MRS. C. V. RILEY, widow of Dr. Riley, predecessor of Dr. L. O. Howard as chief entomologist of the U. S. Department of Agriculture, has donated to the library of the National Museum the scrapbooks of economic entomology which were kept by her husband in the period of his activity from 1865 to 1894. These volumes, about one hundred in number, contain many articles of great historical interest. In giving these scrapbooks to the museum, Mrs. Riley wished to have them housed in the same place as the Riley collection of insects.

UNIVERSITY AND EDUCATIONAL NOTES

THE University of Missouri will ask the state legislature for an appropriation of $6,348,962.39 for the biennium of 1927–28. This is $227,920.29 less than was requested two years ago. The Missouri School of Mines and Metallurgy is asking the state legislature for $1,227,250 for the next two years.

A GIFT of $25,000 to Howard University's medical school $250,000 endowment fund by Julius Rosenwald, of Chicago, has been announced.

PHILLIPS ANDOVER ACADEMY has been presented with $125,000 by A. I. du Pont, of Wilmington, Del., for use in completing the $300,000 science building.

ON March 5 the medical college of The Long Island College Hospital, Brooklyn, inaugurated its new course in "Medical Literature and Bibliography." In a number of schools the importance of bibliographical knowledge has been stressed by individual teachers, but this is said to be the first established course of this nature included in the curriculum of a medical school in this country. An attempt is being made to show the student the value of literature which constitutes an important part of the background of his work; and to teach him how to use a library. The faculty has secured as a lecturer Mr. Charles Frankenberger, librarian of the Medical Society of the County of Kings, whose wide knowledge of bibliography and of the relative values of medical literature can now be made available for the medical student as a part of his training.

A FACULTY of mechanical engineering and mining chemistry and technique is to be founded in the University of Münster, Westphalia, at a cost of 1,500,000 marks. A contribution of 1,000,000 marks has been promised by the provincial government, and 500,000 marks have been received from industrial bodies.

DR. ALFRED OWRE, dean of the school of dentistry at the University of Minnesota, has been named dean of the school of dental and oral surgery at Columbia University, succeeding Director Frank T. Van Woert, who is to be relieved of administrative duties at his own request.

AT Harvard University, Dr. Oliver D. Kellogg has been promoted to a full professorship of mathematics. Other promotions include those of Dr. E. A. Hooton, assistant professor of anthropology, and Dr. William Henry Westen, assistant professor of botany, to be associate professor.

PROFESSOR L. D. AMES, of the Texas Technological College, has been appointed professor of mathematics at the University of Southern California.

DR. H. B. ENGLISH, associate professor of psychology at Wesleyan University, has resigned to take a position at Antioch College.

DISCUSSION AND CORRESPONDENCE

THE COLOR OF HYDRATED SILICA AND ALUMINA

DURING a study of the hydration of silica, alumina and ferric oxide I noticed that alumina became more and more colored as its hydration increased. The anhydrous oxide Al_2O_3 is snow white by either reflected or transmitted light. The hydrated form $Al(OH)_3$ is a decided tan or even brown by transmitted light, but the complementary bluish white by reflected light. A small flake or chip of the hydroxide under a low power microscope shows the effect nicely since the light is easily shifted. Silica shows a precisely similar effect as the SiO_2 goes over to the orthosilicic acid $Si(OH)_4$.

In other words, these hydrated oxides show a pronounced *dichroism* while the oxides do not. This dichroism is a useful qualitative test for the degree of hydration. Previous workers have evidently attributed the brownish color to traces of iron, overlooking the bluish tint of the same particle by reflected light. Either precipitates or suspensions of either hydrate show the effect very well. I have not been able to locate definite *steps* in the hydration of either oxide by this means, to do that would require rather precise spectrophotometric data. Most complex oxides apparently do *not* show similar dichroism on hydration, but only a hasty survey has yet been made.

An interesting application to meteorology is evident in relation to sky colors. Both silica and alumina are strongly hygroscopic, adsorbing water films (at even low humidities) many molecules deep. Due to the intense internal pressures in these films on minute particles, hydration is relatively rapid. Hence we should expect that dust particles (largely

silica and alumina) in the atmosphere would in a few hours or days become partly hydrated appearing brownish or yellowish toward the sun, bluish at a wide angle from the sun, just as commonly observed.

