

### Use of the Word Substrate

IN recent years, the practice has grown up among workers in surface chemistry of using the word 'substrate' to denote the bulk phase underlying a surface film, regardless of the fact that this word has been in general use for a much longer time to denote the substance upon which an enzyme acts. The name as applied to a bulk phase on which a surface film rests would seem harmless enough in most cases, but since it is almost certain that, in enzyme action, the substance acted on is adsorbed, probably locally and one molecule thick, on the surface of the enzyme, the same word 'substrate' will have to do duty *both* for the underlying, and more

bulky, enzyme, and for the small molecules upon which the enzyme acts!

If the words 'substratum', or 'underlying liquid' (or solid, as the case may be) were used instead of substrate for the denser phase adjoining a surface film, I think this inconsistency, and possible source of confusion, in nomenclature, would be simply avoided.

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### Points from Foregoing Letters

THE isotopic and packing fraction of krypton atoms of mass 78, 82, 84, 86, and of xenon atoms of mass 129, have been determined by Dr. F. W. Aston, by comparison with hydrocarbon 'doublets', by means of the mass spectrograph.

Dr. D. Crowfoot reports that the birefringent insulin crystals of prismatic type obtained by crystallization from acetate buffers at pH 5.2 gives similar X-ray patterns to those shown by the usual rhombohedral form, except for a more marked diffuse ring which may be due to the prevalence of amorphous matter, probably responsible for the prismatic form.

The probable absolute configuration of the naturally occurring  $\alpha$  amino-acids has been demonstrated by R. C. Rainey by the application of Boys's rule to 2-amino-hexane, the configuration of which has recently been correlated with that of the amino-acids by Levene and Mardashew; solvent action prevents the direct application of the rule to the amino-acids themselves.

Dr. St. Ziemecki, by replacing argon in a pressure ionization chamber for cosmic ray measurements by krypton, finds the effect was an increase of the ionization current, which was approximately 2.7 times greater than with argon at the same pressure. Thus by using krypton-filled chambers, it is possible to reduce greatly the pressure employed and hence the weight of the apparatus, which is of importance in measurements in high regions of the atmosphere.

By applying a number of corrections (due to mass-polarization, relativistic change of mass with velocity, magnetic interaction between the orbits, etc.) to the calculated value of the ionization potential of lithium atoms, H. A. S. Eriksson finds a value of 610,100 cm.<sup>-1</sup> in fair agreement with the experimental value. For helium, the agreement is not so good. Theoretical values are somewhat higher than experimental ones.

A band in the region of 3000 A. of the Raman spectra of several inorganic acids observed by Dr. C. S. Venkateswaran is attributed by him to the presence of the OH group. The author gives a table showing the frequency limits of the bands in the cases of sulphuric, iodic, selenious, telluric and boric acids and, from their broad and diffuse nature, deduces that the OH group, though present in these acids, is much weaker in strength than the OH group present in the alkalis.

The surface migration of barium on to the opposite side of nickel and tungsten ribbon used in thermionic emission valves, as reported by J. A. Becker, is not

confirmed by Dr. M. Benjamin and R. O. Jenkins, even after sixteen hours running at 1,100° K.

Prof. S. S. Bhatnagar, Dr. H. Lessheim, and Mohan Lal Khanna find that the diatomic vapour of selenium is paramagnetic, which fact agrees with the view that the ground<sup>1</sup> level of Se<sub>2</sub> is <sup>3</sup>Σ.

Experiments on animals are described by Dr. P. J. Du Toit and A. I. Malan to show that rickets result from a deficiency of phosphorus, even in the presence of vitamin D. Lack of calcium, on the other hand, leads to osteofibrosis.

Dr. V. Korenchevsky and K. Hall find that suitable combination of female and male sex hormones (progesterone, œstrone, testosterone and androstenedione) bring about normal pregnancy changes in the uterus and vagina of ovariectomized rats.

Prof. P. W. Wilson describes experiments made at Helsingfors, Finland, and others at Madison, U.S.A., in which both positive and negative results with respect to excretion of nitrogen by leguminous plants were obtained. He emphasizes that the existence of these negative findings together with the lack of clear definition of the conditions required for the occurrence of the phenomenon, make it impossible to decide at this time if the excretion plays a significant part in Nature.

The case of a female *Lebistes* (the 'millions' fish which devours mosquito larvæ) which, as a result of a single mating has produced a succession of broods over a period of several months, is reported by G. L. Purser.

A method of staining smears with neutral-red, enabling one to differentiate between lymph-cells and small monocytes and to indicate qualitative changes in the white blood corpuscles (in infectious anæmia in horses) is described by A. Hjärre and H. Berthelsen.

The equilibria between cobalt chloride, and hydrogen and deuterium have been studied by Prof. J. R. Partington and R. P. Towndrow. Values of the equilibrium constant have been obtained at different temperatures, and from these the heats of reaction have been calculated.

ERRATUM.—Referring to his letter entitled "Collision of Two Oil Drops and the Stability of a Non-spherical Oil Drop", which appeared in NATURE of July 10, p. 70, Mr. Yoshio Ishida writes that owing to an error in the manuscript, 'oblate' should read 'prolate', and vice versa.