$r \gg 0$, and that V remains finite when $r \to 0$. Estimating the value of η from the mass-defect of the deuton, one finds that the probability of emission of a γ-quantum is for an excited proton far larger than the probability of emission of a pair of neutrinos, so that the latter possibility does not lead to contradictions with experimental facts.

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[1] Ig. Tamm, NATURE, **133**, 981, June 30, 1934.
[2] E. Fermi, *Z. Phys.*, **88**, 161; 1934.

Symbols for Chromosome Numbers

IN a paper on the chromosomes of *Chrysanthemum*, Shimotomai[1] pointed out the need for a special symbol to represent the basic number of chromosomes in genera containing polyploid species. He suggests, however, that n should be used for this purpose, φ and 2φ being introduced as new symbols for the gametic and zygotic numbers of chromosomes respectively in a particular species. This usage has been followed by Dr. I. V. Newman in a paper[2] recently issued. The need for an additional symbol for the fundamental number in a genus has been evident for some time, but as n and $2n$ have long been in use for the haploid and diploid chromosome numbers of a species, it seems clear that they should remain unchanged, and the new symbol should be introduced for the new conception of a basic number for the genus.

If this suggestion is adopted, then in the genus *Chrysanthemum*, for example, $\varphi = 9$, in *C. indicum* $n = 18$, $2n = 36$, in *C. yezoensis* $n = 45$, $2n = 90$, etc. To show the polyploid nature of particular species we may then write for *C. indicum* $n = 2\varphi$ or $2n = 4\varphi$, showing that it is a tetraploid species. Similarly for *C. yezoensis* we may write $n = 5\varphi$ or $2n = 10\varphi$, showing it to be decaploid. This will avoid the confusion which is bound to result if the use of n to represent the haploid number in any species is changed.

Sansome and Philp[3] have suggested x as the symbol for the fundamental number, but x was formerly used in place of n, and is still so used by some[4]. Hence confusion can only be avoided by adopting a new symbol such as φ for the basic number.

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[2] Newman, I. V., "Studies in the Australian Acacias. III", *Proc. Linn. Soc. N.S.W.*, **59**; 1934.
[3] "Recent Advances in Plant Genetics", p. 165, 1932.
[4] For example, Fernandes, A., "Nouvelles études caryologiques sur le genre Narcissus L.", *Boletim Soc. Broteriana*, **9**, 23; 1934.

Points from Foregoing Letters

USING three different methods of stimulating stomach secretions, Prof. B. P. Babkin infers that digestive glands are composed of various sets of cells, connected to separate nerves, so that different types of secretions are possible. Slight stimulation of the vagus nerve causes scanty flow of mucous fluid; stronger current provokes copious flow of gastric juice and digestive enzymes similar to those produced by the sham-feeding of a test-meal; the drug histamine stimulates gastric juice secretion but not enzyme production.

Prof. A. H. Compton of Chicago, now visiting lecturer at the University of Oxford, calculates that the energy liberated in the atomic explosions, observed at higher altitudes by means of the 'cloud chamber', may be so high as 600,000 million volts. This energy would correspond to the annihilation of the mass of an atom of weight 600. No such heavy atom, nor any mechanism whereby several atoms would be simultaneously destroyed, is known. Hence it may be assumed that the atomic explosions are due to cosmic rays, which are known to possess energy of that order of magnitude.

A group of investigators from Switzerland corroborates Hevesy and Hofer's recent inference that water introduced into the body becomes completely mixed with the total water content. The Swiss investigators injected a solution of xylose, a sugar-like substance obtainable from beechwood or jute, in water containing 1·66 per cent of the heavy variety, into the intestine of fasting rats. It was found that the water injected, with the heavy water as indicator, distributed itself throughout the entire body in one hour.

Muscle derives its energy from a chemical change in which the sugar-like substance—glycogen—is transformed into lactic acid. For this conversion several other substances are necessary intermediaries, among them creatine, adenylic acid and their phospho-combinations. Prof. J. K. Parnas and his collaborators, as a result of experiments on muscle pulp poisoned with iodoacetic acid, find that phosphoglyceric and pyruvic acids are also intermediaries, the latter acting as phosphate carrier both in the presence and absence of air, and leading to the formation of phosphocreatine and adenosinetriphosphoric acid.

Various investigators have observed that the proximity of ripe apples and pears stimulates the sprouting of potatoes and the growth of pea-seedlings. Similar effects can be obtained with traces of ethylene. Mr. R. Gane has now been able to detect ethylene among the gases given off by ripe apples.

X-ray studies of crystal structure carried out by Dr. Mehl and his collaborators show that very thin films of oxides (less than 1/500 in. in thickness) grown upon crystals of iron and copper, have an atomic arrangement in definite relationship to the lattice structure of the metals on which they are formed. It is as yet uncertain whether the difference in orientation on different crystal faces is related to the observed variations in the rate of oxidation.

Prof. Tamm points out that the emission or absorption of two neutrinos by the neutron or proton, though less probable than the emission of a γ-ray by the excited proton, is also a possible occurrence. It would not change the spin or the electrical charge of the heavier particle, which would be the case when a single neutrino is given off, as postulated by Fermi in order to account for the emission of β-rays (electrons) by some of the radioactive substances.

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