own experience[4] homogeneous films can be obtained when proteins are spread on a salt solution having the P_H of the isoelectric point of the protein in question (egg albumin P_H4.8). In no instance was it possible to obtain homogenous films—as observed through the ultramicroscope—on a surface of distilled water. Likewise, at salt solutions of P_H3 or P_H7 the protein films contained signs of inhomogeneities. It has been found also that films of egg albumen start to collapse at a pressure of about 18 dynes per cm.

In the light of these observations it seems to be possible that in those cases in which protein layers were built up from films which were spread on distilled water, and compressed to 30 dynes per cm, Langmuir, Schaefer and Wrinch were dealing with inhomogenous and collapsed films whose surfaces were to some extent both lyophilic and lyophobic. This would explain the observation that A and B layers are wetted equally by water and by lyophobic solvents, respectively.

Whereas it was not possible to build up PRAA.. films, it is surprising that the authors were able to build up PRBB... layers. In both PRAA.. and PRBB. . layers the lyophilic $-NH_3^+$ and $-COO^-$ groups of one layer would be attached to the lyophobic paraffin groups of the neighboring layer. On theoretical reasons these groups should exert relatively weak cohesive forces upon each other (ion-induced dipole) which probably could be overcome easily by the attractive forces between water and the lyophilic groups (ion-dipole) when such a polylayer is dipped into water. That the polar groups of proteins do not interact with lyophobic groups of other molecules has been suggested by experiments of the author—to be published shortly—in which the molecules of a mixed protein—fatty acid film occupy apparently the same area which they occupy when the compounds are spread alone. The question arises, therefore, whether or not the PRBB layers likewise consist of inhomogenous protein layers which to some extent are both lyophobic and lyophilic.

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A REAGENT FOR VITAMIN B_1

A PRELIMINARY report by McCollum and Prebluda[1] on a reagent for the detection and estimation of vitamin B_1 prompts me to send this note on a reagent for vitamin B_1 which I have been investigating for some time.

An investigation recently completed, and soon to be published, showed that the thiazoles form with potassium iodide a sensitive reagent for the detection of bismuth and antimony. It was also shown that a solution of bismuth iodide in potassium iodide is a sensitive reagent for thiazoles. Since Williams, Clarke and coworkers have shown that vitamin B_1 contains a thiazole fraction, it was suggested by Dr. Benjamin Harrow, of these laboratories, that bismuth potassium iodide be tested as a reagent for vitamin B_1.

This research was begun and a characteristic orange-red precipitate was obtained with the reagent and the following vitamin B_1 products: Fleischmann's yeast cakes, Squibb's malted wheat germ extract (vitavose) and Squibb's vitamin B and G syrup. Fresh orange juice, fresh grapefruit juice and canned tomato juice also gave a characteristic precipitate with the reagent. Certain brands of canned orange juice and canned grapefruit juice did not give the reaction. These products, when treated to destroy the vitamin, gave no precipitate with the reagent unless care was taken to preserve the thiazole nucleus.

The orange-red precipitate formed by the reagent with the above-mentioned products can be filtered, dried and weighed. The weight of the precipitate was found to be proportional to the amount of product used.

This work is being extended further, and complete details will be published later.

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THE EFFECT OF TEMPERATURE UPON THE RESPONSES OF PLANTS TO PHOTOPERIOD[1]

To furnish material for further studies of the relation of anatomical condition to blossoming,[2,3] more than 100 varieties of plants, including some monocotyledons, are being grown in different environmental and cultural conditions. The principal variables being used are photoperiod and temperature, although some partial defoliation, girdling, shading and low nitrogen treatments are also included. It appears that temperatures a little above or below the usual range employed in greenhouse culture have been effective in altering the responses of some plants which are commonly considered to have a fixed or definite reaction to relative length of daylight. For instance, poinsettia plants grown in the short days of winter at a temperature of 68° to 70° F. remained strongly vegetative and did not blossom, while plants in temperatures of 60° to 65° blossomed normally and plants in temperatures of

[4] *Jour. Phys. Chem.*, 40: 361, 1936.
[1] SCIENCE, 84: 488, November 27, 1936.

[1] Published with the permission of the director of the Wisconsin Agricultural Experiment Station.
[2] Ocra C. Wilton and R. H. Roberts, *Bot. Gaz.*, 98: 45–64, illus., 1936.
[3] R. H. Roberts and Ocra C. Wilton, SCIENCE, 84: 391–392, 1936.