advantage over others in that there is a readily producible biological model forming free hydrochloric acid in an essentially similar way, and no other permeabilities need be assumed than those observed for the muscle membrane⁴.

Seeing that free carbonic acid is produced in decarboxylation, the idea may be entertained that, after all, it is this acid which provides the free hydrogen ions. Our present reasons for supposing that this is not the main source (and it may be certainly held to provide some fraction) is that the true first ionization constant of carbonic acid given as around $10^{-3.5}$ does not appear sufficiently high unless strong concentrations of the acid are localized. Secondly, even *in vacuo* the high formation of acid in the external fluid proceeds with fermenting yeast, and the total carbon dioxide is reduced to a low figure. More experimental work is, however, required in this connexion.

The theory will be discussed more fully elsewhere.

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² Walls, D. P., thesis to the National University, Ireland (1944).

³ Bull, H. B., and Gray, J. S., *Gastroenterology*, **4**, 175 (1945).

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A Neutral Solvent for Melanin

MELANIN from the ink sac of *Sepia officinalis*, from a melanoma, and that prepared by the action of tyrosinase on tyrosine has been found to be soluble in the cold in ethylene chlorhydrin, $\text{CH}_2\text{Cl}.\text{CH}_2\text{OH}$.

Previously melanin had been thought to be soluble in diethylamine, but further investigation showed that in fact the solvent had combined with water vapour to form an alkyl hydroxide, and the resulting solution was strongly alkaline. It was also thought that 1:2-dihydroxypropane was a solvent, but on evaporation it was found that the resulting blackish-brown substance no longer had the properties of melanin. In the case of ethylene chlorhydrin the solution is neutral, and the substance remaining after evaporation is indistinguishable from the original melanin. The solubility increases with heat, and no change has been detected in the recovered melanin after treatment with the solvent in a Soxhlet extractor.

No guarantee of the purity of the melanin being possible, no attempt has been made to determine the precise degree of solubility, but it is very evident that both tumor and *Sepia* melanins are much more soluble than that obtained from tyrosine. No conclusions can be drawn from this fact, as it is not possible to state whether the tumor and *Sepia* melanins are or are not combined with a protein.

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Control by D.D.T. of Flies Breeding in Percolating Sewage Filters

NUISANCE often arises from the emergence of large numbers of flies from percolating filters treating sewage, situated near dwelling-houses or busy thoroughfares. Species which have caused most trouble are *Anisopus fenestralis*, *Psychoda alternata* and *Psychoda severini*. Various methods of control have been tried, including treating filters with creosote or bleaching powder, and flooding the filters with sewage; flooding can only be used, however, where the construction of the filter is suitable. The toxic substances so far used are non-selective in their action; the concentrations necessary to kill fly larvæ also kill other members of the valuable population of scouring organisms, such as Collembola and enchytraeid worms, as well as bacteria and fungi, which form the active biological film on which the purifying efficiency of the filter depends.

Experiments on the treatment of small experimental filters with D.D.T. in the form of (a) a powder applied at a rate of 300 lb. of D.D.T. per acre, and (b) an emulsion of D.D.T. in naphtha or kerosene at a rate of application of 50-100 lb. of D.D.T. per acre, showed that more than 90 per cent of the larvæ of *Anisopus* and *Psychoda* were killed, but that the Collembola and enchytraeid worms were unaffected. Preliminary tests show that D.D.T. in these concentrations is non-toxic to the bacteria and fungi in a filter, and thus