

DISCUSSION

INACTIVATION OF THE IRRITANT TOXICANTS OF POISON IVY AND POISON OAK

THE discovery of Sizer and Prokesch¹ that mushroom tyrosinase can render the poison of poison ivy (*Rhus Toxicodendron*) innocuous adds another oxidase to those already discovered which have this same property. However, all previous oxidases with the property of inactivating this (or these) poisons have been found in the poisonous *Rhus* sap along with the poison itself.²

It is of some interest to compare the clinical results of Sizer and Prokesch with those of Dr. Edward von Adelung. As the oxidase (or laccase) of western poison oak (*Rhus diversiloba*) has the power to change the poison to a non-toxic substance while exuded on the surface of an injured plant it was thought that this oxidase might change the poison to a non-toxic substance when on the human skin and thus be a remedy for *Rhus* dermatitis. Experiments were conducted by Edward von Adelung, M.D.³ of Oakland, California, to ascertain the value of the enzyme solution as (1) poisonous or not; (2) a preventative of *Rhus* dermatitis; (3) remedy. The following results were obtained: (1) The enzyme solution did not produce dermatitis though rubbed briskly into the skin; (2) when mixed with *Rhus* poison in alcoholic solution it did not destroy the poison (the enzyme is active in 50 per cent. alcohol); (3) it had no remedial value.

However, it might be well to bear in mind that *Rhus diversiloba* oxidase is in all probability a different oxidase from the tyrosinase used by Sizer and Prokesch; and also that *Rhus diversiloba* poison may (or may not) be different from the poison of poison ivy (*Rhus Toxicodendron*).

It has been noticed by Bertrand that laccase (which apparently acts similarly to *Rhus diversiloba* oxidase) did not accelerate the oxidation of tyrosine but did accelerate the aerobic oxidation of guaiacol. On the other hand, he found mushroom tyrosinase to aid in the oxidation of tyrosine but not in that of guaiacol. Yet there is some similarity in the substrates acted upon by both enzymes; both enzymes oxidise some compounds containing mono- or polyhydroxy-phenyl groups. In the instance of tyrosinase this includes, as mentioned by Sizer and Prokesch, tyrosine and the sex hormones stilbestrol, estrone, a-estradiol or estriol.

¹ SCIENCE, 101: 517, 1945.

² H. Yoshida, *Jour. Chem. Soc. (London)* 43: 473-486, 1883; G. Bertrand, *Comptes rendus Acad. Sci., Paris*, 18-145, 1894-1908 and *Bull. de la société chimique de Paris*, 11- (3rd ser.) 4 (4th ser.), 1894-1908; A. B. Stevens, *Am. Jour. Pharm.*, 77: 255-260, 1905; A. B. Stevens and L. E. Warren, *Am. Jour. Pharm.*, 79: 499, 1907; J. B. McNair, *loc. cit.*

³ J. B. McNair, *Jour. Infect. Dis.*, 20: 485-498, 1917; "Rhus Dermatitis," p. 69, 1923.

Therefore, one might have some expectation of finding the poisons of both poison oak and poison ivy to contain a mono- or polyhydroxy-phenyl group. That this is the case has been confirmed by the chemical analysis of several investigators. In regard to the poison of poison sumac (*Rhus Vernix*) being a hydroxylated compound, Stevens and Warren showed this to be the case as early as 1907. This was done by the use of the Grignard reagent. Stevens and Warren also observed that the magnesium organic halide, which resulted when the hydroxyl groups were destroyed by this reagent, was not toxic.

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THE NAMES OF FOSSIL MEN

To the biologist working in other fields the significance implied by the names of fossil men is often misleading. He rather naturally concludes from such names as *Pithecanthropus erectus*, *Sinanthropus pekinensis* and *Eoanthropus dawsoni* that each is a distinct genus and species different from modern man. Furthermore, he believes that *Homo soloensis*, *H. rhodesiensis*, *H. heidelbergensis*, *H. neanderthalensis*, etc., connote types belonging to the same genus as does modern man but each to a different species.

However, to his dismay, he finds that his conclusions do not conform with those of some of the specialists on fossil man. Thus, Weidenreich,¹ one of the foremost contemporary authorities, states that all hominids, living and fossil, belong to the same species which is subdivided into several races or subspecies. This opinion is also held, on genetical grounds, by Dobzhansky.² In addition, Weidenreich¹ says that "The names given to groups and subgroups of fossil hominids have no 'generic' or 'specific' meaning. They are nothing but convenient labels, respected by tradition, to facilitate identification. I have used *Sinanthropus* and *Pithecanthropus*, etc., in this sense and shall continue to do so in the future." He also expels that famous "bone of contention," the Piltdown mandible, from the Hominidae and states that the name *Eoanthropus* should be discarded.

Most biologists believe that all living types of man belong to the same species, *Homo sapiens*, although Hill³ and especially Gates^{4, 5} have advanced evidence against this concept, the latter (Gates⁵) recognizing five species.

