ABSTRACTS OF COMMUNICATIONS.

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The rôle of surface tension and potential difference in the stability of a diphtheria-like bacillus.

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It has been found possible to emulsify a highly cohesive and agglutinable strain with M/50 sodium oleate, which concentration was less than for any other of a number of salts used, which included M/16 MgCl, M/8 Na Citrate, M/2 NaCl, copper acetate and $CaCl_2$, which are given in the order of their emulsifying efficiency.

With threshold concentrations of certain of the emulsifying salts the organism spreads suddenly over the surface of the liquid. The phenomenon is well recognized to be one of surface tension depression.

It is probable that the emulsifying action of the oleate is brought about by its ability to diminish the abruptness at the interfacial boundary between the bacterium and the solution. This view accords with the fact that COONa radical of the oleate is truly soluble in the water, and the hydrocarbon radical is not. The obvious lipoidal nature of the wall of the bacterium in question makes probable the adsorption of the oleate anion; in fact, repeated washing restores the flocculability. These conditions make for diminution of abruptness at the interfacial boundary which always produces a marked lowering of surface tension. Measurements of potential difference indicate the recognized importance of this factor also, but in the more dilute concentrations of salts.

A closely related strain emulsifiable in NaCl was precipitated by $CaCl_2$ and an ion antagonism was shown between the Na and Ca cations in a ratio of 80:1. The effect was not permanent. The ratio is of the same order of magnitude as in oil-water and water-oil emulsions and suggests a similar lipoid arrangement in the membrane of the organism.

145 (2377)

A study of the reaction of normal human subjects to intravenous injections of insulin.

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Two-tenths of a cc. of insulin were injected intravenously. Blood samples were withdrawn at frequent intervals, and sugar determinations were carried out on the whole blood.

The blood sugar decreases rapidly and at a uniform rate. The minimum sugar value is indicated at about 18 minutes after the injection. The sugar content of the blood then rises, at a slower rate, reaching the initial value within about one hour after the injection.

Peculiarities were observed in the reaction of overweight subjects. The insulin hypoglycemia is not as intense as in a lean subject of the same weight, and recovery from it seems slower. While this phenomenon apparently corroborates older views on the subject of "fat and glycogen antagonism", it is being investigated further, and other experiments are being undertaken on the relationship between fat and glycogen formation.

It is suggested that the varying degrees of adiposity, as such, underlie the differences in the reaction to insulin of animals used in its assay.

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