## SCIENTIFIC JOURNALS AND ARTICLES

THE July number (volume 13, number 3) of the *Transactions of the American Mathematical Society* contains the following papers:

J. B. Shaw: "Quaternion developments with applications."

H. S. Vandiver: "Theory of finite algebras."

Dunham Jackson: "On the degree of convergence of the development of a continuous function according to Legendre's polynomials."

Louis Ingold: "Functional differential geometry."

E. B. Van Vleck: "On the extension of a theorem of Poincaré for difference equations."

E. B. Van Vleck: "One-parameter projective groups and the classification of collineations."

J. E. Rowe: "Bicombinants of the rational plane quartic and combinants of the rational plane quintic."

THE closing (July) number of volume 18 of the *Bulletin of the American Mathematical Society* contains: Report of the April meeting of the Society, by F. N. Cole; "Proof of a theorem due to Picard," by W. R. Longley; Review of Chwolson's Traité de Physique, by E. B. Wilson; "Arithmétique Générale," by E. Dumont and N. J. Lennes; Shorter Notices: Muir's Determinants, by G. A. Miller; Cohen's Lie Theory of One-Parameter Groups, by E. J. Wilczynski; Müller's Abriss der Algebra der Logik, by L. I. Neikirk; Andoyer's Cours d'Astronomie, by Kurt Laves; "Notes"; "New Publications"; List of papers read before the society and subsequently published; Index of Volume 18.

## NOTES ON ENTOMOLOGY

SOME years ago Dr. Y. Sjöstedt made a collecting trip to the high mountains of East Africa. The results of nearly a year's collecting in that region were gradually published, and now have all been brought together in three volumes.[1] Dr. Sjöstedt collected over 50,000 specimens of insects, belonging to about 3,500 species, of which over 1,200 were new species. Many new genera and several new families have been erected upon this material, one of the richest insect collections ever brought from Africa.

A NEW entomological journal is the *Entomologische Mitteilungen* issued by the Deutsche Entomologische Museum, under the direction of Drs. S. Schenkling and C. Schaufuss. It is to be a monthly, and will contain papers on all orders of insects, but doubtless a majority will be on beetles. The first number contains a short history of the Deutsche Entomologische Museum, the only purely entomological museum in the world. With this new publication the museum abandons its previous quarto journal.

ONE of the results of the Belgian exploitation of the Congo was a Congo Museum, located near Brussels. This institution has now begun the issuance of a journal, *Revue Zoologique Africaine,* edited by the curator of the museum, Dr. H. Schouteden. It is to be issued irregularly; two fascicles have appeared, and are largely occupied with entomological articles treating all orders of insects.

DR. E. M. WALKER, who for some years has been studying the dragonflies of the genus *Æshna,* has now published his results.[2] It is a most painstaking and excellent work. There is a considerable amount of biologic information about these insects in the early part of the article, as well as figures of the characteristic parts of the nymphs. The author recognizes and gives complete descriptions of 16 species, most of which are confined to the northern parts of the United States and Canada. Several of the plates represent the markings of the body in color.

THE position of the flies of the family Phoridæ in the system of the Diptera has been a subject for discussion for many years. It has generally been considered as on the borderland between the two main divisions of the order, put sometimes on the one side, sometimes on the other. Now Dr. D. Keilin has

[1] "Wissenschaftliche Ergebnisse der Schwedischen Zoologischen Expedition nach dem Kilimandjaro, dem Meru, und dem umgebenden Massaisteppen Deutsch-Ostafrikas, 1905–1906, unter Leitung von Professor Dr. Yngve Sjöstedt," Stockholm, 1911, 4to.

[2] "The North American Dragonflies of the Genus *Æshna,*" Univ. of Toronto Studies, No. 11, pp. 213, 28 plates, 1912.

made a careful study of the larvæ of three species and unhesitatingly places the family in the Cyclorhapha.[3] These three species of *Phora* he found breeding in decaying snails, and each can be recognized in the larval and pupal condition. The author also investigates the internal anatomy of the larvæ and pupæ, and the methods of emergence of the flies.

The full paper[4] in which Frederic Muir solves the *Ascodipteron* question has recently been issued; a brief preliminary note appeared a year ago. Mr. Muir kept the bats containing parasites, and obtained puparia, which after about a month disclosed the winged flies. After mating, the female attaches to the bat, breaks off her wings and legs, and by the aid of the powerful mouth-parts burrows until only the tip of her abdomen remains extruded. Her body enlarges until the head is hidden within a deep anterior pit. Both new species are from the Malay region.

A recent entomological portion of "Das Tierreich" is by Dr. H. Friese on the megachilid bees of the world.[5] The author tabulates the species according to the main geographical regions. Most of the species are from Europe or North America; the tables of the European species are doubtless fairly complete, but the tables for the American forms will be greatly enlarged, as many of our species are yet undescribed. In *Osmia* Dr. Friese lists 345 species, in *Anthidium* 247 and in *Megachile* 540. The work should be of great help to any one who would undertake the careful study of our megachilid bees.

One of the largest parts of the new "Coleopterorum Catalogus" is No. 39 on the subfamily Cerambycinæ, 574 pages. It will be of the greatest use to the numerous students of this, one of the most popular families of beetles, as its author, Dr. Aurivillius, is well known as a most careful and thorough worker. In many of the larger genera the species are arranged according to the main zoological regions.

Nathan Banks

[3] "Recherches sur la morphologie larvaire des Dipteres du genre *Phora*," *Bull. Sci. France Belg.*, XLV., pp. 27–88, 1911, 4 pls.

[4] "Two New Species of *Ascodipteron*," *Bull. Mus. Comp. Zool.*, LIV. (No. 11), pp. 331–366, 3 pls., 1912.

[5] "Das Tierreich," 28 Lieferung, Apidæ I Megachilinæ, 1911, 440 pp.

## *SPECIAL ARTICLES*

### SHEEP-BREEDING EXPERIMENTS ON BEINN BHREAGH[1]

*Introductory Remarks.*—It is astonishing how ignorant we all are about common things. Just test the matter on yourself. Sheep are quite common; and we are all more or less familiar with their appearance, and should therefore be able to answer some questions about them. Well then—*How many front teeth has a sheep got in its upper jaw?*

You never counted them? You have not observed? Next time you come across a sheep just look and see, and you will find that she has *none at all!*—the upper gum is bare.

We are all familiar with the fact that a sheep suckles her young; and know therefore that she possesses nipples that yield milk. How many nipples has she, and where are they located?

Human beings, of course, have only two, located on the breast. Dogs and cats and other mammals that have a litter at birth have many nipples, located in pairs all along the belly. Cows have at least four, located on the belly between the hind legs. Where are the sheep's nipples placed, and how many are there?

I must confess that I was myself unable to answer these questions, until, in the year 1890, I made a personal examination of the sheep on Beinn Bhreagh.

[1] From the *Beinn Bhreagh Recorder*, Vol. X., pp. 368–386: A typewritten periodical, limited to five copies, containing records of experiments of various kinds, conducted at Dr. Bell's summer place at Beinn Bhreagh, near Baddeck, Cape Breton Island, Nova Scotia.

One copy is deposited in the Smithsonian Institution, at Washington, D. C., and the others are in the possession of private individuals, viz., Dr. A. Graham Bell and Mr. J. G. Davidson at Beinn Bhreagh, N. S., and Mr. Gilbert H. Grosvenor and Mr. David C. Fairchild, at Washington, D. C.