Dr. Stejneger has called my attention to the fact that the specific name under which Mr. Doolittle's specimen was reported should properly have been written *Ambystoma maculatum* instead of *Ambystoma punctatum*, as shown by him in 1902.[6]

M. W. Lyon, Jr.
George Washington University

CENTIGRADE VERSUS FAHRENHEIT

In the article by A. H. Sabin, appearing in the May 5 issue of Science, entitled "The Centigrade Thermometer," were expressed the sentiments of many scientific workers, who have had no other method of voicing their opposition to his scheme accorded to them by Representative Johnson, than through articles in various publications.

In the judgment of the writer the set of questions submitted to him by Mr. Johnson should have been so constituted as to have permitted the views of the opposition to have been presented.

The *inconvenience* of the Fahrenheit scale is not apparent to the writer.

The number denoting the temperature range between the freezing point (32°) and the boiling point (212°) of water, being 180 is divisible without a remainder by 1, 2, 3, 4, 5, 6, 9 and 10; while the number for the Centigrade scale denoting the same range, namely 100, is divisible by only 1, 2, 4, 5 and 10 without a remainder; or three less divisors, tending to arouse the suspicion that the Fahrenheit scale is more "rational" than the Centigrade scale.

It is the opinion of the writer that such a change as is contemplated by Mr. Johnson would not only be idiotic, but a most undesirable blow at *educational efficiency*, the most important factor entering into the life of every human individual.

F. E. Austin
Hanover, N. H.

SAFETY RAZOR BLADES FOR HAND SECTIONING

If there are still any botanists so old-fashioned as to cut sections by hand, they may be glad to know, both for themselves and for their students, of the convenience and cheapness of the razor I am now using.

The present stropping handle of the Gem Safety Razor is the holder, the Gem Damascene the blade. The total cost is about fifteen cents. The blades, when dull, can be replaced for five cents, but in the stropping holder they may very easily be kept sharp.

I find this thin, keen, easily stropped razor admirably suited to light work. I am not sure that it would be heavy enough to cut hard wood satisfactorily, but it sections leaves, stems and roots, even of considerable size and hardness. I am so pleased with the result that I wish to share it.

George J. Peirce
Botanical Laboratory,
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California

[6] *Proc. Biol. Soc. Wash.*, Vol. 15, pp. 239–240, December 16, 1902.

SCIENTIFIC BOOKS

Ptolemy's Catalogue of Stars. A Revision of the Almagest. By C. H. F. Peters and E. B. Knobel. Carnegie Institution of Washington, 1915.

It will give pleasure to astronomers to have this long and careful work on the collation of existing manuscript copies of the "Almagest" so well presented in published form. It is the oldest known catalogue of measured star places, and while observers of this day can receive little assistance in comparing those rough measurements with modern positions, the catalogue will still exhibit the changes in the heavens due to precession, and it serves as a record of the unchanging character of the distribution of the bright stars.

No original copy of Ptolemy's "Almagest" is in existence, so far as known, and the earliest manuscripts thus far found were made eight or nine centuries after the epoch of the catalogue. Both Greek and Arabic manuscripts are among the early transcripts; the Latin copies were translations of either one of these. In the transcriptions many errors were made, due in part to the ignorance of astronomical science on the part of copyists, and to the difficulties of translating the nu-

merical terms of the original, some of which can easily be misconstrued unless the form is exactly noted. To reconcile if possible the differences in the various manuscripts, and then to identify the stars observed with the present known positions, were the objects of the revision. Any probable explanation of the source of an error makes it easier to accept a correction, and for such explanations a thorough acquaintance with the language in which the results were recorded, as well as knowledge of the character of the results are required. Both these requirements were fulfilled in a remarkable degree by Dr. Peters. Grounded in his astronomical training under the tutelage of Encke and Gauss, he possessed the painstaking and thorough habits of the mathematical investigator, joined to a wide culture from his varied life in different European countries. His residence of several years at Constantinople gave him a fluent knowledge of Turkish, Persian and Arabic, besides his training in Greek, Latin and Hebrew, and his acquaintance with the usual European languages, which the old time culture demanded of an educated man. Following his revolutionary experiences, he came to this country in 1854, and soon after was associated with Dr. B. A. Gould, in the Dudley Observatory at Albany, which he left to become professor of astronomy at Hamilton College. In the period of over thirty years of his directorship of the observatory at Clinton, he made several trips abroad, and searched the capitals of Europe for the manuscripts of the "Almagest," sparing neither time nor labor in studying every detail relating to the star positions on record. The "Almagest" contained a full summary of all existing knowledge of the apparent movements of the sun, moon and planets, the division of practical astronomy to which the attention of the earliest students of the sky would be most naturally attracted. The seventh and eighth books were devoted to the catalogue of northern and southern stars, respectively. Ptolemy did not accept any other explanation of the universe than that of a central earth, without rotation, though ideas more in conformity with the actual form of the solar system had even at that time been more than once subjects of speculation. The value of the obliquity of the ecliptic was known, and the effect of the precession could be closely calculated. His positions were given in longitude and latitude, for an epoch known to be about A.D. 138. But the earliest comparisons of his positions showed that they were approximately true for a much earlier period, following the epoch of the observations of Hipparchus by about one hundred and ninety years, thus corresponding nearly to the epoch A.D. 60. The present publication, while presenting much of the evidence from all points, adds nothing to the solution of the question whether the places of Ptolemy's catalogue were derived from any observations of his own, or were simply the observations of Hipparchus, brought up to the later epoch by the addition of a constant correction to the longitudes, for the effect of precession.