If all known men, living and fossil, do belong to the same species then the Linnean name, *Homo sa-*

¹ F. Weidenreich, "Palaeontologia Sinica." Whole Series 127: 1-484, 1943.

² T. Dobzhansky, *Am. Jour. Phys. Anthrop.*, n.s. 2: 251, 1944.

³ W. C. Osman Hill, *Nature*, 145: 260, 1940.

⁴ R. R. Gates, *Man*, 37: 28, 1937.

⁵ *Idem.* *Am. Jour. Phys. Anthrop.*, n.s. 2: 279, 1944.

piens, would have priority over all the others and the various types of fossil men should be considered as subspecies of *H. sapiens*. In this case, the older scientific names, e.g., *Pithecanthropus erectus*, etc., would be inappropriate and should be abandoned. In their place could be substituted the names *Homo sapiens javanensis* (= *Pithecanthropus erectus*), *H. s. pekinensis* (= *Sinanthropus pekinensis*), *H. s. dawsoni* (= *Eoanthropus dawsoni*, if considered human), *H. s. rhodestensis*, *H. s. heidelbergensis*, *H. s. neanderthalensis*, etc.

These names would be more in keeping with the usual rules of zoological nomenclature, would more clearly indicate the significance of the various types and would still readily distinguish the different fossil men, which is Weidenreich's sole reason for retaining the older names.

Another aid to other biologists would be a reduction in the synonymy. At present, to mention a few examples, *Homo neanderthalensis* = *Homo primigenius* or *Palaeoanthropus neanderthalensis*; *H. heidelbergensis* = *Palaeoanthropus heidelbergensis*; *H. soloensis* = *Palaeoanthropus soloensis*, *H. neanderthalensis soloensis* or *Javanthropus*; and *H. modjokertensis* = *Pithecanthropus erectus* (baby). In an earlier paper Weidenreich⁶ calls *Pithecanthropus* by the name *Homo erectus javanensis* and *Sinanthropus* by the name *Homo erectus pekinensis*, but Dobzhansky² believes that the correct name for *Pithecanthropus* should be *Homo erectus erectus*.

Naturally, much of this confusion and synonymy can only be cleared up by further study and new material which would probably result in a change of status of some of the forms. However, whenever possible, the use of a single scientific name as the accepted and correct one is greatly to be desired.

The designation of the correct name, the status of the individual types and the reduction in the synonymy could probably be best and most efficiently brought about by an international board of experts. The fact that we are dealing with fossils, which are rarely complete specimens or abundant in number, greatly complicates the problem, as more than once in paleontology different generic and specific names have been given to various parts of the same individual or species. An additional factor contributing to the confusion is that human remains are among the rarest of fossils and it is undoubtedly extremely difficult for the discoverer or describer of a new specimen to be objective and unbiased in his evaluation of its true significance and importance.

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⁶ F. Weidenreich, *Am. Anthropologist*, n.s. 42: 375, 1940.

THE REACTION OF VITAMIN A WITH LIEBERMAN-BURCHARD REAGENT

In repeating the work of Lowman¹ on the reaction of vitamin A and carotene with adsorbed sulfuric acid it was found that unadsorbed sulfuric acid added to carotene in chloroform solution gave rise to a blue color. The difficulty that was encountered in attempted quantitative measurement of this color was the immiscibility of the sulfuric acid and the chloroform. However, when acetic anhydride was also added (Lieberman-Burchard reagent) the solution became completely homogeneous and gave rise to an intense blue-green color, which rapidly faded. Acetic anhydride by itself gave no color reaction when added to carotene.

This reaction was also obtained with vitamin A-carotene mixtures extracted from human blood plasma and suggests the possibility of utilizing this reaction for the quantitative measurement of vitamin A in plasma. One difficulty that might be encountered in such a determination would be the interference caused by cholesterol. This might be obviated by saponification of plasma cholesterol ester with mild alkali to free cholesterol and subsequent removal of cholesterol by precipitation with digitonin.

As time is not available for the complete study of the possibilities of this reaction this communication is being published as a suggestion to interested workers in the field.

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OPINION 152 OF THE INTERNATIONAL COMMISSION OF ZOOLOGICAL NOMENCLATURE¹

ON May 24, 1944, the International Commission on Zoological Nomenclature issued Opinion 152 on the status of the generic names in the Order Diptera first published in 1800 by J. W. Meigen in his "Nouvelle Classification des Mouches à Deux Ailes."

This opinion has far greater importance than most workers realize, as it affects all branches of zoology. Few taxonomists know why the Meigen names have been the cause of so much discussion and therefore little realize the importance of this opinion.

In 1800, M. Baumhauer of Paris published a paper by J. W. Meigen entitled, "Nouvelle Classification des Mouches à Deux Ailes," in which he reviewed the known genera of Diptera and proposed many new genera. For all of these genera he gave names and short descriptions and cited the number of species, but gave no specific names. The generic descriptions

¹ A. Lowman, *SCIENCE*, 101: 183, February 16, 1945.

² Contribution No. 250 from the Entomology Department, University of Illinois, Urbana.