of retrogressive erosion by a Belgian stream, which is thought to have captured the Meuse from an assumed westward course south of the uplands, a process that seems inadmissible in view of the continuity of the Ardennes as a divide elsewhere. The numerous subsequent streams in the eastern part of the Seine system are not recognized as such; and the subsequent valley-lowlands, opened on weak strata, between the cuestas that are maintained by stronger strata, are not regarded as certainly due to differential erosion (p. 326), although no specific reasons are given to justify this scepticism. The Loire, whose former northward course from the Central plateau to the Seine is proved by the distribution of crystalline gravels, is explained as having been turned to its present westward course past the site of Orleans by one of the chief anticlines of the region; but its extension southwest past Blois and Tours seems to have been taken with little regard to the numerous anticlinal and synclinal axes mapped there.

The former northward course of the Loire, as above stated, may perhaps give explanation to the peculiar westward deflection of the Aube, upper Seine and Yonne along a subsequent valley south of the cuesta of *calcaire grossier* to the point where the Loing, a smaller stream, turns their united waters through the cuesta towards Paris. The Loing seems to represent the former course of the Loire. While that large river ran here, one of its subsequent branches might, with more or less aid from differential elevation, naturally enough have captured the Yonne, upper Seine and Aube, which then continued in their deflected course after the Loire had been turned away to the west.

HERCEGOVINA.

A students' excursion from the University of Vienna through Bosnia, Hercegovina and Dalmatia, under Penck's leadership, in the spring of 1899, led that geographer to prepare two essays on the physical features of the region visited ('Geomorphologische Studien aus der Hercegovina,' *Zeitschr. deutsch.-oesterr. Alpenvereins*, XXXI., 1900, 25–41, 'Die Eiszeit auf der Balkenhalbinsel,' *Globus*, LXXVIII., 1900, 133–136, 159–164, 173–178). Strongly folded Mesozoic limestones occupy most of the country traversed. They have been extensively denuded and in some areas reduced to plains, while elsewhere mountains of strong relief still remain. Some of the latter possess well-defined cirques and moraines of former local glaciers. Large sinkholes abound in the highlands. Much of the upland surface exhibited bare limestone ledges, the typical Karst landscape. The lower course of the Kerka river lies across one of the plains of denudation whose surface evenly truncates the inclined limestone strata; but the plain is now elevated and trenched by the river, and in the young gorge thus formed extensive travertine deposits have produced a beautiful group of falls, back of which stretches a narrow, branching lake. In other cases, dislocation is believed to have accompanied elevation. Many streams that flowed on the surface of the lowlands before their elevation now escape to the sea from enclosed basins by underground passages, reappearing further on in great springs, and thus leaving the uplifted land forms more than usually intact. The undersigned also, as a member of Penck's party, has written a brief account of this 'Excursion in Bosnia, Hercegovina and Dalmatia' (*Bull. Geogr. Soc. Phila.*, III., 1901, 21–50).

W. M. DAVIS.

NOTES ON ENTOMOLOGY.

WITH the coming of the new century we have two new entomological journals. One, entitled *Revue Russe d'Entomologie*, is issued bimonthly by a committee of six editors, several of whom are well known to entomologists. It is a general journal, containing descriptions of new species, synopses, etc., but most of the articles are devoted to the Russian fauna. Each number contains a bibliography of current entomologic literature appertaining to the Russian fauna. The other journal is the *Zeitschrift für systematische Hymenopterologie und Dipterologie*, published by F. W. Konow, of Teschendorf, Germany. Six numbers are to appear each year. Its title indicates its intended scope, but several biologic articles have already appeared in its pages.

It has long been known that the species of *Orina*, a genus of Chrysomelid beetles, were viviparous. Recently Mr. Champion and Dr.

Chapman have investigated this matter,* confirming the previous knowledge, and discovering that one species is ovo-viviparous. They find that the eggs develop into larvæ in the ovarian tubules, and increase in size during their progress down the oviduct. This indicates that fecundation in these insects is not by the usual method; but how is as yet unknown.

