a sort of parental supervision, considering the mental caliber of some of the supervisors, but it could be likened to a business or family partnership. The wise man knows that his business partner or his wife may sometimes want to go when he wants to stay, but he also knows that the disadvantages of the partnership —the items on which he surrenders his own preference —are greatly outweighed by the advantages. Therefore, he accepts certain limitations. Is it not possible to do scientific work within such a framework in some degree of contentment, at least until certain potential dangers have receded?

If the trends that appear to threaten academic freedom and even seem to hamstring the progress of research are as dangerous and ominous as claimed, why not consider the matter as a research problem and really study both sides? This type of thing is susceptible of reasonable solution in the conference room, provided both sides are represented by intelligent men who can see the forest as a whole, as well as by men who are still threading their way through the trees. The military and administrative sides must be properly represented, for the scientists alone may find it difficult to make up their collective mind (*cf.* the National Science Foundation!). Of course, we scientists admit privately that our mental processes are a bit superior, but let us try to listen with complaisance to the viewpoints of others.

The turmoil about faculty loyalty oaths has always puzzled the writer. Is it entirely because of the threat to academic freedom, or do unmentioned feelings of personal dignity regarding the unassailable integrity of the scholar complicate the situation? This is only one point of view, but the writer would be very happy to see the research scientist approach the whole problem with more scientific detachment, trying to understand the necessities of those charged with the protection of our national security (and with it our fine research facilities), recognizing without condoning certain weak links in the administrative chain, and, above all, carrying scientific methods and ideals and dignity into the argument, not forgetting these ideals when someone gets a blow on the nose.

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Pressor and Oxytocic Hormones of the Pituitary Gland

IN THE past few years, by the use of improvements in analytical methods of extraction and of adsorption and elution, du Vigneaud and his collaborators (Pierce and Turner) have added much to previous knowledge concerning the chemistry of the pressor and oxytocic hormones of the pituitary gland. Enough is now known concerning the amino acid constituents of these hormones to warrant the following observations concerning the relationship between them.

According to du Vigneaud and his collaborators, the acids common to both hormones are tyrosine, proline, glutamic acid, aspartic acid, glycine, and cystine. In addition to these, the pressor hormone contains arginine and phenylalanine, and the oxytocic hormone, leucine and isoleucine.

The presence of phenylalanine in the pressor hormone is in contradiction to the work of Stehle and Fraser, who reported it to be absent. The absence of isoleucine from the same hormone is in contradiction to the work of Stehle and Trister, who reported it to be present. The work of Stehle and his collaborators was done with a preparation much inferior in potency to that investigated by du Vigneaud and his collaborators. The isoleucine reported by the former may have been contained in the ballast of the pressor preparation. The absence of phenylalanine is not easily explained, since conditions were favorable for its detection. If the reader is willing for the moment to accept the results of Stehle and his collaborators as correct, the results of du Vigneaud and his collaborators have what seems like a plausible explanation. In the starch column method of separation, phenylalanine and isoleucine appear in close sequence in the eluate, so that it is possible what was reported as phenylalanine may have been isoleucine.

If this is true, then the interesting conclusion follows that the only difference between the pressor and oxytocic hormones is the occurrence of leucine instead of arginine in the oxytocic hormone and, vice versa, the occurrence of arginine instead of leucine in the pressor hormone. The possibility that one hormone may be derived from the other occurs immediately. The introduction of a guanidine group into leucine with the elimination of a methyl group would convert the oxytocic hormone into the pressor hormone. The reverse, the conversion of the pressor hormone into the oxytocic, requires the elimination of the guanidine radical from arginine and the introduction of a methyl group.

The ideas expressed are not compatible with the conception that the two hormones are split products of a giant molecule.

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Electrokinetic Behavior of Dilute Monodisperse Sulfur Hydrosols

THE development of dilute monodisperse sulfur hydrosols by LaMer and Barnes (*1*) has resulted in the study and solution of a number of problems previously unattainable with polydisperse sols (*2–5*). However, the electrokinetic properties of the dilute monodisperse sols had not been studied in connection with any of these investigations.

