duced by Professor Zeiss, director of the Institute of Hygiene of the University of Berlin.

THE hundredth anniversary of the presentation of the daguerreotype process of photography to the French Academy by Louis Jacques Daguerre, father of photography, was commemorated on August 17 at the Eastman Kodak Building at the World's Fair with the opening of an exhibition of daguerreotype equipment, including a camera operated by Charles H. Tremaine, the only daguerreotypist in the United States. The exhibition includes an original daguerreotype by Daguerre, an 1837 photograph, which is the earliest existing still-life; an 1845 daguerreotype panorama of Niagara Falls, and many early photographs.

THE regular summer meeting of the Pennsylvania Academy of Science was called at Laporte, county seat of Sullivan County, on August 11, 12 and 13 by President R. W. Stone. Ninety-eight members and guests were present. Laporte is on the Allegheny Plateau at an elevation of almost 2,000 feet and is ideally situated for field trips, particularly in botany, as many rare plants occur in the neighborhood, including a number of unusual northern species. Field trips were held to the Haystacks, Lincoln Falls, Whirls End, High Knob and other points. On the evening of the eleventh, an out-of-door meeting open to the public was held. Talks, partly illustrated by lantern slides, were given on the local forestry, botany and geology. A correspondent writes that an unusually fine display of the aurora was visible that evening, adding materially to the interest of the meeting.

THE Rockefeller Foundation has recently granted Stanford University the sum of $200,000, for the continued maintenance, during a ten-year period, of a program of biological research supported since 1934 by previous grants from the same foundation. The project is under the general supervision of Professor C. V. Taylor, and has included individual investigations on biochemical factors in eye-color control in Drosophila, by G. W. Beadle; bioelectric phenomena in plant cells, by L. R. Blinks; the reorganization processes in induced encystment and excystment of ciliates, by C. V. Taylor; hybridization and embryonic transplantation experiments with Amphibia, by V. C. Twitty; the determination of polarity in developing ova, by D. M. Whitaker, and biochemical studies of bacterial synthesis, by C. B. van Niel.

ADDITIONAL facilities for the scientific study of problems confronting the fishing industry on the Atlantic Coast will be provided by the Bureau of Fisheries through the construction of a new laboratory building at the University of Maryland, College Park, to be built at a cost of $100,000. Preliminary plans call for the erection of a building to permit consolidated housing of the technological laboratory units now in operation at College Park and at Washington. A laboratory for research into West Coast fishing problems is maintained by the bureau at Seattle. The College Park building will provide for the first time similar unified facilities for the benefit of Atlantic Coast fishermen.

DISCUSSION

THE NEW NOMENCLATOR ZOOLOGICUS

SCIENTIFIC workers can not avoid a considerable amount of bibliographic drudgery, but in the nature of things some of this most necessary work can not be undertaken by single individuals. This is especially true in regard to generic and subgeneric names, which, according to the rules, may not be duplicated in the whole realm of zoology. Sherborn's "Index Animalium," listing, with bibliographical references, the generic names proposed up to 1850, has been invaluable; and particulars concerning later names may be found in the annual volumes of the *Zoological Record*. The various nomenclators, that of Scudder being the most important, listed the generic names, with dates. Yet with all these aids, there was clearly urgent need for a new nomenclator, bringing the subject up to date, and including some five thousand names which had been omitted from earlier lists. Such a work was projected by Dr. S. A. Neave, assistant director of the Imperial Institute of Entomology, in 1934. As a result of incessant labor by many workers, it has been completed, and is published by the Zoological Society of London. The first volume (A–C) is now published; three others (with over 900 pages each) will appear at intervals of about six months. The whole work is sold for eight guineas, post free, "a price which bears no relation to the initial cost, but which, it is hoped, will enable many individual zoologists, as well as institutions and libraries, to purchase copies." There are more than 225,000 entries, each occupying one or more lines of print. The generic names are in bold face and thus much easier to read than those in Scudder's work, which is in any case almost impossible to obtain, being long out of print. Looking up numerous names which are familiar to me, I have failed to detect any errors. The cost of preparation was borne by the Zoological Society of London, which publishes the work at its office in Regent's Park, London, N.W.8. Contributions towards the cost of printing were made by the Carnegie Corporation of New York, the Royal Society and a generous anonymous donor. Recorders were paid, but surely not in proportion to their labors.

J. R. le B. Tomlin unreservedly turned over for the use of the editor his great manuscript list of the generic names used for mollusca, on which he has been working for many years.

