series of tests, in what he could call a perfected form, he did wish to present for the consideration of the members certain phases of the work, which had been done.

The principal color-destroying or changing agencies toward which the fastness of dyestuffs are usually tested may be enumerated as follows: Fastness to light, fastness to weather, fastness to washing, fastness to scouring, fastness to milling (including felting and fulling), fastness to alkalies, fastness to acids, fastness to chlorine, fastness to sulphur dioxide, fastness to rubbing, fastness to ironing and calendering, fastness to steaming, fastness to perspiration, fastness to urine.

The paper then went into detail concerning the methods of determining the fastness of dyestuffs to the above agencies, and also the methods of recording the same. To make the record of a color complete, certain other data were also recorded namely: Its name, dyestuff concern manufacturing or selling, samples of the textile material dyed full shade, and in various percentages to indicate its coloring value, a detailed recipe of the process used in making the dyeings that are tested, its solubility, color of its solution, action of its solution with acids, action of its solution with alkalies, and finally three samples of dyed cotton and wool union material to indicate its affinity for the two important fibers, and to give some idea as to its value for union dyeing.

The paper was accompanied by many dyed and tested samples which indicated the manner in which all of the above tests and determinations of an individual color could be easily recorded upon a single folder of the proper size for an ordinary letter file.

In conclusion, it was said that the tests described had been formulated with the constant aim to make them as comparable as possible with the actual conditions of practise, and that they had been revised each time that it was thought that any change would make them approach nearer to this desired condition. In the opinion of the speaker they were subject to still further change and modification, but as he looked back to the series of tests made four and five years ago, he felt that great improvement had been made. He was inclined to believe that all of the members present, who were directly interested in textile coloring, would agree with him that great advances could be made if color dealers and textile manufacturers in general would agree upon certain standards of fastness, and adopt uniform methods for making the various tests which, at the present time, are often so valueless, because of lack of information as to how they were made.

Much could be accomplished by cooperation, and it was sincerely hoped that the future would see an organized effort, upon the part of those interested, toward the establishment of such methods.

The paper was discussed at some length by members and guests. At the close of the meeting a vote of thanks was passed, to the Lowell members of the section for the enjoyable and instructive program and visits of the afternoon and evening, and to the managers of the several industrial plants where visits were made, for their courtesy and attention to the comfort and enjoyableness of the visits.

Preceding the meeting the members of the section were provided with a tempting lunch at the Lowell Textile School, after which the various departments of the school were visited and the students observed at their work. At 2:30 P.M. parties were formed to visit (*a*) the Bigelow Carpet Works, (*b*) the Lawrence Hosiery Mill; (*c*) the Lowell Gas Light Company, (*d*) the Merrimack Print Works. At all of these industrial plants the members were shown many interesting and instructive processes.

Frank H. Thorp,
Secretary

Discussion and Correspondence

The Effective Surface-Temperature of the Sun and the Absolute Temperature of Space

To the Editor of Science: I have before me yesterday's issue of Science. As for myself no more striking illustration could be given of the chaotic state in which this whole disputed question of the sun's effective surface-temperature still remains, than the results obtained by Professor Poynting, as set

forth in the single paragraph in the second column on page 602 of SCIENCE.

For the past six years my whole time has been given up to work relating to investigations as to the probable origin and physical structure of our sidereal system. In the course of these investigations the question, *What is the present surface-temperature of the sun?* has recently given me much trouble, for the results of different investigators vary all the way from twelve hundred degrees up to eighteen million degrees centigrade!

With the aid of recent observations, made with a mirror which I figured about three years ago, and which, for this kind of work, is by far the most powerful telescope ever constructed (aperture two feet, focal length three feet) I finally deduced the simple, fundamental, *theoretically exact* expression given below.

This equation proves that if Professor Poynting's value for the temperature of the "small black particle" is correct the sun's surface temperature is twelve million degrees instead of only six thousand.

In my approximate determination of the absolute temperature of space with the aid of the mirror, no allowance has yet been made for absorptions and reflections due to ponderable matter in the space between the sun's surface and the focal point of the mirror. Professor Poynting's value for the absolute temperature of the "small black particle" is 300°; my uncorrected value for the same particle is 0°.5 +. So that according to my results the effective surface temperature can not be less than twenty thousand degrees centigrade.

If t is the temperature of the "small black particle" at the distance r from the *center* of the sun, and t_0 is the effective temperature of the surface of the sun at the distance r_0 from the sun's center, then my *theoretically exact* formula is simply

$$t_0 = t\left(\frac{r}{r_0}\right)^2,$$

a Newtonian expression which, according to the assertions of modern astrophysicists, can not be used for determining the effective surface-temperature of the sun; so far as I can learn this stand has been taken mainly for the reason that the very high resulting temperatures heretofore obtained seem to be inadmissible.

I had intended to defer the publication of my present views regarding the probable origin of our stellar and solar systems until more definite observational and more theoretical data had been deduced; but as repeated reference to a theory should be accompanied by some evidence bearing on the question "Is the theory tenable?" I will shortly forward for publication in SCIENCE a very brief statement of the results so far obtained.

J. M. SCHAEBERLE

ANN ARBOR,
November, 2, 1907

ARTICLE 30 OF THE INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE

THE new article 30 of the International Code of Zoological Nomenclature, adopted by the International Congress of Zoologists at its recent meeting in Boston,[1] is beyond question a great step forward in providing definite methods for determining genotypes in zoology. Although the old article 30 is canceled, the new article 30 includes all of the principles of the old one, of which it is virtually an extended amplification, embracing seven distinct "rules," and thirteen additional "recommendations," the former numbered *a* to *g*, and the latter *h* to *t*. The recommendations have relation to the selection of types for genera still typeless, but one of them, numbered *i*, and relating to "virtual tautonomy," might well have been transferred to the "rules." The "cases" are wisely separated into two categories: "I. Cases in which the generic type is accepted *solely* upon the basis of the original publication." "II. Cases in which the generic type is not accepted *solely* upon the basis of the original publication."

The first class includes: (*a*) all those genera, the founder of which designated the type at the time of founding the genus; (*b*) those genera, the founder of which used *typicus* or

[1] See SCIENCE, N. S., Vol. XXVI., pp. 520–523, October 18, 1907.