Al. III

3p.—md. Obs. λ	Int.	Calc. λ	m	3p.—ms. Obs. λ	Int.	Calc. λ	m	3s.—mp. Obs. λ	Int.	Calc. λ	m
891.9	(1)	892.0	4	855.0	(3)	855.02	5			695.8	4
893.8	(2)	893.9		856.7	(4)	856.76		696.0	(6)	696.2	
				725.7	(1)	725.6	6			560.3	5
				726.7	(2)	726.8		560.3	(3)	560.4	
								511.1	(1)	511.2	6

Mg. II
$1\sigma - m\pi$

Obs. λ	Int.	Calc. λ	m
1240.1	(4)	1239.9	2
1240.5	(4)	1240.4	
		1026.0	3
1025.9	(2)	1026.1	
946.6	(1)	946.7	4

It must be admitted that both Millikan and Simeon list a line at λ 560.5 which they credit to carbon. The line at 1025.9 in magnesium might perhaps be ascribed to hydrogen were it not for the extreme weakness of the hydrogen line at λ 1216.

The persistence of impurities, especially when high voltage excitation is employed, introduces uncertainties which can not well be eradicated. But in my judgment, the structure of the spectrum and the close agreement between observed and calculated values justifies the identification shown in the tables.

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LICE FROM HUMAN MUMMIES

FOR a very long period of time there has been discussion as to whether or not each of the different primary races of mankind harbored a distinct race of lice, particularly head lice. Confusion has followed controversy in this matter until to-day we find that there is no semblance of accord in regard to the problem. If one studies a large series of lice from living Americans it is observed that apparently there is no correlation between louse types represented and the racial types of the host individuals. It was while studying such a series that the writer became convinced that he was dealing largely with hybrids of different racial types or varieties of lice. This conviction deepened greatly when it was learned from the results of Bacot's work during the world war that the head louse of man would hybridize with the body louse and give fertile progeny.

Knowing that these two louse varieties hybridize and that there has long been an intermingling of three of the primary races of men in this continent, the writer conceived the idea of going back to prehistoric man, before the mixing of these races took place, and examining scalps of mummies in order to get samples of unhybridized lice.

Scalps of precolumbian Peruvian mummies in the Department of Anthropology of the United States National Museum were first examined. Six of these were obtained and five of them were found to be well laden with nits; unfortunately, however, no adult lice were secured. Nits also were found on an Egyptian mummy, but of the fourth century A. D. Later, through the courtesy of Dr. Frank E. Lutz, of the American Museum of Natural History, a loan was secured of scalps or hair samples from no less than twenty prehistoric American Indian mummies from that institution. All these were examined. Ten were found to possess nits; and of these ten, three also had lice, one being laden with dead lice of all stages of development.

It is not the intention of the writer of this communication to discuss here the taxonomy of these mummied lice, but he would like to record the fact that those from Peruvian mummies are slightly different from those of mummies taken in southwestern United States, and also that all the lice from prehistoric mummies show differences from some lice obtained from a living Indian. It is of course probable that our living Indians in some instances not only have the Caucasian head louse but also the Ethiopian type and possibly hybrids between these two or between the American type or types and either the Caucasian or Ethiopian type.

The American mummy type of head louse is quite distinct from what Fahrenholz describes as *Pediculus humanus marginatus,* a Japanese variety. It is much nearer what he describes as *Pediculus humanus chinensis,* the Chinese head louse. It should be stated, however, that the writer has never seen either the Japanese or Chinese type of head louse and also that he is inclined to doubt the advisability of recognizing more than one variety of louse for the yellow race of mankind.

A comparison of these mummy lice with *Pediculus* lice from American monkeys of the genus *Ateles* has been made. It should here be recalled that by many authorities the Pediculid lice of our American monkeys are considered as being only the common head louse of man. In the writer's investigation it was

found that these lice from mummies were quite distinct from the monkey-infesting forms. In fact, the writer has discovered that all these monkey Pediculids of America can be distinguished from any of the varieties of our head louse by the characters of the pleural plates. If the pleural plates of the man-infesting forms are viewed from the side they are found to be squarish and without lateral lobes. Now if the pleural plates of any of the *Ateles*-infesting forms are viewed from the side they are found variously shaped but not squarish, and in addition some of them are provided with well-developed lateral lobes.

