

Many years ago Professor E. O. Wooton, then in charge of the department of botany at the New Mexico Agricultural College, planned a flora of New Mexico. It was at first expected that the work would be finished in a few years, but various difficulties arose, while every new locality examined furnished additions to the list of species. Thus, as the years passed, the collections tended to run ahead of the work done on them, and the completion of the flora appeared more remote than ever. Eventually, Mr. Paul C. Standley became Professor Wooton's assistant, and through the joint labors of the two the flora made rapid progress; after both had moved to Washington, and were in a position to consult the larger herbaria, it was finally completed. It was then offered to the National Museum for publication, and met with the usual delays. Owing to its great size, it had to be condensed, everything not considered essential (*e. g.*, names of collectors) being cut out. As it now appears, it is a bulky volume, containing an enormous amount of information. The number of species treated in 2,975, but, as the authors state, the actually existing flora is doubtless much greater. Considerable areas in New Mexico have never yet been visited by a botanist, while others have only been superficially examined. Though the "Flora of New Mexico" is necessarily of the nature of a preliminary survey, it forms an excellent guide to the plants of the state, and is reasonably complete for all the better known localities. Each genus is briefly defined, all the species are included in very clearly written keys, and in addition there are numerous remarks which greatly facilitate the ready recognition of the various plants. The type locality, general range and range in New Mexico are given. It would be hard to imagine a more useful and adequate treatment of the subject within the space-limits imposed. After spending many hours in the study of the book, the reviewer finds his admiration for it increasing with greater familiarity, a process the reverse of that experienced in relation to some other works of the same general type. There may be, there certainly are, matters which will re-

quire amendment, but we appear to have the best presentation which years of study in the field and herbarium, and careful consideration of all the available evidence, can give at the present time.

The new species found in the course of the investigation have been very numerous, including members of such genera as *Yucca*, *Agave*, *Quercus*, *Clematis*, *Rosa* (two), *Ame-lanchier*, *Padus* (six), *Lupinus*, *Robinia*, *Rhus*, *Acer*, *Garrya*, *Sambucus*, etc., etc. Although New Mexico is bordered by Colorado on the north, it contains a very large number of species not found in the latter state. How many of these are really endemic or pre-cinctive can not be ascertained until the plants of Arizona and Chihuahua are better known, but it is practically certain that several at least are confined to some of the large mountain groups. In discussing Wooton's cockle-bur, *Xanthium commune Wootoni*, it is remarked that it appears to be a distinct species, but is not placed as such on account of the occurrence of *commune* and *Wootoni* burs in a single instance on the same plant. DeVries ("Species and Variation," 1905) grew *X. Wootoni* from seed, and found it to come true; in his discussion of it he provided a binomial designation. The reviewer, two years ago, found a specimen of *X. commune* in a greenhouse at Boulder, having several *Wootoni*-like burs, although no *X. Wootoni* has ever been seen in Colorado. We must apparently conclude that *X. Wootoni* is a valid species, but that *commune* from time to time varies or mutates to a virtually identical form.

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#### SCIENTIFIC JOURNALS AND ARTICLES

THE concluding (October) number of volume 16 of the *Transactions of the American Mathematical Society* contains the following papers:

W. V. LOVITT: "A type of singular points for a transformation of three variables."

J. K. LAMOND: "The reduction of multiple *L*-integrals of separated functions to iterated *L*-integrals."

G. A. MILLER: "Independent generators of a group of finite order."

C. N. HASKINS: "On the zeros of the function,  $P(X)$ , complementary to the incomplete gamma function."

EDWARD KIRCHER: "Group properties of the residue classes of certain Kronecker modular systems and some related generalizations in number theory."

C. DE LA VALLÉE POUSSIN: "Sur l'intégrale de Lebesgue."

G. E. WAHLIN: "A new development of the theory of algebraic numbers."

A. F. CARPENTER: "Ruled surfaces whose flecnode curves have plane branches."

THE opening (October) number of volume 22 of the *Bulletin of the American Mathematical Society* contains: Report of the twenty-second summer meeting of the society, by Thomas Buck; "Groupless triad systems on fifteen elements," by Louise D. Cummings and H. S. White; "Note on Green's theorem," by C. A. Epperson; "Convergence of the series

$$\sum_{i=0}^{\infty} \sum_{j=0}^{\infty} \frac{x^i y^j}{i - j\gamma}$$

( $\gamma$  irrational)," by W. D. MacMillan; "A certain class of functions connected with Fuchsian groups," by Arnold Emch; "Professor Bôcher's views concerning the geometry of inversion," by Eduard Study; "The Davis calculus," by E. W. Davis; "Notes"; and "New Publications."

THE November number (Vol. 22, No. 2) of the *Bulletin* contains: "On the relation between linear algebras and continuous groups," by L. E. Dickson; "An aspect of the linear congruence with applications to the theory of Fermat's quotient," by H. S. Vandiver; "Limits of the degree of transitivity of substitution groups," by G. A. Miller; "The permutations of the natural numbers can not be well ordered," by A. B. Frizell; "Relations among parameters along the rational cubic curve," by J. E. Rowe; Review of Vallée Poussin's *Cours d'Analyse Infinitésimale*, third edition, by M. B. Porter; Review of Zeuthen's *Lehrbuch der abzählenden Methoden der Geometrie*, by E. S. Allen; Review of Carslaw's *Teaching of Mathematics in Australia*, by R.

C. Archibald; "Shorter Notice": Loria's *Per la Biografia di Giovanni Ceva*, by D. E. Smith; "Notes"; and "New Publications."

### SPECIAL ARTICLES

#### THE MOUNTING OF CELLOIDIN SECTIONS IN SERIES

INVESTIGATORS in both normal and pathological plant histology have to often resort to celloidin for embedding parts of plants which contain a considerable amount of lignified tissue, as the sections are very apt to break up badly in cutting if the material is embedded in paraffin.

The process of cutting and mounting celloidin sections is very simple if only occasional sections are required for study, as they can be stained and mounted separately. It is sometimes desirable, however, to examine a whole series of sections, in which case it is necessary to stick the sections to a slide before staining them, which greatly increases the difficulty. Plowman<sup>1</sup> has described a method of this kind which very briefly is as follows: As the sections are cut they should be transferred to a piece of smooth thin paper, and when they are dry the paper should be turned face downward on a slide which has previously been coated with albumen fixative. Add several layers of paper, press down, and roll with a roller. Place another slide on top of the sections, clamp down, and dry for a few hours.

I have had occasion to use the above described method on various occasions with rather poor success. The paper is very apt to stick to the edges of the sections and either tear them badly or pull some of them away from the slide when the paper is finally removed. The use of oiled paper will not entirely obviate this difficulty unless the paper is very oily, in which case it is apt to prevent some of the sections from sticking to the slide if some of the oil gets beneath them. I have found, furthermore, that it is necessary to use a much thicker solution of albumen than for paraffin sections, which is apt to become deeply colored in the subsequent staining, resulting in messy looking slides.

<sup>1</sup> *Bot. Gaz.*, 37, pp. 456-461.