Part I., 1901, of the journal of the Hungarian National Museum, *Természetrajzi Füzetek*, contains world catalogues of two families of insects. One is 'Catalogus Pipunculidarum,' by C. Kertész, pp. 157–168. It brings the subject down to 1901, and includes 4 genera and 110 species. The other is a 'Catalogus Endomychidarum,' by E. Csiki. It is published as a supplement to the journal, and contains 78 genera and 585 species.

Brauer has issued another part of his 'Beiträge zur Kenntniss der *Muscaria schizometopia*.' † This deals with the synonomy of many species described by Bigot, Macquart and others that belong to genera allied to *Calliphora*. It is prefixed by a table to these genera. Nearly twenty of the species come from the United States, and many more from Mexico. Of especial value are his determinations of the Bigot material.

E. Wasmann has concluded his paper on '*Termitoxenia*,' ‡ in which he deals with the systematic position of the genus. In a previous part he thought it would go in the Stethopathidæ, but now he concludes to erect for it a new family, Termitoxenidæ, intermediate between the Eumyidæ and the Pupipara. It thus falls into Coquillett's superfamily Muscoidea.

An interesting contribution towards the life-history of an eastern mosquito has been published by Miss Nelly Evans. § She has studied *Culex fatigans*, one of the species known to attack birds. Specimens were kept a month on fruit; but will not deposit eggs until they have had a meal of blood. Fertilization normally occurs after feeding, but one specimen laid eggs that had been fertilized only before feeding. Egg-boats are laid about four to six days after meal of blood; if the mosquito is again fed, it will deposit again, and some specimens laid five egg-boats. The larval stage lasts twenty days; the pupal stage four days.

Dr. F. Dahl has given an account of the habits of the ants of the Bismarck archipelago.* It is preceded by a systematic article by Professor Forel. Dahl, however, gives tables to the genera and species, both according to structure, and according to nesting habits. He compares the fauna to that of north Germany, and tabulates the species of the latter region according to nest habits. The plates illustrate two remarkable nests. One is of *Camponotus quadriceps* in the stems of a plant. The pith is partially excavated; at places the cavity is enlarged, and there are simple openings to the outside. This does not affect the plant or cause any abnormal growth. The other is a greatly enlarged stem of a plant in which there are many channels and cavities caused by *Iridomyrmex cordatus*.

Dr. G. Enderlein has written on the breathing apparatus of the Gastridæ † (more commonly known as Œstridæ). In these larvæ, which infest various large animals, respiration is often performed under difficulties, and results in considerable modification of the breathing apparatus. These modifications, which the author describes in considerable detail, are summed up as follows:

1. Complication of the closing apparatus of the stigmata.
2. Elongation of the stigmal cleft.
3. The beginning of air reservoirs.
4. Development of the terminal tracheal structures for the reception of oxygen by the blood.

* 'Observations on some Species of *Orina*, a Genus of Viviparous and Ovo-viviparous Beetles,' *Trans. Ent. Soc, Lond.*, 1901, pp. 1–19. 2 plates.

† *Sitzungsber. Akad. Wissensch.*, Wien, 1899 (1901), pp. 495–529.

‡ '*Termitoxenia*, ein neues, flugelloses, physogastres Dipterengenus aus Termitennestern'; part II. *Zeitschr. f. Wissensch. Zool.*, 1901.

§ 'Some Observations on the Life-history of *Culex fatigans*, the Common Grey Mosquito of Lower Bengal,' *Proc. Asiat. Soc. Bengal*, Aug., 1901, pp. 65–67.

* 'Das Leben der Ameisen im Bismarck-Archipel,' *Mitt. Zool. Mus. Berlin*, II., hft. 1, pp. 1–70, 2 pls., 1901.

† 'Die Respirationorgane der Gastriden,' *Sitzungsber. Akad. Wiss.*, Wien, May, 1899 (1901), pp. 235–302, 3 pls.

