leyan University, received his Ph.D. in physiology at Chicago in 1902 and his M.D. from Rush Medical College in 1905. Before going to St. Louis he was instructor in physiology in the University of Chicago, and at the Marine Biological Laboratory at Woods Hole.

Mrs. Margrete Bosē has been appointed professor of chemistry in the University of La Plata. Her husband, Dr. E. Bose, is professor of physics in the university.

Mr. James Lees, of the University of Bristol, has been appointed lecturer in engineering in the South African College, Cape Town.

Dr. Franz Hofmann, professor of physiology at Innsbruck, has been called to the German University of Prague to succeed Professor Gad.

DISCUSSION AND CORRESPONDENCE

LABORATORY TABLES

To the Editor of Science: Several months ago I read with interest in Science Professor Augustus H. Gill's suggestions for chemical laboratory furniture and fittings. Among other things he discusses various kinds of materials and surfaces for table tops. It occurs to me that it may be of sufficient interest to warrant calling attention to still another kind of surface for laboratory tables.

In our testing laboratory at The York Manufacturing Company we have tables with tops of ordinary wood. On this there are placed sheets or slabs of heavy asbestos board, one fourth inch thick. These are fastened in place by a few small brads driven around the edge. All around the outer edge of the table there is a narrow strip of wood of the same thickness as the asbestos board, making a permanent border. This, as a matter of course, is nailed in place. It prevents the edges of the asbestos from becoming frayed out. The advantages of this asbestos surface are almost self evident. Flasks and beakers containing hot water or solutions can be stood upon it without fear of their cracking. There is also little risk of breaking glassware by setting it down a little too hard, as is often the case on slate or stone or even wood, where particles of grit may happen to be. And of course the resistance of the asbestos to fire and heat is too well known to need any comment. There is the further advantage that when the asbestos slab becomes old and worn it is easily replaced without in any way disturbing the table, thus making the latter practically new.

We have found this plan highly satisfactory and pass on the suggestion for any who may desire to try it. It is quite possible that it is an old device after all.

C. H. Ehrenfeld

York, Pa.

A FORMULA FOR OPTICAL INSTRUMENTS

In many surveying and optical instruments a ray of light is reflected by a pair of plane mirrors. And if ϕ be the angle between said mirrors; and the entering light ray lies in the plane commonly perpendicular to them; then, of course, the doubly reflected ray must cross its original path at the angle 2ϕ. And, although the ray sway from side to side; so long as it preserves its parallel position to this commonly perpendicular plane; so long also is the crossing angle still 2ϕ.

But now, should the entering ray be deflected at a variable angle θ to this commonly perpendicular plane, then the question arises as to the resultant effect upon the crossing angle, a problem that constantly arises in practise, and yet one, I believe, that the text-books leave unanswered.

The single solution is as follows: letting ϕ be the angle between the two mirrors, and θ be the independent variable angle that the entering light ray makes with the plane commonly perpendicular to the said mirrors, while δ is the crossing angle desired. Then,

$$(\cos\theta)\ (\sin\phi) = \sin\tfrac{1}{2}\delta,$$

a very simple formula, that can be easily demonstrated by elementary trigonometry.

In the special cases where the entering ray is normally inclined to the commonly perpendicular plane, and it be asked what errors may be produced by changes in the direction of that ray? we should simply determine, first, the angle ϕ between the two mirrors, and secondly, the angle θ that the ray was designed to have with the commonly perpendicular plane, when the above formula will prove itself, by giving us the correct bend δ in the ray that the instrument was designed to produce. Whereupon any error on deflection in the entering ray either does or does not make a new angle θ' with the commonly perpendicular plane, giving us, therefore, by the above formula the new value of δ.

ALAN S. HAWKESWORTH
UNIVERSITY OF PITTSBURGH

THE INSUFFICIENCY OF DATA ON ENVIRONMENT GIVEN IN PAPERS DESCRIBING DEEP-SEA AND OTHER MARINE ORGANISMS

TO THE EDITOR OF SCIENCE: In examining a number of recently published papers on corals, foraminifera and other marine animals, especially for the purpose of ascertaining the temperature conditions under which the organisms live, I have been particularly impressed by the fact that very rarely are any definite data given on the temperature of the waters from which they were taken. As it is a generally known biological fact that temperature is one of the most influential factors in determining geographic distribution, it is highly important that precise information on this subject should be available. In fact, the data on the physical conditions under which an organism was collected should always be presented as fully as possible. Depth, temperature, nature of the bottom, and relations to marine currents, are important factors. As so many zoologists are engaged on the description of marine faunas, and as it is more or less habitual to give very meager data on the conditions under which the organisms described live, this appeal for more detailed information is made to the body of investigators through the columns of SCIENCE.

T. WAYLAND VAUGHAN

SCIENTIFIC BOOKS

The Age of Mammals in Europe, Asia and North America. By HENRY FAIRFIELD OSBORN. Illustrated. New York, The Macmillan Co. 1910.

Students of paleontology have awaited impatiently the past few years a promised work on extinct mammals by Professor Osborn. In his "Age of Mammals," as it has recently appeared, expectations have been more than realized. For more than a century, beginning with the classic researches of Cuvier, our knowledge of extinct vertebrates has been increasingly widened, and of no group so greatly as of the mammals. In North and South America, throughout Europe, in India, and more recently in Africa, discoveries have followed discoveries so rapidly that all but the expert have nearly given up in despair the attempt to follow and understand. And it is superfluous to say that in no part of the world has the progress of our knowledge been so rapid as in North America. Those famous pioneers in American paleontology, Leidy, Cope and Marsh, followed soon by Scott and Osborn, and later by Wortman, Hatcher, Matthew, Merriam, Sinclair, Gidley, Peterson, Douglass, Loomis, as well as others whose names may be omitted here without invidiousness, have contributed abundantly and meritoriously to our knowledge of the history of mammalian life in North America.

But, for some years it has been growing more and more evident that it was time that an inventory should be made of what we know. And this has now been done ably by Professor Osborn in this voluminous work of more than six hundred pages. That there is no place in the world where such a work could be written as the American Museum of New York City, with its extensive collections, and various experts in paleontology, especially Dr. Matthew, for aid and advice, vertebrate paleontologists know full well. That there is no one who could treat the subject more broadly and comprehensively than Professor Osborn will, also, be as readily admitted. Indeed there are few who are competent to criticize expertly the work as a whole, as the reviewer is painfully conscious, since he knows that he is not one of them. Vertebrate paleontology has advanced with such enormous strides within the scientific career of the present writer even, that it is no longer possible for