After Dr. Peters had begun his study of the foreign manuscripts, Mr. E. B. Knobel, at one time president of the Royal Astronomical Society, learned that they were both engaged upon the same search; and as Dr. Peters did not plan to work in the English museums and libraries, they entered into hearty and unselfish plans of collaboration, to include all available sources of authority.

The description of their mutual labors has been written by the English astronomer, and the results have been tabulated by him, after much extra discussion and transcription of the original notes of Dr. Peters. In all, thirty-two copies of the "Almagest," now preserved in Rome, Paris, Vienna, Venice, Oxford and London, were examined by the two investigators, and the places of the stars from twenty-six of these manuscripts have been tabulated for comparison. The magnitudes from seven manuscripts have also been tabulated. The stars have been given Baily's numbers, consecutively, to No. 1,028, through the various constellations in which the catalogue of Ptolemy was collected. The places and

magnitudes are always those derived by Dr. Peters; and the identification with modern star designation, a tabulation of the errors found, and the comparison with the Harvard photometric magnitudes have been added. The fact that Ptolemy lived at Alexandria, four degrees south of Rhodes, the site of Hipparchus's observations, and yet did not include any more southern stars than did the latter, is one point of evidence against a new series of observations by Ptolemy. Hipparchus is supposed to have observed 1,080 stars. The work of identification involved the reduction of modern star places back to the respective epochs of the old observations, and, with this, the computation of the probable errors of the old measures. These had been recorded in fractions of a degree, and the fact that much confusion arose in transcribing these fractions in the Greek has added to the uncertainty of some of the identifications. Many of the manuscripts in existence are evidently copied from some particular original, and the errors of that original would be reproduced, in addition to new mistakes of transcription.

After the death of Dr. Peters, in 1890, the collection of material made by him was sent to Mr. Knobel, who has enlisted the support of astronomers and public-spirited men in having the results of their joint labors properly recognized by the publication in permanent form. The volume contains an excellent portrait of Dr. Peters, and some photographic reproductions of the pages of the two oldest copies of the "Almagest."

R. H. Tucker

Lick Observatory,
March 21, 1916

Flora of the Northwest Coast. By Charles V. Piper and R. Kent Beattie. Published by the authors, Washington, D. C., November 10, 1915. Pp. xiii + 418. Price $1.50.

Students of the flora of western North America will welcome Piper and Beattie's "Flora of the Northwest Coast." The authors are to be congratulated for bringing to fruition the labors of their earlier years for the botany and botanical education on the Pacific coast. Their new work will contribute greatly to the knowledge of the plant life in the northwest and, as they themselves express the hope, will "stimulate a greater activity and interest in the flora."

The area covered by the manual is that lying west of the summit of the Cascade Mountains from the headwaters of the Willamette River in southern Oregon to the 49th parallel of latitude. This is a natural geographic region characterized by its magnificent coniferous forests which form the dominating plant formations over nearly the entire area below 5,000 feet altitude. "The only break in this coniferous cover consisted originally of a series of prairies extending from the Upper Willamette Valley northward to Vancouver Island. North of the head of Puget Sound, however, the prairies are small and limited in the main to the extremities of points and portions of the islands in the Sound."

In a forested region such as the northwest the lignescent flora naturally attracts attention, and it is interesting to note that, although the forests are largely composed of a few species of conifers, there is a comparatively large variety of trees and shrubs, approximately 9½ per cent. of the total flora. Of the 155 species of woody plants described, 47 are trees, 105 shrubs and 3 woody climbers. The genera with more than two species of trees are, *Pinus* 6, *Abies* 6, *Salix* 5, and *Acer* 3. The genera with five or more species of shrubs are, *Salix* 14, *Ribes* 10, *Spiræa* 5, *Rubus* 6, *Ceanothus* 6, and *Vaccinium* 9.

A summary of the flora is given in a table, from which we learn that there are described, 100 families, 550 genera and 1,617 species and subspecies, distributed as follows: Pteridophyta 7 families, 22 genera and 61 species; Gymnosperms 2 families, 10 genera and 22 species; Monocotyledons 15 families, 111 genera and 412 species; Dicotyledons 76 families, 407 genera and 1,122 species. The composition of the flora may be brought out a little more fully by listing a few of the prominent families and genera. The families containing more than 60 species are: Poaceæ 46 genera and 116 species,