Karl Verhoeff has recently added another number to his series of articles on palæarctic Myriopods.* This part deals with certain points in the morphology, classification and distribution of the Chilopoda. He makes out four pairs of mouth-parts, and five segments in the chilopod head. The systematic part treats of the genera *Bothriogaster*, *Geophilus*, *Cryptops* and *Lithobius*.

Probably no one has studied the varieties of a moth so closely as has Mr. J. A. Clark, who, in a recent article on '*Peronea cristata* Fabr. and its aberrations,'† has elucidated and named no less than sixty-two forms of this British moth. Twenty-five of these aberrations are here described for the first time.

Monographiæ Entomologicæ, No. II., is to be 'A Monograph of the Membracidæ' of the world, by G. W. Buckton. The first part has been issued, is a quarto in size, and contains fifty-six pages and eight colored plates. It is, however, far from a 'monograph'; there are descriptions of many species, but there are many other species listed but not described, and often without reference as to where they were described. One of the new species is from New York. The plates are rather crude.

Every coleopterist should be interested in Mr. H. C. Fall's recent list of Coleoptera from southern California.‡ Apart from the fact that, next to the New Jersey list, it is the largest local list yet issued, it is of great value because of the notes on habits and variation of the species mentioned. The total number of species runs up to 2,197, included in 826 genera. The long lists of Malachiidæ and Tenebrionidæ are especially marvelous to an eastern collector. Eighty-seven new species are described, and many others indicated, but not fully studied.

Nuttall and Shipley in continuation of their investigations on the structure and habits of *Anopheles** have given many interesting observations. The recent parts relate to the pupa and imago, and will be of particular value to those interested in the external anatomy of insects. The detailed descriptions of the emergence of the fly from the pupa and of the feeding habits of the imago are especially interesting. In the description of the thorax the authors have followed Brauer in the nomenclature of parts. They consider that the first thoracic spiracle belongs to the mesothorax and not to the prothorax, as several authors have claimed.

Major Ross has issued his 'First Progress Report of the Campaign against Mosquitoes in Sierra Leone.'† This crusade was largely in the nature of an experiment to prove that tropical towns, notorious for mosquitoes and malaria, could be largely freed from these plagues by the adoption of certain sanitary measures. It is almost needless to say that it was successful. Empty tin cans, buckets and broken bottles were gathered, pools and puddles in streets and back yards were drained, and in a few weeks mosquitoes were rarities in Freetown.

NATHAN BANKS.

THE GEOLOGICAL SOCIETY OF AMERICA.

THE fourteenth winter meeting of the Society will be held at Rochester, N. Y., beginning on Tuesday, December 31, in the Geological lecture room, Sibley Hall, University of Rochester. The meeting will be called to order at 10 o'clock a. m. by President Charles D. Walcott. The annual address of the retiring president will probably be given Tuesday evening. The Council will hold an informal session on Monday night to open and count the ballots for officers and fellows, and will meet in formal session at 9 o'clock Tuesday morning. If the weather is favorable short excursions may be planned; one to see the Niagara strata of the Genesee gorge in the northern part of the city, and another to the Pinnacle moraine in the southern edge of the city. Ward's Natural Science Establishment, which is across the street from the University, will provide a lunch

* 'Beiträge zur Kenntnis paläarktischer Myriopoden,' XVI., Aufsatz. *Nova. Acta. K. Leop.-Carol. Akad. Naturf.*, LXXVII., No. 5. 1901. 3 plates.

† *Entom. Record*, 1901, pp. 227–229; 261–265; 287–293.

‡ 'List of the Coleoptera of Southern California with Notes on Habits and Distribution and Descriptions of New Species,' *Occ. Papers, Calif. Acad. Sci.*, VIII., Nov., 1901, pp. 1–282.

* 'The Structure and Biology of *Anopheles*,' *Jour. of Hygiene*, I., pp. 259–276; 431–484, 4 pls., 1901.

† Liverpool School of Tropical Medicine, Memoir 5, part 1, 1901.