

## Points from Foregoing Letters

The masses of the light elements as far as fluorine have been calculated by Dr. M. L. Oliphant from the data given by Aston in *NATURE* of February 29, together with transformation data. The large mass found for the neutron (1.0091) is difficult to reconcile with the hypothesis that the proton and neutron are interconvertible elementary particles. By plotting the departure of the atomic masses from a whole number against the mass-number, Oliphant makes interesting deductions concerning the stability of several atomic species and predicts the probable existence of helium of mass 5.0125, the only mass-number missing from the list.

X-ray diffraction photographs obtained with bent crystals of sodium chloride are submitted by Dr. A. P. Komar, who compares them with diagrams derived from theoretical considerations. The good agreement between the two supports the view that the crystal in the process of plastic deformation behaves as a mosaic aggregate of blocks, which change their orientation nearly independently.

From the amount of  $\gamma$ -rays excited by fast neutrons S. Kikuchi, H. Aoki and K. Husimi have constructed a table showing the relation between the atomic number and the capture cross-sections for fast neutrons in various elements; they point out certain discontinuities which may be connected with the internal structure of the atomic nuclei of light elements.

From the frequency with which certain sex-linked characters (colour-blindness, light sensitivity of the skin, etc.) are inherited through the father's father or the father's mother, Prof. J. B. S. Haldane draws a tentative 'map' of the order in which the genes responsible for those characters are present in human chromosomes.

The rates of sedimentation of haemocyanin (blood pigment of snails) in ordinary and in heavy water of varying hydrogen ion concentration have been determined by Prof. The Svedberg and I.-B. Eriksson-Quensel, by means of the ultra-centrifuge. From these determinations and from the effect of heavy water upon the electrical potential, the authors surmise that the iso-electric point ( $pH$  at which suspended particles lose their charge and become stationary in an electric field) and stability of haemocyanin are somewhat different in heavy water from those in ordinary water.

Dr. P. Meyer shows that the haemolymph of terrestrial gastropod Molluscs has the same colloid osmotic pressure as that of marine gastropod Molluscs. On the other hand, colloid osmotic pressure of the haemolymph rises steadily from decapod Crustaceans to Arachnoids and insects. This supports his hypothesis of a close relation between the general organisation of an animal and the colloid osmotic pressure of its body fluids. The transition from one surrounding medium to another, in particular, does not seem to affect this relation, at least so far as sea water and air are concerned.

The colouring of many birds fades when they are kept under the usual caged conditions. Dr. H. L. Ratcliffe reports that an increase in the variety of

food (including milk proteins, legumes, mineral salts and fat-soluble vitamin) brings back to flamingos, ibises, spoonbills and buntings much of their natural colouring.

Commenting upon methods of assay of vitamin A, J. F. Ward and R. T. M. Haines point out the need for uniformity in the ration food of test animals; there are indications that vitamin A acts only indirectly upon the growth of the animals, inducing a healthier state of the epithelial and absorbing surfaces, thus enabling the absorption of the true growth vitamin, whether present in the vitamin-containing oil or in the supposed vitamin-free ration.

A new ergot alkaloid was independently discovered last year in four different laboratories and described under the names ergometrine, ergotocin, ergobasine and ergostetrine. In a joint letter, several of the discoverers, who have exchanged and compared the substances isolated in the various laboratories, state that these substances are identical; they leave it to the world of science to adopt one of the four suggested names for the new active principle.

A slight, but definite, increase in the density of carbon tetrachloride after some of it has been decomposed by metallic sodium is reported by R. S. Bradley. The author considers that this increase in density is due to a small chemical separation of the chlorine isotopes, the carbon tetrachloride which contains the lighter chlorine isotope reacting preferentially with the sodium, and leaving behind a mixture with a greater proportion of the heavier isotope.

Prof. K. G. Emel us and Dr. R. W. Lunt believe that there is no need for the frequently made assumption that ionised atoms and molecules are involved in gaseous reactions, when the gases as a whole are ionised (electrically conducting). In the authors' view, the reactions are only incidentally related to the conductivity of the gases and the velocity with which such reactions take place can be accounted for on the assumption that the reacting particles are neutral.

Dr. W. Bradley points out that a certain type of molecular arrangement which has been found in several cancer-producing substances is also effective in determining the dyeing properties of organic substances, being present in 'substantive' dyes (that is, dyes which can be used without a mordant).

The reactions and probable structural formula of a new basic compound  $C_4H_7N_5$  obtained from guanine (a substance resulting from the decomposition of nucleic acids and other compounds present in animal tissues) are described by Prof. G. Hunter.

Drs. W. A. Wooster and A. J. P. Martin describe how, by adjusting the filament and anode potentials, the electrometer triode valve can be used either as a high resistance (for the measurement of ionisation currents such as obtained in an ionisation chamber used in connexion with X-ray study of crystals) or as an earthing key. In this latter case, it has the advantage that, on opening, it introduces no spurious deflection of the galvanometer.