that the growth of the chicks was stimulated by the same substance. This latter observation is in accordance with the findings of H. M. Evans, G. A. Emersom and O. H. Emerson[3] in experiments with rats.

Several authors agree that there are two forms of the anti-encephalomalacia factor, namely, a fat-soluble and a water-soluble form. The above observations show that the fat-soluble form is either identical with, or may be substituted by, the synthetic vitamin E. It should further be possible to standardize vitamin E in fats by means of the anti-encephalomalacia activity.

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Nov. 29.

* By courtesy of F. Hoffmann. La Roche & Co., Basel.

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The "Du Noüy Phenomenon"

SOME years ago, du Noüy discovered the very interesting fact that blood serum is able to maintain its normal surface tension. When a surface-active substance like sodium oleate is brought on the surface of a serum solution, the surface tension is lowered for a very short time, but in a few minutes regains its original value (whereas the decrease of surface tension of water is a persistent phenomenon).

Du Noüy believed this phenomenon to be due to the adsorption of oleate on the surface of the large protein molecules, the oleate molecules being thus eliminated from the surface of the liquid. The action of other strongly surface-active substances, such as sodium taurocholate and glycocholate, is equally well neutralized by the serum molecules. To quote du Noüy, "it explains why the liberation of these substances in the circulation does not carry with it a fatal haemolysis of the red cells—in the case of jaundice, for instance—although present in sufficient quantities to lower considerably the surface tension of an equal volume of saline solution. The antagonistic action of the plasma proteins counteracts the effect of the excess of bile salts and owing to this phenomenon of defence, the surface tension of the blood is not lowered to a dangerous degree"[1].

This interpretation is now generally accepted, and the description of the 'du Noüy phenomenon' appears in many text-books and reviews on surface phenomena of biological fluids (Brinkman[2], Herčík[3], and others).

In the course of our experiments, we met with direct evidence that the capacity of the blood serum to neutralize the action of such substances as sodium oleate has little to do with colloidal adsorption. If we prepare an ultrafiltrate of diluted serum, the fluid, although deprived of colloids, preserves its former capacity to neutralize the action of oleate. On the other hand, if, instead of ultrafiltration, we precipitate the calcium ions of the serum by addition of some oxalate, the capacity of such an 'oxalated serum' to neutralize oleate is greatly depressed. Finally, we used a pure solution of calcium chloride containing as little as 1·0 or 0·5 mgm. per cent calcium, which roughly corresponds to the calcium content of 1 in 10 to 1 in 20 serum dilutions. The neutralizing capacity of such calcium chloride solutions did not differ markedly from that of the above serum concentrations.

We thus arrive at the conclusion that the neutralization of oleate (and probably also of bile salts) is not a colloidal but rather a salt effect, which is chiefly due to the calcium ions of the serum.

A detailed description of these experiments will be published elsewhere.

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Crystalline Vitamin B_6 (Adermin)

ANALYSES of vitamin B_6 (adermin), isolated in a crystalline state from yeast by Kuhn and Wendt[1], from rice polishings by Keresztesy and Stevens[2] and by Ichiba and Michi[3], established its empirical formula as $C_8H_{12}O_3NCl$. It seems, however, that vitamin B_6 was prepared so long ago as 1932, though its physiological importance was not recognized. In a paper by Ohdake[4] dealing with oryzanin (vitamin B_1 from rice polishings) a by-product, obtained from the so-called basic silver fraction ($pH = 6·8–9·0$) is described and the formula $C_8H_{10}O_3N.HCl$ assigned to it.

Considering the properties of the substance, the presence of trivalent carbon or quadrivalent nitrogen is very unlikely, so the total number of hydrogen atoms should be either 10 or 12, instead of 11, calculated from the analyses. If twelve atoms of hydrogen are present, the empirical formula of adermin results and, if one compares the properties stated* ("long, colourless plates, easily soluble in water, less in alcohol, not in acetone, benzene, ether, etc.; melting point 204–205°, uncorrected (decomposition); strong Pauly's reaction; precipitated by phosphotungstic acid") with those reported for adermin, the resemblance becomes very clear.

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* The original paper being no longer accessible to me, these data have been translated back into English from a note in Dutch.

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Rigidity in Protein Films, and the Properties of the Force-Area Curves

PROTEINS when spread upon aqueous solutions at sufficiently low surface concentrations exhibit the mechanical properties of two-dimensional liquids. A change of state occurs upon compression, the film acquiring marked rigidity in the plane of the surface; upon the slender basis of an analogy with the behaviour of proteins in bulk, the film in this rigid condition has been called a 'gel'[1]. A consequence of this rigidity is that whereas in the liquid film any change in pressure can be transmitted through a small aperture dividing the film into two portions,

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