Recently such a study was made, using a microelectrophoresis method (*6*). Sols prepared with dilute sodium thiosulfate (0.002 *M*) and HCl (0.001–0.003 *M*) were found to contain *positively charged particles*. Previously, the charge on the sulfur particles in sols prepared from concentrated reagents had always been found to be negative, presumably because of the pentathionate ion produced in the chemical reaction, which becomes strongly bound to the particles (*7*). Our investigations have demonstrated that the fundamental reason for the existence of positively charged particles in the dilute sols is the absence of a significant concentration of pentathionate ion. Under these circumstances hydrogen ion can become the charging species. The positive charge decreases with increasing pH. The particles are isoelectric at pH of approximately 4, and negative at higher pH values. When extremely small amounts of sodium pentathionate were added to the dilute monodisperse sols (final concentration of $Na_2S_5O_6 = 1\text{–}2 \times 10^{-5}$ *M*), the positive charge was immediately reduced considerably or completely reversed. Such experiments indicate that the concentration of pentathionate in the original dilute sols is always less than 1×10^{-5} *M* many hours after mixing the reagents.

In a recent paper Dinegar, Smellie, and LaMer drew the same conclusions concerning the pentathionate ion concentration in these dilute sols from the results of chemical measurements (*8*).

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Book Reviews

Carbon Dioxide Fixation and Photosynthesis. Symposia of the Society for Experimental Biology, No. V. New York: Academic Press, 1951. 342 pp. $6.80.

The papers read at the Sheffield meetings of the Society for Experimental Biology in 1950 are now available in book form. They attest to a carefully planned program in which various phases of the general problem of photosynthesis have been ably presented by persons whose efforts have contributed materially to a better understanding of this complicated process. Included are discussions of the most important physical, chemical, comparative-biochemical, and biological aspects. On the whole, the material has been very well integrated.

The first four chapters, by H. A. Krebs, H. G. Wood, S. Ochoa, and D. Herbert, set forth the development of our comprehension of carbon dioxide assimilation by nonphotosynthesizing organisms. They show how, from the discovery of this phenomenon, now some 15 years ago, detailed investigations have resulted in a definition of several of the specific reactions involved, including the isolation and characterization of enzymes and coenzymes that play a role in CO_2 fixation by animal tissues and microorganisms. Herbert's paper, especially—containing much otherwise unpublished material and a penetrating critical analysis of existing discrepancies—is a fine contribution.

Three succeeding chapters are concerned with aspects of the metabolism of higher plants. M. Thomas discusses crassulacean acid metabolism; because of the emphasis in the first four chapters on the mechanism of formation of certain di- and tricarboxylic acids, it provides a link with the first part of the book. The subject matter treated by Thomas, however, is, from the point of view of a biochemical analysis, still in a rudimentary state. The papers by O. V. S. Heath, and by H. L. Penman and R. K. Schofield, dealing, respectively, with assimilation by leaves with stomatal control eliminated, and with some physical aspects of assimilation and transpiration, conclude this "biological interlude." The three chapters provide many examples of the complications attending studies with higher plants.

The next three chapters are an excellent introduction to the photochemical basis of the photosynthesis problem. The photochemical formation and reactions of atoms and radicals in aqueous systems are discussed by M. G. Evans and N. Uri; photochemical oxidation-reduction processes, also in aqueous systems, by Jos. Weiss; and the resonance transfer of energy between molecules by E. J. Bowen. The general treatment of these aspects is so admirable, and the implications for a better understanding of the mechanism of photosynthesis are so clearly evident and so well presented, that a careful study of these chapters cannot be too strongly recommended.

James Franck's paper on the physical background of photosynthesis summarizes the application of physical principles to the formulation of an integrated picture of a general mechanism. The section on physical aspects is concluded with a chapter by M. S. Nishimura, C. P. Whittingham, and Robert Emerson on the maximum efficiency of photosynthesis, representing a critical evaluation of this much debated and controversial field, and one by B. Kok on photo-