

### Disintegration by Slow Neutrons

CHADWICK and Goldhaber, in their letter to NATURE on January 12, record experiments which indicate that slow neutrons can eject heavy charged particles from light atoms, even when the neutron traverses the atom "at relatively large distances" from the nucleus. To account for this, they suggest that there may be an attractive force between a nucleus and a neutron, at these large distances.

An alternative explanation is that the heavy particles are not in the nucleus, but outside it.

JOHN TUTIN.

26 Fenchurch Street,  
London, E.C.3.  
Jan. 14.

### Velocity of Sound in Liquid Oxygen

It seems that the velocity of sound has never been measured in liquefied gases at low temperatures, probably because the customary methods were not easily practicable. It appeared reasonable to try as a new method the effect, which has recently been

discovered by Debye-Sears and Lucas-Biquard, namely, the scattering of light by ultrasonic waves in liquids and solids. Judging from the results which I have obtained using oxygen as a scattering liquid, this method provides indeed a simple and convenient means for this purpose. The experiments, which were carried out with oxygen of 99.3 per cent purity, boiling at atmospheric pressure (705-720 mm. mercury) at  $-183.6^{\circ}$  C., and with a frequency of 7,500 kilocycles, yielded a sound velocity of 903 m./sec. Taking 1.140 as the density of the liquid, one gets then an adiabatic compressibility of  $105.6 \times 10^{-6}$  cm.<sup>2</sup>/kgm. The isothermal compressibility may also be calculated; with  $3.38 \times 10^{-3}$  as the value of the differential of the specific volume, and 0.406 as the specific heat at constant pressure, it comes out as  $172.0 \times 10^{-6}$  cm.<sup>2</sup>/kgm.

A detailed account will appear in *Helv. Phys. Acta*.

R. BÄR.

Physikalisches Institut der Universität,  
Zürich.  
Dec. 27.

### Points from Foregoing Letters

By means of a powerful source of neutrons (half a gram of radium mixed with beryllium) Prof. J. C. McLennan, Mr. L. G. Grimmett and Mr. J. Read have produced measurable radioactivity in the elements molybdenum, palladium, tantalum, tungsten and platinum. They have determined with fair accuracy the radioactive life-periods thus induced in these elements.

The amount of absorption of infra-red light ( $1.4-1.6\mu$ ) by certain organic substances can be related to their molecular structure as deduced from chemical tests, solubility, volatility, etc. Dr. Hilbert and Messrs. Wulf, Hendricks and Liddel state that when a hydrogen atom of an organic molecule is joined to two oxygen atoms by a co-ordinate link (that is, it forms a 'chelate' ring by sharing two electrons of one of the oxygens) then the compound does not show the usual amount of infra-red absorption typical of ordinary compounds containing the OH group, although by chemical tests the OH group appears to be present.

Crystals without a centre of symmetry (carborundum, zincite) when placed between two mercury electrodes, can be used as radio-detectors, while symmetrical crystals (galena, pyrites) do not give rectification with such large contact areas, but only with point contacts (cat's-whisker). Dr. S. R. Khastgir outlines a theory based upon the arrangement and the unbalanced electrostatic forces of the atoms in the surface layers of the crystals, and claims that this theory explains a number of observations not accounted for by other views of crystal rectification.

It has been shown that infants can produce their own vitamin C. From experiments with female guinea pigs in which luteal tissue was artificially induced, Dr. Geoffrey Bourne deduces that the corpus luteum of the ovary also has the ability to synthesise the anti-scorbutic vitamin C.

Mr. R. Snow and Mr. B. Le Fanu find that the cambium cells from strips of decapitated young sunflower plants, not only continue to grow, but even

produce wood cells (xylem) and give off roots, when covered with gelatin containing auxin (from the ether-soluble extract of urine). This raises the question whether the hormone activating cambial growth may not be identical with auxin, which has been shown to promote cell elongation and root formation.

Prof. V. V. Narlikar gives an equation, which he states to be the only one, relating space-time and velocity in such a way that the formula is invariant (independent of the observer's motion). From this formula the recession of spiral nebulae can be deduced.

The distribution of intensity in the spectrum of the light scattered by gases at different pressures has been determined by Mr. S. Bhagavantam and Mr. A. V. Rao. They find that the 'wings' of continuous light, which appear at the sides of the primary line and have been ascribed to the rotation of molecules, become similar to those obtained with liquids, when the gases are under high pressure.

The replacement of feathers in fowls is described by Miss Anne Hosker, who points out that not only in penguins and ostriches, as mentioned by Dr. Lowe, but also with young chicken and ducklings, the first feathers during moulting are carried for some time at the tips of succeeding ones.

Dr. T. F. Wall reports that in a hard-drawn steel wire, with one end clamped by three clamps 18 in. apart, a group of high-frequency waves of stress (produced by a blow at the clamped end) was found to travel along the wire more slowly than the simultaneous surge of stress. In an annealed wire, the speed of the group of waves is more nearly equal to that of the surge.

Dr. F. W. Gray and Mr. J. H. Cruickshank defend the accuracy of the Curie-Chéneveau magnetic torsion balance; they do not agree with F. E. Hoare that the unexplained variations observed at times by Gray and Dakers with water are due to the unreliability of the balance.