active substances, the potentials of sulfanilamide, sulfapyridine and p,p′-diamino diphenyl sulfone were measured. The potentials of these fell within a range of 20 millivolts. o- and m-amino benzenesulfonamide were the "inactive" compounds examined. These two substances gave potentials about 50 millivolts lower than the active compounds.

It must be emphasized that, until more is known about the blood levels obtained and the rate of absorption and excretion of "inactive" compounds, it is not possible to accept them as inactive in theoretical considerations. When an attempt is made to correlate activity, only compounds known to be present in the blood stream for intervals of time and in concentrations comparable with sulfanilamide or sulfapyridine, and under these conditions showing no therapeutic effect, should be considered as inactive. Strangely enough, for this type of work, some well-studied inactive compounds would be highly desirable. It seems possible that attempts of this sort to use some fundamental physical property as a stepping-stone in attacking the problem of correlating chemical structure with chemotherapeutic activity may lead to a more rational basis for the selection of new chemotherapeutic agents. Further work of this general nature will be reported later.

We conclude, on the basis of the following facts, that the "plateau potentials" of Shaffer are a function of the oxidized and reduced forms of the oxidizing agents employed, rather than of the oxidation products of sulfanilamide:

(1) In the presence of excess sulfanilamide the potentials fall rapidly as the oxidized form of the oxidizing agent is exhausted.

(2) Equilibrium potentials are established if partially oxidized solutions of sulfanilamide are allowed to stand for 48 hours.

(3) When an excess of ceric sulfate is present, the equilibrium potentials agree with those calculated for a cerous-ceric system.

(4) The "plateau potentials" can be varied within wide limits, depending on the rate of addition of the oxidizing agent.

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STRUCTURE AND SYNTHESIS OF A PLANT WOUND HORMONE

IN an earlier publication the isolation of a crystalline substance possessing wound hormone activity has been described.[1] This substance, which was isolated from the water extract of green string-beans, possesses the property of eliciting renewed growth activity in the parenchymatous cells of the bean mesocarp, and its activity may hence be quantitatively determined by the bean test which has been described elsewhere.[2] Elementary analysis of the crystalline product, together with its molecular weight (by m.p. depression in camphor) leads to the formula $C_{12}H_{20}O_4$, and the equivalent weight by titration indicates a dibasic acid.[1] Upon catalytic hydrogenation a crystalline dibasic acid, $C_{12}H_{22}O_4$, identical with decane-1,10-dicarboxylic acid was obtained. After oxidative degradation of the natural wound hormone, sebacic acid was obtained in good yield. The substance must therefore be 1-decene-1,10-dicarboxylic acid:

$$HOOC \cdot CH{=}CH \cdot CH_2 \cdot CH_2 \cdot CH_2 \cdot CH_2 \cdot CH_2 \cdot CH_2 \cdot CH_2 \cdot CH_2 \cdot COOH.$$

This structure has been confirmed by synthesis of 1-decene-1,10-dicarboxylic acid. The resulting product was found to be identical with the natural product both in chemical properties and in physiological activity.

1-decene-1,10-dicarboxylic acid is capable of evoking intensive wound periderm formation in washed discs of potato tuber. It would seem probable therefore that the material with which Haberlandt[3] dealt in his early investigations of wound hormone activity in the potato was at least in part 1-decene-1,10-dicarboxylic acid. It would seem appropriate and convenient to refer to this substance as "traumatic acid"[4] (from Greek τραῦμα = wound). A detailed report of these investigations will appear elsewhere.

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THE PLASMODIUM OF HEMITRICHIA VESPARIUM (BATSCH) MACBR

SCLEROTIUM collected from a partially decayed log furnished the source of material used in studying certain cytoplasmic elements in the plasmodium of a Mycetozoan species that had been treated with mitochondrial methods of technique.

When exposed to a humid condition in a large dish, the revived sclerotium issued a bright yellow stream of plasmodium on the woody substratum that had been thoroughly moistened. At this stage of development it was impossible to make an accurate determination of the species involved. For over four months the plasmodium was active under the stimulus of food, moisture and slight light, but when exposed to a bright,

[1] J. English, J. Bonner and A. J. Haagen-Smit, *Proc. Nat. Acad. Sci.*, 25: 323, 1939.

[2] J. Bonner and J. English, *Plant Physiol.*, 13: 331, 1938.

