As a first experimental approach to this situation we are testing the following plan at certain of the Harvard University science departments.

At our suggestion each of these departments has appointed an informal representative to deal with press problems. These men aid in preparing news reports from their departments and act as clearing agents for press inquiries. About once every month they meet with representatives of the University News Office and Science Service to discuss common problems and anticipated news situations.

The usual spot news report is handled as follows. The departmental representative discusses a potential science story with his directly interested colleagues. If the latter decide to issue a report, a trained journalist from the University News Office is introduced for an interview. He writes the story and returns it for correction and criticism.

The completed story is distributed by the University News Office to local papers, Science Service and the national press services.

In this way an accurate account written in newspaper style is made generally available. A complete record of the scientist's connection with it also exists within the university. Of course the story as finally issued may be changed by individual newspapers. We have urged that any serious inaccuracy or distortion of a science report be corrected in a letter to the responsible editor. Such letters are frequently published, and in any case tend to decrease the further garbling of science news.

However, in our short experience there has been little occasion for such action. The stories which we have sponsored, scientifically authoritative and written in newspaper fashion, have appeared with remarkably little distortion, usually almost verbatim. By issuing such reports more promptly and comprehensively than newsmen alone could possibly prepare them, scientists rather than reporters can select the news which issues from science departments.

It is hoped that these procedures may possess some general interest and validity. Communications may be addressed to the committee secretary, Mrs. B. J. Bok, care of Harvard College Observatory, Cambridge, Mass.

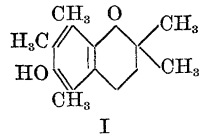
COMMITTEE ON PUBLIC RELATIONS OF SCIENCE, A.A.S.W., BOSTON AND CAMBRIDGE BRANCH

SPECIAL ARTICLES

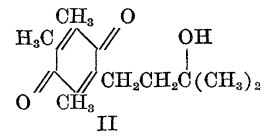
THE STRUCTURE OF THE RED OXIDATION PRODUCTS OF TOCOPHEROLS AND RELATED SUBSTANCES[1]

WHEN tocopherols, 2,2,5,7,8-pentamethyl-6-hydroxy chroman (I) and similar substances are oxidized under suitable conditions, the products are yellow para quinones (II).[2] When, however, silver nitrate or nitric acid is used as the oxidizing agent and the action of the reagent is prolonged, brilliant red solutions are obtained[2a, 2b, 3] and Furter and Meyer[4] have developed a photometric method of analysis for tocopherols based upon the reaction with nitric acid.

We have obtained the same red crystalline compound, m.p., 109–110°, from the chroman I using either silver nitrate or nitric acid as the oxidizing agent. Photometric examination of solutions of this substance and of solutions obtained from I by the procedure of Furter and Meyer shows that this red substance is responsible for the color developed in the latter case.

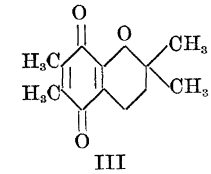


I

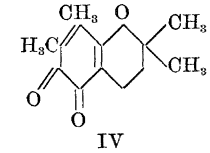


II

John and his associates[2a] established that the red compound $C_{13}H_{16}O_3$ from I differed in composition from the quinone II by one carbon and four hydrogen atoms; and Karrer and his associates[2b] showed that a similar difference in composition resulted when 2,5,7,8-tetramethyl-6-hydroxy chroman was converted into the analogous red compound $C_{12}H_{14}O_3$. Karrer also showed that the red compound was a quinone, and a tentative structure was proposed, which by analogy would become III when applied to the red



III



IV

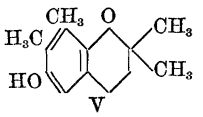
[1] This communication is paper XVI in a series on "The Chemistry of Vitamin E." Paper XV, *Jour. Org. Chem.*, 4: in press, 1939.

[2] (*a*) John, Dietzel and Emte, *Zeitschr. physiol. Chem.*, 257: 173, 1939; (*b*) Karrer, Fritzsche and Escher, *Helv. Chim. Acta*, 22: 661, 1939.

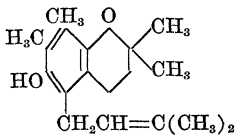
[3] Evans, Emerson and Emerson, SCIENCE, 88: 38, 1938.

[4] *Helv. Chim. Acta*, 22: 240, 1939; see also ref. 2*b*.