It may be that the spider monkeys (*Ateles*) acquired their Pediculids originally from man but not from recent man. The time must have been thousands of years ago, more probably tens of thousands of years ago, for there are at least two or three quite distinct species of lice on *Ateles*.

Kellogg (SCIENCE, Vol. xxxviii, p. 601) attaches much phylogenetic significance to the occurrence of *Pediculus* species on *Ateles*, holding that it indicates that these monkey hosts represent American derivatives of the Old World anthropoids. It is possible in this case, however, that there has been a crossing-over, *i.e.*, that the *Ateles* lice have been derived from some of the near ancestral types of recent man or that the whole human complex of lice is of a more recent derivation and from certain unrelated monkey hosts. That lice may cross over from hosts of one phylogenetic group to those of a different phylogenetic group, "bridging the phylogenetic gap," the writer has pointed out in the case of the biting lice of the family Gyropidae. The lice of this family apparently have crossed over from their ancient and most favored hosts, certain rodents, to their more recent and less favored hosts, ungulates and primates.

It may be, however, that in *Pediculus* we are dealing with one of those generalized types that refuses to respond in the usual manner to the diversifications of the environments into which the group has thrust itself. In other words, it has become to an unusual degree more or less independent of the minor charges of environmental conditions. In this connection I would like to record here the infestation of two brown-hipped marmosets (*Lenotocebus nigricollis*) with a *Pediculus* species. There is strong evidence in these two cases, however, that the lice were stragglers from the badly infested *Ateles* species, yet many eggs were laid on both marmoset hosts by the lice. These infested marmosets were brought back from South America for the National Zoological Park by W. M. Mann in 1922.

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DECOMPOSITION OF CERTAIN ORGANIC TOXINS BY VANILLIN DECOMPOSING ORGANISMS[1]

HAVING found bacteria in many soils able to decompose certain toxins the question arose as to whether the same or different organisms of a given soil decompose the several toxins.

In order to answer this question, pure cultures of organisms able to decompose vanillin were isolated from several soils and used to inoculate a medium containing another toxin. Fifty cubic centimeters of medium were placed in each of several Erlenmeyer flasks as usual, and inoculation was made in duplicate for each organism. These cultures were then incubated at room temperature for about 10 days. The results obtained with vanillin (control) resorcinol, cumarin, quinoline, benzidine and caffein follow:

	Growth		Toxin present	
Organism	a	b	a	b
Vanillin toxin medium				
Vanillin 5a2	yes	yes	no	no
Vanillin 21a	yes	yes	no	no
Vanillin 22a1	yes	yes	no	no
Vanillin 130–1	yes	yes	no	no
Control	no	no	yes	yes
Resorcinol toxin medium				
Vanillin 5a2	no	no	yes	yes
Vanillin 21a	no	no	yes	yes
Vanillin 22a1	no	no	yes	yes
Vanillin 130–1	no	no	yes	yes
Control	no	no	yes	yes

In neither of the duplicate cultures of organisms of any of the four soils was cumarin, quinoline, benzidine or caffein decomposed. The results were negative as in the resorcinol cultures detailed just above. From these results it appears that these vanillin decomposing organisms are not able to decompose any of the five toxins tested—resorcinol, cumarin, quinoline, benzidine and caffein—under the rather favorable conditions of the tests and that they are able to decompose vanillin only.

In spite of the strong indications mentioned above there is some doubt of the specificity of these organisms, since it is not known whether they had ever decomposed vanillin before being brought into the laboratory for these experiments. Moreover, this must for the present remain an uncertainty because the samples were too small to analyze for vanillin.

It is highly desirable that this study be extended to other toxins, and also that organisms which decompose other toxins be tested for their ability to decompose vanillin and still other toxins.

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[1] Published with the permission of the director of the Alabama Experiment Station.