[3] G. Haberlandt, *Sitzungsb. d. Königl. Preus. Akad. d. Wiss.*, 16: 318, 1913.

[4] Report of work carried out with the aid of the Works Progress Administration, Official Project No. 665-07-3-83, Work Project Number 9809.

artificial light for a continued period, immediate fruiting resulted. On examining the fruiting bodies, it was possible to classify the species as *Hemitrichia vesparium*.

A survey of the taxonomic history of *Hemitrichia vesparium* discloses that the color assigned to the plasmodium has been purple-red with no reference to the conspicuous yellow color observed in this study. It is of interest to record this color observation, since the recent monographs of Lister (1925) and Martin and Macbride (1934) assign a shade of red or purple to the plasmodium, evidently in accordance with the descriptions of the earlier workers. Whether the early descriptions of the form are inadequate as to the color status of the plasmodium or whether the plasmodium under certain physiological conditions assumes a purple-red, while under others a bright yellow color, are interesting questions. However, it appears from previous observations that plasmodia in relation to species are distinctly constant in color aspect.

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LITERATURE SERVICE FOR CHEMISTS

BEGINNING on October 1 the Hooker Scientific Library, Fayette, Missouri, inaugurated a new literature service for chemists. Dr. Julian F. Smith is leaving the du Pont Company, where he has been doing chemical literature work, to become associate director of the "Friends of the Hooker Scientific Library," of which Dr. Neil E. Gordon is director.

Through Dr. Smith the library will offer translations and literature searches, backed by facilities for providing filmstat or photostat copies of any matter in the more than twenty thousand volumes comprising the collection. To his chemical education (B.S., Illinois 1916; M.S., California 1920; Ph.D., Chicago 1922) and his long experience in chemical literature work Dr. Smith adds linguistic skill acquired by years of practice in translating from German, French, Spanish, Italian, Portuguese, Dutch, Scandinavian, Polish and Russian.

The combination of a specialist in technical literature and one of the most comprehensive chemical libraries ever assembled is unique in chemical reference service. It offers an unprecedented opportunity to all chemists to have technical literature or patents clearly and accurately translated by a chemist, and to have the literature on any problem skilfully combed by an experienced searcher who is not hampered by language barriers.

The Hooker Scientific Library will render these services at cost (on a self-supporting but not a profit basis) to members of the "Friends of the Hooker Scientific Library." The minimum fee for an individual life membership is $10; for a permanent corporation or institutional membership, $100. All who are interested are invited to write to Dr. Neil E. Gordon, Central College, Fayette, Missouri.

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SCIENTIFIC BOOKS

RECENT BOTANICAL BOOKS

Protein Metabolism in the Plant. By ALBERT C. CHIBNALL. xv + 306 pp. 21 figs. 9 plates. Yale University Press, New Haven. 1939. $4.00.

THE Silliman Memorial Lectures in Yale University for 1938 are here presented in an expanded form. It is fortunate that our knowledge of the physiological chemistry of the proteins in plants should be summarized for the benefit of plant physiologists and biochemists by one whose researches have led him far into the field. Drawing from his own extensive experience and from a wealth of historical and present-day literature, Professor Chibnall has succeeded in presenting a thought-provoking account of the problems and the progress of this field of plant science. The first three chapters are devoted almost entirely to a historical survey of many of the earlier contributions to the protein metabolism in seedlings from the point of view of their relationships to contemporary protein chemistry. Since they include commentaries upon the works of many of the original investigators of the natural amino acids, these chapters should be of additional interest to all present-day students of biochemistry. The classical studies of Pfeffer, Schulze and Prianischnikow receive special consideration and are interpreted in the light of more recent knowledge. One chapter discusses the formation of asparagine and glutamine in seedlings, with emphasis upon the origin of the ammonia and of the carbon precursors. Another deals with the mechanism of amino acid and protein synthesis in plants, and stresses the rôle of the α-keto acids. The preparation of proteins from leaf tissues and the application of the author's own methods to extensive studies of the composition and nutritive value of the proteins of forage plants are described at some length. Three chapters explore the protein metabolism of leaves and the rôle of proteins in the respiration of detached leaves. Evidence for the existence of a protein cycle in leaves is critically discussed, and the interrelationships between organic acids, carbohydrates and fats and proteins in leaf respiration are considered.