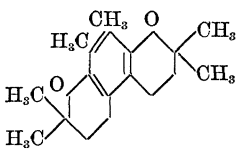
compound from I. The red substance, however, is not a para quinone, but is an ortho quinone, and it has the structure IV. The substance forms a phenazine, m.p. 151–152° with o-phenylene diamine and this phenazine shows a strong greenish yellow fluorescence in ultra-violet light, a property shown by the phenazines of the lapachol group of compounds, similar in structure to IV.[5] That the methyl group in position 5 of I is the group lost in the conversion of I to IV was shown by the fact that the condensation products of o-xylo hydroquinone and isoprene (V, VI and VII), in which the group in position 5 is not methyl, all gave the same red compound IV, m.p. 109–110°, when subjected to the action of nitric acid or silver nitrate.



V



VI



VII

A careful comparison of the absorption curves obtained from IV with absorption curves of known o-quinones also leads unmistakably to the conclusion that the red compounds can not be para quinones, but are ortho quinones.

The red o-quinone from α-tocopherol is an oil. Unfortunately, although it reacts with o-phenylene diamine, the phenazine is also an oil. However, solutions of this phenazine show the same strong greenish fluorescence as is shown by the phenazine of IV, and there can be little doubt but that the tocopherols are also converted into analogs of IV by nitric acid or silver nitrate.

The formation of red o-quinones is not confined to 6-hydroxy chromans, but occurs also with 5-hydroxy coumarans and other related substances. Catechol also produces a red color in the Furter and Meyer reaction, a fact which may be of importance in the examination of natural products by this method, since catechol derivatives are fairly common among natural products.

In these reactions, the mechanism is obscure, although it appears that an alcohol, preferably a primary or secondary alcohol, must be used as the solvent, and the results indicate that the alcohol is probably a reagent as well as a solvent.

Full experimental details of this work will be published elsewhere.

LEE IRVIN SMITH
WILLA B. IRWIN
HERBERT E. UNGNADE

SCHOOL OF CHEMISTRY,
UNIVERSITY OF MINNESOTA

[5] Hooker, *Jour. Chem. Soc.*, 63: 1376, 1893.

APPEARANCE OF FERMENTABLE POLYSACCHARIDE IN THE BLOOD AND A SIMPLE METHOD FOR ITS DETECTION[1]

ALMOST 40 years ago Besançon and Griffon,[2] Huber,[3] Neufeld[4] and Wadsworth[5] noted that certain bacteria grow more abundantly in the sera obtained from pneumonia patients than in normal sera. When inoculated with pneumococci, a voluminous white precipitate is obtained, while normal sera develop only a slight cloudiness. E. C. Rosenow[6] and Longcope[7] showed that this is due not to bacteria and bacterial debris, as was previously supposed, but to the production of unusually large quantities of acid which precipitate the serum proteins. Longcope noted this phenomenon in sera from patients with pneumococcic and streptococcic infections, from cases of gonococcus endocarditis, acute articular rheumatism, chronic nephritis and uremia. He concluded that "there is . . . some substance which makes its appearance in the blood stream under certain conditions and from which the pneumococcus is capable of forming large quantities of acid." Until the present study was undertaken in 1934, no further work has appeared, and the literature contains scant reference to this very striking phenomenon.

The following simple procedure was adopted early in this work. One cc of the clear sterile serum is transferred to a small sterile test-tube. Serum from strongly hemolyzed blood should not be used. It is inoculated with one drop of an 18-hour culture of a *rapidly growing strain* of pneumococcus. It is then incubated at 37.5° C. The precipitation becomes apparent in about 12 hours; it reaches its maximum in about 36 hours. Normal sera become faintly cloudy. Sera from patients with abnormal states may become opalescent (+), almost opaque (++), opaque with small amount of precipitate (+++) or they may contain a voluminous precipitate (++++). In order to rule out

[1] This study was aided by grants from the Bartlett Memorial Fund and the Douglas Smith Foundation for Medical Research of the University of Chicago.

[2] F. Besançon and V. Griffon, *Ann. Inst. Pasteur*, 14: 449, 1900.

[3] F. O. Huber, *Centralbl. innere Med.*, 23: 417, 1902.

[4] F. Neufeld, *Zeit. Hyg. Infectionskrank.*, 40: 54, 1902.

[5] A. Wadsworth, *Jour. Med. Res.*, 10: 228, 1903.

[6] E. C. Rosenow, *Jour. Inf. Dis.*, 2: 280, 1904.

[7] W. T. Longcope, *Jour. Exp. Med.*, 7: 626, 1905.