P. G. NUTTING

U. S. GEOLOGICAL SURVEY

A CRITERION FOR DISTINGUISHING IDENTICAL TWINS FROM FRATERNAL TWINS

APART from the examination of the placenta and foetal membranes at birth, there is no safe criterion of distinguishing the identical twins from the fraternal twins. In the course of study on my collection of finger prints and hand and sole prints of some twins I have come to realize that, generally speaking, the same hands or feet of the identical twins resemble each other more closely in their patterns than the two hands or feet of the same individual. To represent in symbols, let r and l stand respectively for the right and left hand or foot of the one twin A, and r′ and l′ respectively for the right and left hand or foot of the other twin A′ which is identical with A, then:

$$r-r' \text{ (or } l-l') < r-l \text{ (or } r'-l').$$

This statement holds good in principle also for the several identical twins studied by Wilder (04, 19), Pol (14), Bonnevie (23, 25), Kuragami (26) and Montgomery (26); while such a condition can never be found in twins of different sexes nor in twins of the same sex bearing evidence for their being fraternal twins. Thus, we seem to be justified by saying: "Such twins are identical twins in which the same hands or feet of different individuals are more alike than the different hands or feet of the same individual."

But this statement must not be taken as involving the notion also that, if the former resemblance is less than the latter resemblance, the given twins are fraternal, since there are some twins which are apparently identical and yet do not show the condition mentioned above. Anyway, this will probably serve as a criterion for identifying some identical twins.

Some writers on twins and twinning, such as Bateson (13) and Newman (17), seem to hold the view that the identical twins are comparable with the right and left halves of the body of one person. The view could not be quite correct, should it imply that the resemblance between the identical twins is in principle equal to the resemblance between the right and left halves of one person. As a matter of fact, speaking generally, the resemblance between the identical twins is more than that between the halves of one person. Aside from the fact that the viscera show a marked asymmetry and the situs inversus viscerum is exceptional, even among identical twins, there are several cases known where such twins have the same defect or abnormality on the same side of the body. Moreover, as mentioned above, the hands or feet of the same side of different twins show closer resemblance than the two hands or feet of the same individual.

TAKU KOMAI

KYOTO IMPERIAL UNIVERSITY,
JAPAN

THE "TEARING METHOD"

DR. K. HOROVITZ, who is working at present in my laboratory, has just pointed out to me a very important paper which I had unfortunately overlooked, and which gives strong support to the letter I published in SCIENCE (Feb. 11, 1927, p. 160). This article, by no less an authority than P. Lenard, is entitled, "Über Oberflächenspannungmessungen besonders nach der Abreiszmethode . . ." (*Ann. der Physik,* 1924, lxxiv, 381–404), and contains a highly interesting study of the "tearing method" (a horizontal rod being used instead of a ring). The conclusions of the paper are that: "Es ist dadurch . . . der *einfachste und zugleich zuverlässigste* Weg zu *genauester, absoluter* Oberflächenspannungmessungen leicht gangbar gemacht." ("The *most accurate absolute* measurements of surface tension . . . ")

In his determination, Lenard uses the method which I described in 1919, namely, a torsion balance. I may furthermore recall that the plate illustrating my first description of the tensiometer showed the instrument with a rod and not with a ring; the ring was adopted later, mainly on account of the smaller amount of liquid required for the measurements, and of the fact that no correction was required for the capillary action on the two perpendicular rods of the frame.

LECOMTE DU NOUY

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FOR MEDICAL RESEARCH

STUDY OF BARTLETT PEAR BLACK-END UNDERTAKEN IN CALIFORNIA

AN extensive study of the black-end of the Bartlett pear has been undertaken by the division of pomology, University of California. This disease, which is physiological in nature, has been taking heavy losses during recent years in practically all pear sections of the state. In view of the fact that the losses seemed to be increasing from year to year it was thought advisable that a systematic study be made of the disease and also possible methods of control worked out.

The early stages of the black-end are evident while