ancient Babylonian wheel had six spokes while the ancient wheels in Egypt and Greece had only four tends to support the hypothesis that among the former an angle of 60° was regarded as normal while the right angle was regarded as normal among the latter. At any rate, the hypothesis advanced by Professor Hoppe tends to throw additional light on a question which relates to our daily experiences, but had not received a satisfactory answer.

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NOTES ON ENTOMOLOGY

The first volume of Mr. Kirkaldy's long-expected catalogue of the Hemiptera Heteroptera of the world has been issued, and is truly a great work. Indeed it is, if possible, too extensive and elaborate for ready reference. This volume[1] treats of the families known to us as Pentatomidæ, Scutelleridæ and Cydnidæ. The general plan is similar to that of the Lethierry and Severin Catalogue: the species of each genus are numbered, the localities at the right side of the page, and each reference includes the generic name used by each writer. Wherever known the food plants are given. In the introduction he has a classification of the order, and an exposition of the rules of nomenclature followed by him, which differ in several respects from those commonly adopted by entomologists.

The era of discovery of strange insects is not yet passed. Dr. Karl Jordan has described a new and truly remarkable genus of insects which was found in a sack on the wings of a Malayan bat.[2] He considers that it belongs to the Forficulidæ, but its resemblance to the common earwigs is extremely slight. It is a very flat insect, with a pair of small, curved, oval cerci; the pro- and mesothorax have a median suture; the head looks like that of a perlid larva, with a suture from eye to eye, the basal joint of the antennæ is very large and long. Dr. Jordan calls it *Arixenia esau.* He considers that it shows some relation to *Hemimerus,* and that it may possibly form a new suborder of Orthoptera. It might be useful to compare the insect with some of the Mallophaga, as a possible connecting link between them and some of the neuropteroid insects.

Dr. Alex. Schepotieff describes a new genus of primitive insects[3] which he calls *Protapteron indicum;* it comes from the Malabar coast. It is a small, slender form and has some resemblance to *Acerentomon,* but probably more allied to *Campodea.* It has four pairs of rudimentary feet on the basal abdominal segments, each two-jointed. There are no terminal cerci, and the antennæ are slender; there are five widely separated ocelli on each side of the head; each segment has only a dorsal and ventral plate, no other chitinized parts; the tarsi end in a single claw; and there are but two pairs of spiracles.

Dr. Albert Tullgren is the author of a most valuable paper on Swedish Aphidæ.[4] In this first part he treats of the Swedish Pemphiginæ. This subfamily he divides into six groups: Vacunina, Hormaphidina, Mindarina, Pemphigina, Schizoneurina and Anœciina. He gives a full description of each genus and species, and as much of the life history as is now known. He reviews the previous classifications of the subfamily Pemphiginæ, and presents considerable matter on the structure of the group. The numerous figures illustrate the essential structural characters, such as head, antennæ, cornicles and wings.

Dr. A. E. Shipley has given a valuable account of the insects affecting the red grouse in Scotland.[5] These are principally a biting louse, *Goniodes tetraonis,* the bird fly, *Ornithomyia lagopodis* and a dung-fly, *Scatophaga stercoraria.* The author has not found any connection between any of these parasites and

[1] "Catalogue of the Hemiptera Heteroptera," Vol. I., Cimicidæ, pp. 392, Berlin, December, 1909.

[2] *Novitates Zoologicæ,* Vol. 16, pp. 313–326, 1909, 3 plates.

[3] "Studien über niedere Insecten," *Zool. Jahrb., Abt. Syst.,* Vol. 28, pp. 121–135, 1909, 3 pls.

[4] "Aphidologische Studien," *Arkiv f. Zoologi,* Bd. V., No. 14, pp. 190, figs. 92, 1909.

[5] "The Ectoparasites of the Red Grouse (*Lagopus scoticus*)," *Proc. Zool. Soc. London,* 1909, pp. 309–334.

the disease that seriously affects grouse. The figures of the structure of some of these forms are extremely good, and particularly useful are those of the larvæ of the Scatophaga.

