

*d*-galactose together with the as yet unidentified reducing acid first described by Lüdtkke<sup>2</sup>. The *l*-galactose isolated by Pirie accounts to some extent for this discrepancy. Much further work, however, appears to be necessary before even a tentative structure can be proposed for the polysaccharide, and stress must be laid on the necessity of securing a homogeneous starting material.

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<sup>1</sup> Pirie, *Biochem. J.*, **30**, 369 (1936).

<sup>2</sup> Lüdtkke, *Biochem. Z.*, **212**, 419 (1929).

### Diamagnetic Susceptibility of Heavy Water

SINCE our communication in NATURE of April 25 (p. 706), we have repeated the determination of the mass susceptibility of deuterium oxide using two specimens of purity 99.95 per cent. Our mean result now obtained is  $0.638 \times 10^{-6}$ , which agrees excellently with our previous value, obtained with a slightly less pure specimen, and also with the value obtained by Cabrera. This therefore may be taken to establish the value of the mass susceptibility of deuterium oxide at ordinary temperature at the figure named.

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### Points from Foregoing Letters

THE sensitivity to sound of different frequencies shown by certain organs of the cricket (the long hair-sensilla on the cercus) and of the locust (tympanal organ and receptor organs distributed over the body) has been determined by Dr. R. J. Pumphrey and A. F. Rawdon-Smith and found to be in some respects more extensive than the human. In particular, the sensitivity of the anal cercus appears greater than the human for the lowest audible frequencies, whilst there are indications that the tympanal organ possesses superhuman sensitivity at the opposite end of the spectrum.

Sir Ambrose Fleming discusses various numerical characteristics of the number 861, obtained by dividing the product  $hc$  (action quantum and velocity of light) by the square of the electronic charge ( $e^2$ ).

An extension of the supraconductivity theory devised for the 'intermediate' state, in which supraconductors are imagined as consisting of many separated microscopic elementary regions, is given by Dr. F. London, to make it applicable to a case where an electric field is also present (with certain restrictive assumptions). Dr. London states that he has met with success in applying the theory to a phase transition brought about in a supraconducting wire by the magnetic field of a current through the wire.

By means of new ultra-violet data, the singlet systems of S III and K VI are partially classified by Dr. H. A. Robinson. These data show that S III is present in nebulae and, by interpolation, confirm the presence of Ar V.

The quantum energy of  $\gamma$ -rays emitted from twenty-four elements under the bombardment of slow neutrons has been determined by S. Kikuchi, K. Husimi and H. Aoki; they find a striking correlation between energy of  $\gamma$ -rays and atomic number of element bombarded.

Prof. H. T. Stetson, from an analysis of latitude observations for the years 1928-31, finds variations in latitudes with the moon's position amounting to less than half those previously calculated for the 1909-11 period. He also discusses the considerably lower results obtained by Kawasaki for the period 1922-31 and suggests that latitude variations correlating with the moon's position are more apparent during certain years; further, that the problem may be complicated by change of phase and by geophysical movements. He concludes that periods of analysis should not exceed three years.

Assuming that the residual electrical conductivity of hexane, which cannot be decreased by any known method of purification, is due to ionisation by cosmic rays, and taking the number of cosmic rays as given by Millikan to be  $1.48 \text{ cm.}^{-2} \text{ min.}^{-1}$ , Dr. I. Adamczewski calculates that the ionising power of a cosmic ray in hexane corresponds to 28.6 ion pairs in air at normal conditions, which is of the right order of magnitude.

The electrical conductivity across thin films of non-aqueous liquids (carbon tetrachloride, olive oil, etc.) changes abruptly as the film becomes thinner from a barely detectible to a measurable value, in a step-wise manner, according to experiments by Prof. T. Teorell.

When a single crystal of zinc sulphide is heated in air, it is covered by a film of zinc oxide. This film, when examined by electron diffraction, shows the properties of a single crystal in a crystallographically defined position relative to the ZnS-structure, according to Prof. G. Aminoff and B. Broomé.

A table giving the oestrogenic properties of a number of organic compounds together with a rough indication of their activity is given by Prof. E. C. Dodds and W. Lawson. Of various diphenyl methane derivatives tested, only those containing two hydroxyl groups in the *para* positions have been found to be active; the presence of a phenanthrene condensed ring is not necessary for this sex-hormone activity.

The carotenoid pigment echinenone, recently isolated by Dr. E. Lederer from the sexual glands of the sea urchin, *Echinus esculentus*, has been tested by Dr. T. Moore for activity as a provitamin A. with positive results.

Experiments described by M. J. Neuhaus indicate that, in male fruit flies, crossing-over between the X-chromosome and the short arm of the Y-chromosome occurs more frequently than with the long arm of the Y-chromosome, and that the crossing-over takes place between chromatids.

To explain the process of carbon assimilation by green plants (photosynthesis), Dr. J. Weiss assumes that for every chlorophyll molecule which reduces carbon dioxide at the surface of the fat-soluble (lipoid) particles in the chlorophyll granule, there are about 500 chlorophyll molecules in the interior of the granule, which provide the surface molecule with the four necessary quanta of energy.