pressing toward it in the face of countless discouragements and disappointments, enduring indescribable physical torture and defying peril of imminent death until his goal was won. It is the picture of a man ambitious, brusque, forceful, rugged, resourceful, indomitable; yet a man honest and sincere, devoted to wife and children, considerate of his men and posessing a keen appreciation of the beauties of nature; on the whole a man who was an able leader of expeditions rather than a popular leader of men, a man to admire and honor, rather than to love. If the more engaging qualities which inspire popular affection were latent beneath the mature man's iron exterior, they were quickened only by his intimates, and do not color strongly the pages of Professor Hobbs's book.

From the literary standpoint the volume is well written, and the author's forceful style holds the reader's attention throughout. One notices occasional repetitions of phrases, and the smoothness and unity of treatment suffer in some measure from introduction into the text of the many quotations prefaced by the oft-repeated words "wrote Peary," "Peary writes," and similar expressions. But these minor defects are more than offset by the general excellence of the text. And it is only fair to add that the value of the work as an authentic record of Peary's life is enhanced by the numerous quotations from authoritative sources, and that despite their frequent occurrence the story as a whole moves continuously and with unflagging interest to its dramatic close.

The student of polar history might prefer to see the chapters on the Cook controversy excluded from the book. This view would be understandable, for since Cook was never near the Pole and added little to the technique of Arctic exploration, why should the hoax he perpetrated on a gullible public be detailed at length? But such a view would be to forget the purpose of biography. The Cook hoax was the supreme tragedy of Peary's life, and must occupy a prominent part in any adequate account of that life. Freeman could not write his monumental biography of Lee without dealing fully with the insubordination of the sulking Longstreet, however disgraceful and humiliating the story. No event in Peary's life has greater public interest than the controversy of which he was the innocent victim. The fact that a very large proportion of the published reviews of Professor Hobbs's book have cited those chapters dealing with the Cook-Peary controversy as the highlight of the volume bears witness to this truth.

It is significant of the public welcome accorded Professor Hobbs's book that many of its reviewers have hailed the volume as the final and definitive biography of Peary. The present reviewer would hesitate to venture far into the realm of prophetic appraisal, particularly in view of the fact that Peary's diary covering his later and greatest achievements has not yet been placed at the disposal of any biographer. He would prefer to say that Professor Hobbs has given us an excellent life of the famous explorer, the only adequate biography yet available, delightfully written and fully documented, a book of real and permanent value.

DOUGLAS JOHNSON
COLUMBIA UNIVERSITY

SPECIAL ARTICLES

USE OF DEXTROSE BY EXCISED TOMATO ROOTS

IN a review of plant tissue cultures White[1] states that excised tomato roots require sucrose and are unable to utilize dextrose under the conditions studied. The implications of such results for the metabolism of cane sugar by tomato roots are obvious, and White briefly discusses their significance.

However, our observations, in contrast to those of White, show that excised tomato roots are able to utilize dextrose. Since the ability or inability of tomato roots to utilize dextrose is of considerable interest from the standpoint of carbohydrate metabolism in general, a brief report of our results is made at this time.

We have grown excised tomato roots in White's solution in which dextrose was substituted for cane sugar. Two samples of dextrose of high purity were used as follows: Dextrose C. P. anhydrous Pfanstiehl lot No. 380 with an ash content of 0.008 per cent. and Cerelose with an ash content of 0.004 per cent. from the Corn Products Company.

Excised tomato root tips were transferred on July 18, 1936, from White's solution containing cane sugar to the same solution containing 2 per cent. Pfanstiehl's dextrose instead of cane sugar. These solutions had been sterilized at six pounds pressure for thirty minutes. The excised roots grew well, though the branches were longer, more slender and less numerous than in the solutions containing cane sugar. They were also less white, more translucent. We are not certain whether these differences in growth in the cane sugar solutions and in the dextrose solutions are due to the difference in the sugar or to the small quantities of impurities which are present even in these highly purified sugars.

[1] P. R. White, *Botanical Review*, 2: 419–437, 1936.

Subcultures from these excised roots were made to dextrose solutions on August 20; a set of second subcultures into dextrose was made on September 23; a third, on October 22; a fourth, on November 24; a fifth, on December 26, and a sixth, on January 30, 1937. The roots which had thus grown for more than 6 months in a dextrose solution through seven transfers showed as good growth in the sixth subculture as in the original transfer to the dextrose solution. The culture solutions for the second subculture (third transfer in dextrose) were sterilized at fifteen pounds for twenty minutes, and for the third subculture part of the medium was sterilized at six pounds for thirty minutes and part at fifteen pounds for twenty minutes. No differences in growth in the media sterilized at the two different temperatures were noted.

