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PANDEMIC BOTANY[1]

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IN his "Life and Letters of Sir Joseph Dalton Hooker," Leonard Huxley tells us that early in 1867 Sir Joseph "was urged" to accept nomination at the next meeting of the British Association for the presidency for 1868. Whether any American botanist ever had to be "urged" to accept the presidency of the Botanical Society of America "deponent sayeth not." In fact, there is no historical record that any such method of securing a president for this society was ever tried. The method is that of the botanist in search of material for study. He goes out into a field of unsuspecting plants, seizes the one he wishes, puts it into his vasculum and closes the lid. Later, in the laboratory, he brings out the plant, makes longitudinal and cross sections, peels off the epidermis, soaks some of it in chloral hydrate to make it transparent and by various other ruthless details of technique compels the plant to disclose its most intimate and personal characteristics. Everything so disclosed is embodied in a "contribution to knowledge" and published where all the world may read.

So the committee on nominations of this society meets in secret conclave and decides on a few names, as soldiers are drafted for war. To safeguard the principle of democracy (still dear to science), the entire membership is urged to do likewise. From the preliminary list of victims so chosen the plebiscite of the society makes the final choice of one. He is not "urged" nor even invited; he is notified. A careful search of the literature of this subject has failed to disclose a single instance of a botanist so lacking in unselfish patriotism as to refuse to serve his botanical country in her time of presidential need.

And then comes the laboratory treatment, in all the brilliant setting of an annual dinner, when the *retiring* president is compelled to advance and, like the

[1] Address of the retiring president of the Botanical Society of America, given at the "Dinner for all Botanists" at Indianapolis, on December 29, 1937.

cal holder is desirable. All that is required is an adjustable clamp mounted on a base. Several such clamps have been improvised from apparatus found in the laboratory. A serviceable clamp was made from the small brass, standard-threaded parts purchasable at any electric-fixture counter. This assembly included a base, one or more ball-and-socket connections and a short piece of threaded tubing with a nut. A hole drilled through the tubing received the pin-vise, which was then clamped by screwing down the nut.

Adjustments for grinding are made under the binocular. The oilstone must rest on a firm base. The needle point is placed on the stone and, under the pressure necessary for proper grinding, is adjusted to the desired angle. Grinding is accomplished by moving either the stone or the whole needle-clamp assembly. The latter may be picked up and turned as a whole for inspection of the needle as often as desired without disturbing the grinding adjustment.

Needle-blades of any size, ground to a variety of shapes, may be fitted to the micro-scissors, enlarging their usefulness for many different types of work. The models described were made in the machine shop of the Harvard Medical School.

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THE PREPARATION OF DOPA-MELANIN

THE work of Bloch,[1] Raper[2] and their co-workers has shown that natural melanin is most probably formed by the oxidation of tyrosine. The first oxidation product is dopa (l-3,-4-dihydroxyphenylalanine); dopa is oxidized to a red compound which, in the presence of oxygen, spontaneously changes to melanin (dopa-melanin).

Bloch and Schaaf[3] observed that dopa spontaneously oxidizes in alkaline solution to form dopa-melanin.

50 cc of a 0.01 *N* NaOH solution is saturated with dopa, and the resulting solution is placed in a 75 cc test tube. Air, saturated with water (to prevent excessive evaporation), is bubbled through this solution. The solution, which turns pink when the dopa and NaOH are mixed, quickly turns jet black. After 2 days, the melanin solution is made acid by the addition of 2 cc of 0.5 *N* HCl. The insoluble melanin is centrifuged down and the precipitate is washed 10 times with 10 cc portions of 0.005 *N* HCl. The melanin is now suspended in distilled water and transferred to an evaporating dish. The HCl is removed by evaporation to dryness on a water bath, after which the melanin is further dried over P_2O_5.

[1] Bloch, *Z. physiol. Chem.*, 98: 226, 1917.
[2] Raper, *Physiol. Rev.*, 8: 245, 1928.
[3] Bloch and Schaaf, *Biochem. Z.*, 162: 181, 1925.

Thirty-five to forty per cent. of the weight of the original dopa can be recovered as melanin by this method. Florence, Ensolme and Pozzi[4] have stated that the formation of melanin from tyrosine, using tyrosinase, is a limited reaction; the weight of melanin obtained in their experiments was about 40 per cent. of the initial weight of the tyrosine.

If stronger NaOH solution is used in making dopa-melanin, some of the pigment apparently is converted to a red-brown substance which is soluble in HCl.

It seems likely that natural melanin contains polypeptide side chains which are not present in synthetic melanin. Abderhalden and Guggenheim[5] have demonstrated that polypeptides which contain tyrosine will form melanin when they are oxidized in the presence of tyrosinase. Gortner[6] succeeded in isolating a melano-protein from the wool of black sheep.

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[4] Florence, Ensolme, and Pozzi, *Bull. soc. chim. biol.*, 17: 290, 1935.
[5] Abderhalden and Guggenheim, *Z. physiol. Chem.*, 54: 331, 1908.
[6] Gortner, *Proc. Soc. Exp. Biol. Med.*, 9: 120, 1911.

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