of this fallacy is highly injurious to efforts that are being made in connexion with administrative education, which, as this case so lamentably indicates, can be needed by both employers and employed.

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Points from Foregoing Letters

EXPERIMENTS with liquid helium at temperatures between 0.2° and 0.5° K. indicate, according to Dr. N. Kürti and Prof. F. Simon, that the anomalous heat conduction and probably the surface film flow vanish at these very low temperatures.

Prof. S. Szczeniowski, Prof. S. Ziemecki and Dr. K. Narkiewicz-Jodko have measured during a balloon ascent ionization by cosmic rays at heights from 6 to 10 km. Nitrogen and krypton ionization chambers, each filled with gases under pressure of 16.5 atm., were used. The ratio of intensities of ionization in krypton and in nitrogen is equal to the ratio of densities of these gases. The curves obtained show no irregularities, which is contrary to the results of some German authors. A residual current in the above chambers observed at a depth equivalent to 900 m. of water shows very marked fluctuations which may help to explain the anomalies of ionization by cosmic rays at great depths found by Clay and Corlin.

D. A. Oliver and J. W. Shedden find that, on cooling permanent magnet alloys of the nickel-aluminium-iron Mishima type in a unidirectional magnetic field, the coercivity is not greatly affected but the remanence and the value of $BH_{\max}$ are increased; they suggest an interpretation of the results.

Prof. K. S. Cole and Dr. H. J. Curtis have shown that there is a decrease in the alternating current impedance of the giant nerve fibre of the squid during the passage of a nerve impulse. Analysis of the change shows that it is due to a decrease in the membrane resistance without an appreciable change in the membrane capacity.

Dr. A. S. Russell and J. C. Carver have investigated

the reduction of solutions of nickel, cobalt, iron and other similar metals by zinc amalgam. They find that reduction to metal occurs very much more readily from complex anions of these metals than from the cations. They reject the view that the slowness of reduction of the cation is primarily due to a surface action at the reducing metal, and ascribe it to the existence of protective groupings surrounding the apparently simple cations.

D. Erikson, Dr. A. E. Oxford and Prof. R. Robinson find that the pigment of *Actinomyces Waksmanii* maintains its blue colour when boiled in alkaline solution, and cannot, therefore, be an anthocyanin. No anthocyanin, they state, has yet been definitely demonstrated in any bacteria.

A table showing the biological activity of various double esters of the synthetic oestrogenic agent diethyl stilboestrol is given by Prof. E. C. Dodds, L. Golberg, W. Lawson and Prof. R. Robinson. Large doses of the dimethyl ether prolong the oestrus almost indefinitely.

Polarographic curves (potential changes at a dropping mercury electrode) of various substances are given by F. Bergh, Dr. O. M. Henriques and C. G. Wolffbrandt. They conclude that the curve previously obtained with cancer serum is due to a mixture of substances. One of these can be adsorbed on fuller's earth and re-extracted by pyridine.

A crystalline toxic protein (crotoxin) of molecular weight 11,000, or possibly 33,000, has been obtained from the venom of the rattlesnake by Prof. K. H. Slotta and H. Fraenkel-Conrat. Another active constituent of this venom which has proteolytic and coagulating activity has been separated in a tenfold increased concentration.