Such a work as this serves to emphasize the international and cooperative features of scientific work, and to show that it is possible to maintain a great republic of workers, without regard for race and without any external coercion. In the field of science we have a working League of Peoples, which may well serve as a model for other efforts to unite humanity for the common good.

T. D. A. COCKERELL

UNIVERSITY OF COLORADO

A NEW COLOR REACTION OF VITAMIN B_1 (THIAMIN, ANEURIN)

STUDYING the influence of pure synthetic vitamin B_1 (thiamin, aneurin) on blood phosphate fractions[1] by Fiske and Subbarow's technic we were surprised by the great increase of the values when thiamin was added. More accurate investigations showed that pure thiamin produced alone an intense blue color by the use of ammonium molybdate in sulfuric acid solution and aminonaphthosulfonic acid solution. This reaction being nevertheless non-specific permits, however, the determination of the vitamin when the concentration is above 100γ in pure aqueous solution. Since the color reaction follows the Beer's law it was possible to determine the optimal spectral zone for photometric readings. A Pulfrich spectrophotometer was employed, using filter S 72. The absorption index, $\frac{\text{concentration}}{\text{extinction coeff.}}$ was calculated and found to be 0.375. The technic for the determination is easy and rapid. To a 25 ml flask the thiamin solution (more than 100γ) is added together with 5 ml of a 2.5 per cent. ammonium molybdate solution in 3N sulfuric acid and then 1 ml of a 0.25 per cent. aminonaphthosulfonic acid containing sodium bisulfite and sodium sulfite (as prepared for blood phosphorus determination by Fiske and Subbarow).[2] The flask is filled to the mark with distilled water and the color read after 10 minutes using a 3 ml cup and filter S 72 in a Zeiss photometer. The extinction value is multiplied by 0.375 to obtain the thiamin in the sample.

When phosphorus is also present in the solution the color intensity represents the vitamin plus phosphorus content. By destroying organic matter with sulfuric-nitric mixture in another sample and neutralizing, then proceeding as above, the color developed represents only the phosphorus content. The difference between the first and the second determinations gives the thiamin content.

[1] G. G. Villela and A. M. Leal, *Compt. Rend. Soc. Biol. Paris*, in press.

[2] C. H. Fiske and Y. Subbarow, *Jour. Biol. Chem.*, 66: 375–400, 1925.

A more detailed study of this reaction will be published elsewhere.

GILBERTO G. VILLELA
ALUISIO M. LEAL

OSWALDO CRUZ INSTITUTE,
RIO DE JANEIRO, BRAZIL

ON THE NATURE OF FRICTION

FRICTION between solid surfaces is ordinarily thought of as due to the interlocking of surface irregularities. That static friction also depends on the molecular attractions between the surfaces has recently been shown in a series of experiments on the tangential force between two smooth, clean glass surfaces in contact.

We placed a short piece of fire-polished glass tubing inside of a longer straight glass tube. This tube had a sufficiently large bore so that the smaller piece could slide freely within it. This assemblage was thoroughly heated and carefully evacuated by means of an efficient mechanical vacuum pump after which the outer tube was sealed off in the evacuated state. The assemblage was then enclosed in a water jacket for temperature control and clamped on a tilt table. This arrangement permitted us to determine accurately the angle at which the small glass tube started to slide under gravity within the larger tube.

During the course of the experiments it was discovered that the static friction, as computed from the angle of slip, was much larger for surfaces baked in a vacuum than for surfaces which were exposed to the air in the laboratory. The lower friction of the exposed surfaces undoubtedly was due to a moisture and gas film between them.

Several assemblages were constructed, baked out and sealed under vacuum. In each the coefficient of static friction decreased almost rectilinearly with the number of passes of the slider. In one case, where both slider and enclosing tube were made of soft soda glass, the coefficient of static friction decreased to one half its original value in 44 passes of the slider.

The appearance of the sliding surfaces was much modified during the experiment. The fresh surfaces looked perfectly smooth under a microscope, but after a few passes of the slider the surfaces became pitted. The pits were approximately round and not elongated in the direction of the motion, showing that parts of the surfaces had been torn out as if welded junctions had been broken.

In all our experiments, using baked and evacuated apparatus, the coefficient of static friction decreased with wear. How far this decrease in friction continues is not known as yet, but it is not likely to go much below one half of its virgin value. Certain difficulties with the breaking of the outer tube due to the impacts of the slider have prevented us from extending the experiment indefinitely with a given tube.

Our interpretation of these results is that a large