

A promising chemical test was recently put forward by Rowland¹ in which the characteristic changes in the percentage distribution of the milk proteins are utilized. Rowland showed that even in sub-clinical mastitis the percentage of casein-nitrogen falls below the normal level. This loss in casein is primarily out-balanced by a rise in globulin, and this suggested the possibilities of working out a method similar to Lange's gold test for cerebrospinal fluid, a test which is largely bound up with pathological changes in the globulin content of this body liquid. Owing to the predominance of casein, no characteristic results could be obtained with whole milk, but a sensitive test was procured with casein-free milk serum prepared in the manner described by Rowland and titrated back with sodium hydroxide, using methyl red as indicator, to a pH in the region of 6.0-6.5. When 5 ml. of a red gold sol prepared in accordance with Lange's directions are mixed with 1 ml. of this serum, the colour of the gold sol remains unaffected by sera from milk of healthy individual cows or quarters,

but turns instantaneously to violet or blue in the case of even slight infection of the udder.

The results so far of this simple and rapid test seem to correlate particularly closely with the bacteriological findings regarding the presence or absence of mastitis-producing organisms in the milk. Experiments with dilution series suggest that the correlation between globulin content or globulin/albumin ratio and the intensity of the colour changes is not of a simple nature, and preliminary investigations indicate that the proteose-peptone fraction of nitrogenous compounds of the milk also participates in the reaction.

A detailed study of all the factors involved is now in progress.

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¹ *J. Dairy Res.*, 9, 47, 174 (1938).

Points from Foregoing Letters

By isolation of the natural *K* X-radiation, and also by chemical tests, it has been shown by N. Feather and E. Bretscher that an isotope of iodine is one of the active products formed by the action of neutrons on uranium, and previously regarded as belonging to a series of transuranic elements.

The formation of radioactive noble gases during the irradiation of uranium with slow neutrons has been studied by F. A. Heyn, A. H. W. Aten jun., and C. J. Bakker. It is shown that the nucleus can be split in different ways, giving rise to either krypton or xenon. Several decay products of these gases are observed. Bombarded with fast neutrons, thorium also is found to form noble gases too.

L. J. le Roux, C. S. Lu and S. Sugden record experiments in which two further reactions (the condensation of alkyl bromides with aniline and the hydrolysis of *n*-butyl bromide) have been used to separate the isomeric ⁸⁰Br nuclei. These results confirm the discovery of Segrè, Halford and Seaborg and of DeVault and Libby that the ⁸⁰Br nucleus of period 4.5 hour decays by a γ -ray change to give the isomeric ⁸⁰Br nucleus of period 18 minutes.

On the basis of X-ray experiments on iron-nickel alloys, A. J. Bradley offers a new explanation of the structure of some meteorites. These bodies may consist of a mixture of large α - and γ -crystals, corresponding to a state of equilibrium at some temperature between 350° and 580° C. It is suggested that they have gradually assumed this state while in the neighbourhood of the sun, which they encircle in a cometary orbit.

N. Gralén and The Svedberg state that sedimentation and diffusion experiments show that the hypothesis proposed by Talmud for 'intraglobular' reactions based upon Wrinch's theory of protein structure cannot explain the formation of a complex between egg albumin and glycine ethyl ester. It is suggested that the complex can be considered as a chemical compound, and with the glycine residues bound on the outside of the protein molecule.

P. Stamberger finds that the coagulation of rubber latex from *Hevea brasiliensis* takes place 6-11 hours

after collection, before decomposition processes have set in. No change in electrical conductivity could be observed during that period. The coagulation is apparently due to the action of enzymes on the protecting proteins.

W. J. Hickinbottom reports that a study of the isomerization of benzyl phenyl ether in quinoline solution has yielded results which demonstrate that the isomerization is preceded by an initial fission of the ether into free radicals.

X-ray investigation of the fluoride-containing mineral ralstonite shows, according to A. Pabst, that it has a structure similar to that found in the pyrochlore group.

Œstradiol produces in immature rats changes in the water content of most organs and tissues, according to experiments by S. Zuckerman, A. Palmer and G. Bourne. The skin, uterus and vagina show an increase in the water content in the first six hours, then a fall until the 24th hour, and then again an increase until the 66th hour. The water content of the striated muscle, heart, pancreas, brain and gut, on the other hand, changes mainly in the opposite way from that described above.

The fungal disorganization of plant residues in dung and composts has been studied by F. Baker by direct microscopical observation in polarized light. Characteristic disintegration patterns are illustrated. Fungal attack originates in the lumen of fibres, fine hyphae penetrating the tertiary and proliferating in the secondary layer of the wall. The primary layer remains immune from attack.

Some experiments described by E. S. J. Hatcher show that the large hybrid seeds and embryos obtained by crossing two inbred strains of tomato are not the direct expression of hybrid vigour. They are the effect of reduced competition between fewer seeds which are produced by artificial and therefore less efficient pollination.

A new test for bovine mastitis based on a reaction between casein-free milk serum and solutions of colloidal gold is outlined by R. Aschaffenburg.