The experiments with Cerelose were less extensive. A transfer from White's solution containing cane sugar to the same solution with Cerelose substituted for the cane sugar was made on December 26, 1936, and subcultures from these roots to the same medium on January 30, 1937. For both transfers the medium was sterilized for thirty minutes at six pounds pressure. No difference was noted in the growth in the Pfanstiehl dextrose and in the Cerelose. The same type of growth developed with both samples of dextrose.

We are puzzled to account for the differences in our results and those of White. While he does not define the conditions under which his experiments were performed it may be assumed that they were similar to those reported eariler.[2] The conditions of our experiments are similar to those given by White.

We considered the possibility that the differences in results might be because of differences in the variety of tomato used. White has used root tips from the variety Bonny Best, while our root tips were from seeds of a pink-fruited variety from Mexico, Ajo de Verrado No. 580, secured through Dr. J. W. Lesley and Dr. H. L. Blood. This tomato resembles *Lycopersicon esculentum* in some characters and *L. pimpinellifolium* in others. However, we secured root tips from seeds of the variety Bonny Best and found that they too grew in both samples of dextrose mentioned above. Though we have not subcultured these root tips through a series of transfers in dextrose solutions, there is no reason to believe that they would not continue to grow in dextrose solutions as the root tips of the other variety do. Through the courtesy of Dr. P. R. White we secured subcultures of the Bonny Best tomato roots (Clone C) which he has used. These root tips grew in a solution containing mineral salts, baker's yeast and dextrose.

Although White used heat in sterilizing his culture media we considered the possibility also of the roots growing at the expense of decomposition products of dextrose formed by heating in sterilization of the medium. It is well known that small quantities of organic acids and other products are formed in the sterilization of dextrose by heat, and there was a possibility that these decomposition products might be a factor of importance in determining the growth of tomato roots in dextrose solutions. We prepared sterile dextrose solutions by filtration through Jena fritted glass filter funnels and added the sterile dextrose to the solutions of the mineral salts and yeast which had been previously sterilized by heat. Excised root tips of the variety of tomato we have used grew in these solutions. Similar experiments with the Bonny Best variety have not yet been completed, but we have no reason to expect that the results will be different.

It appears, therefore, that excised tomato root tips are able to assimilate dextrose; and we conclude that neither the variety of tomato nor the method of sterilization of the media is responsible for the difference between our results and those of White.

WILLIAM J. ROBBINS
MARY A. BARTLEY
UNIVERSITY OF MISSOURI

[2] P. R. White, *Plant Physiol.*, 9: 585–600, 1934.

THE ANESTHETIC EFFECTS OF SOME N-ARYL BARBITURIC ACIDS CONTAINING DYE-FORMING GROUPS

EFFECTS in physiological responses to pharmacologically active substances are often readily demonstrable, but the causes may be comparatively difficult of proof. The more objective the experiment the more reliable will be the result. The idea of introducing dye groups into physiologically active compounds in order to definitely locate the point of action, if not the mode, is apparently not a new expedient. Ehrlich and Einhorn,[1] Fulton[2] and Gardner and Joseph[3] have tested certain local anesthetics containing dye groups with varying success. Rising, Shroyer and Stieglitz[4] and Pierce and Rising[5] have attempted to do the same with barbituric acid hypnotics. The latter two tested a number of barbituric acid compounds containing dye-forming groups at the 5 carbon atom without producing anesthesia. Apparently heretofore no attempt has been made to test barbituric acid compounds with a dye-forming group attached to the nitrogen atom for anesthetic effects.

[1] P. Ehrlich and A. Einhorn, *Ber.*, 27: 1870, 1894.
[2] J. F. Fulton, *Am. Jour. Physiol.*, 57: 153, 1921.
[3] J. H. Gardner and L. Joseph, *Jour. Am. Chem. Soc.*, 57: 901, 1935.
[4] M. M. Rising, J. H. Shroyer and J. Stieglitz, *Jour. Am. Chem. Soc.*, 55: 2817, 1933.
[5] A. E. Pierce and M. M. Rising, *ibid.*, 58: 1361, 1936.