samples of basic fuchsin were submitted to examination. Five of them proved to be fairly pure pararosanilin, five of them new fuchsin, and the eleventh sample apparently a rosanilin almost entirely free from pararosanilin and hence different from any of the ordinary fuchsins of commerce.

The results of the investigation showed quite plainly that, although pararosanilin is ordinarily satisfactory as a bacteriological stain and for other staining purposes, it is not usually satisfactory in the Endo medium. One sample was found which gave good results when used for the latter purpose, but just why it proved better than the others has not been learned. The best sample for all purposes, as judged by the five reports received from different investigators, was the sample of rosanilin without pararosanilin. Almost equally good, however, were some of the samples of new fuchsin. Accordingly the following specifications are now drawn up to apply to basic fuchsin:

(1) Basic fuchsin designed for staining and indicator purposes must be rosanilin or new fuchsin (Colour Index No. 678) or else a mixture of rosanilin and pararosanilin containing at least half of the former (that is corresponding to Colour Index No. 677).

(2) Fuchsin samples to be certified by the commission must be of such a strength that, when reduced by titanous chloride in an atmosphere of carbon dioxide, one gram of the dye will consume at least 46.5 cc normal titanous chloride solution. A sample of this strength will be between 76 and 85 per cent. total dye content, the exact dye content varying according to the relative amounts of the higher and the lower homologs present.

(3) The sample should prove satisfactory for staining the tubercle organism and should retain its color sufficiently when treated by the Ziehl method to be diagnostic when staining tubercular discharges. This must be determined by an investigator skilled in this particular technic.

(4) The sample must prove satisfactory for use in the Endo medium. In making this test the following technic should be used: A saturated alcoholic solution is diluted 10 to 30 times, the dilution to be such that no precipitation occurs when mixed with a sodium sulphite solution. Then add 0.5 cc of this dilute fuchsin solution to 10 cc of a 2.5 per cent. sodium sulphite solution. Add it to the other ingredients of Endo agar, sterilize and cool. It should then be colorless, but the color must be restored by the colon and dysentery organisms when inoculated upon it. The test must be made by one familiar with the technic in question.

(5) It must be understood that as basic fuchsin is used in other special forms of technic, new standards may be called for. The present specifications apply particularly to the above mentioned two uses; but samples fulfilling them are ordinarily satisfactory for all histological purposes.

At the present time permission to use the commission's label on batches of basic fuchsin submitted has been given to three companies. Some of the batches submitted are recommended as satisfactory for general staining purposes and for use in the Endo medium. Others have been approved for one or the other of these two purposes only. The three companies in question are the Empire Biochemical Company, the Hartman-Leddon Company, and the National Aniline and Chemical Company. The certified samples of fuchsin do not have to be bought from these three concerns directly, but can be obtained through dealers in biological supplies. It is recommended that any one desiring fuchsin of this quality order it from some dealer, specifying the basic fuchsin certified by the Commission for either one or both of the above-mentioned purposes, according to the needs of the particular purchaser.

H. J. CONN,
Chairman, Commission
on Standardization of Biological Stains
GENEVA, N. Y.

SPECIAL ARTICLES

SERIES IN THE SPECTRA OF ALUMINUM AND MAGNESIUM IN THE EXTREME ULTRA-VIOLET

PASCHEN (Ann. d. Phy., 71, p. 152, 1923) in his investigation of the spectrum of doubly ionized aluminum (Al. III) and Fowler (Series in Line Spectra, p. 120) in his study of ionized magnesium (Mg. II) have pointed out the type of series relations which exist in these substances, and have arranged many lines to conform to them. In a study of the spectra of both aluminum and magnesium in the extreme ultra-violet under various forms of excitation, I have recently observed certain lines which appear to be higher members of some of the series discovered by Paschen and by Fowler; Millikan has already identified the two strongest but the remainder seem to have escaped observation. The wave lengths and the series to which these lines belong are given in the following tables.

The lines in aluminum were obtained with the vacuum spark and also with a condenser discharge in an atmosphere of helium at about a millimeter pressure. The magnesium lines were most strongly excited by an arc of 40 volts and about ten amperes operated in a high vacuum by means of a trembler device.

The numerical values of the wave lengths should be correct to at least two tenths of a unit.

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.

THEODORE LYMAN

JEFFERSON LABORATORY,
HARVARD UNIVERSITY

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