M. E. RABAUD has published a brief but interesting article on the habits of certain solitary wasps known as Pompilidæ.[6] He objects to the anthropomorphic interpretations frequently given of the habits of these insects. He notes much variation in the methods of capture and mutilation of prey, as well as in the interest they take in their work. He concludes that the sense which guides the insect in the selection of prey is sight and not smell.

THREE parts of the new "Coleopterorum Catalogus" of Dr. Schenkling have been issued: I., on the family Rhyssodidæ, 11 pp., is by R. Gestro; II., Nilionidæ, Othniidæ, Ægialitidæ, Petriidæ, Lagriidæ, 32 pp., is by F. Borchmann; III., Alleculidæ, 80 pp., is also by F. Borchmann. This name is used in place of the Cistelidæ; the interpretation of *Cistela* familiar to us being erroneous and now called *Gonodera* Muls. The catalogue is on the same plan as the famous catalogue of Gemminger and von Harold, but the derivations of the generic names are omitted.

To the ranks of the peculiar wingless Phoridæ Dr. Trägårdh adds a new genus[7] from South Africa. *Cryptopteromyia jeanssoni* has the wings reduced to mere scales, barely visible, the antennæ have a large bulbous base and a long hairy tip, the legs are long and strong and the body is but weakly chitinized.

THE manual of Indian insects recently published by H. Maxwell-Lefroy and F. M. Howlett[8] will undoubtedly be a most useful work for local students. It is a very bulky volume, and full of interest to those who are unfamiliar with the insects of India. The authors do not treat all Indian insects, those of the hills and the coasts being omitted. There is a long introduction telling of the structure and habits, collections in India, geographical divisions of India, relation of insects to man, etc. Each order is treated from the lowest up to the Rhynchota. Under each are directions for collecting the forms of each family, as well as habits, structure, life-history and number of species in India. As "interludes" are about eighteen chapters on general subjects scattered through the volume; such are: Cosmopolitan insects, deceptive coloring, galls, migration, song of insects, blood-sucking insects, aquatic insects, insects and flowers, etc. A number of figures are copied from other works, but most are original, and the plates are good, although, one fears, sometimes too highly colored. The economic importance of the various species is always considered, and most of the principal injurious forms are figured, often in all their stages.

NATHAN BANKS

[6] "Notes critiques sur les mœurs des Pompiles," *Bull. Sci. France, Belgique*, (7), XLIII., pp. 170–182, 1909.

[7] "Cryptopteromyia, eine neue Phoriden-Gattung mit reduzierten Flugeln aus Natal, nebst Bemerkungen über Thaumatoxena und Termitodeipnus," *Zool. Jahrb., Abt. Syst.*, Vol. 28, pp. 329–346, 1909, 1 pl., 16 figs.

[8] "Indian Insect Life: A Manual of the Insects of the Plains," Agric. Research Institute, Pusa, India, 1909, 786 pp., 535 figs., 83 pls., some colored.

THE BOTANICAL SOCIETY OF AMERICA

THE annual meeting of the Botanical Society of America was held in the Harvard Medical School, Boston, Mass., December 27–31, 1909, under the presidency of Professor Roland Thaxter, over fifty members being in attendance.

The officers for 1910 are:

President—Erwin F. Smith, Bureau of Plant Industry.

Vice-president—Louis R. Jones, University of Wisconsin.

Treasurer—Arthur Hollick, New York Botanical Garden.

Secretary—George T. Moore, Missouri Botanical Garden.

Councilors—William Trelease, Missouri Botanical Garden; F. E. Clements, University of Minnesota; C. L. Sheer, Bureau of Plant Industry.

The following eight botanists were elected associate members of the society: John Hendley Barnhart, New York Botanical Garden; Edward W. Berry, Johns Hopkins University; Mintin Asbury Chrysler, University of Maine; Reginald R. Gates, Missouri Botanical Garden; Otto Emery Jennings, Carnegie Museum; Aven Nelson, University of