instance with the family Lernæopodidæ. Special attention has been directed to the development of certain members of the family, the new facts being recorded in a summary at the end of the paper, which is too long and too technical for quotation in this place.

In No. 1785 of the serial just quoted, Mr. P. Bartsch describes several new species of molluscs of the family Vitrinellidæ from the Pacific coast of North and Central America, with illustrations of the shells.

The cyclostomatous polyzoans of the same coast are discussed by Miss A. Robertson in vol. vi., No. 12, of the University of California Zoological Publications, this communication being the third of the series. In addition to the description of new species, the author directs special attention to the ovicel, with particular reference to the investigations of Dr. S. F. Harmer.

A number of polyzoans ranging from the Ordovician to the Cretaceous, and common to Europe and North America, many of which have been included by previous writers in Stomatopora, are referred by Mr. R. S. Bassler in No. 1797 of the Proc. U.S. Nat. Mus. to a new genus under the name of Corynotrypha, for the distinctive characters of which those interested in the subject must consult the original paper.

In the Proceedings of the Royal Irish Academy, vol. xxix. (B), No. 3, Mr. A. W. Stelfox gives an annotated distributional list of the land and fresh-water molluscs of Ireland. The author acknowledges his indebtedness to Dr. Scharff in working out the fauna generally, and to Mr. B. B. Woodward for the discrimination of the species of Pisidium. Fourteen land and fifteen fresh-water species inhabiting Great Britain have not yet been recorded from Ireland, and since most of these belong to the central European fauna, there is considerable probability that they never reached the western island. On the other hand, a Hygromia which apparently belongs to the Cornish outlier of the Lusitanian fauna may turn up on the east coast of Ireland, while search for *Limax tenellus* should be made in the northern and north-western districts.

The slugs of Natal form the subject of a paper, by Mr. W. E. Collinge, published in the Annals of the Natal Museum, vol. ii., part ii. These are referable to fifteen species, arranged in six families, of which the Aperaidæ, as represented by the exclusively South African genus Apera, is new. Of the five species of this remarkable genus, which has hitherto been included in the Testacellidæ, three are found in Natal. The genus is believed by the author to represent a very primitive type, such resemblances as it shows to the Testacellidæ being probably due to parallelism. It was originally described, in 1879, as Chlamydephorus, a name which clashes with the mammalian Chlamydophorus. The author states that the latter name was given by Agassiz in 1844, but it was really proposed in 1824 by Harlan, in the form of Chlamyphorus, and this difference in the original may give rise to the question whether it really preoccupies Binney's Chlamydephorus.

No. 5 of the fifth volume of *The Philippine Journal of Science* is devoted to a description, by Mr. L. E. Griffin, of a new species of the protozoan genus Euplotes, for which the name *Eu. worcesteri* is proposed. The type-specimen was found in 1909 in water brought to the Manila Laboratory from the neighbouring bay. The species, of which exquisite illustrations are given in the plates accompanying the memoir, is very closely related to *Eu. vannus*.

A new generic type of crinoid, *Thalassocrinus pontifer*, from the Philippines is described by Mr. A. H. Clark in No. 1793 of the Proc. U.S. Nat. Mus. It is a stalked form referable to the family Hyocrinidæ, with its nearest relationship, apparently, to Gephyrocrinus.

R. L.

PAPERS ON SYSTEMATIC BOTANY.

AN important feature in the revision prepared by Dr. C. B. Robinson of Philippine Urticaceæ, is the discussion of generic limits and relationships. A new genus, Elatostematoides, is proposed for certain species previously referred to Elatostema or Pellionia, and another genus, Astrothalamus, allied to Maoutia. Under Laportea, a genus of notoriety on account of its stinging hairs, it is mentioned that the hairs are siliceous, and may contain formic and acetic acids; also that prompt relief is afforded by ammonia or carbonate of soda. Many new species are differentiated, notably nine for Laportea and twenty for Elatostema. The first part only of the article appears in the concluding number of the fifth botanical volume of *The Philippine Journal of Science*.

The second number of the current volume of *The Kew Bulletin* contains the diagnoses of thirty new African species, chiefly under the genera Protea, Sorocephalus, Loranthus, and Erythrococca, a note by Mr. G. Massee on a lilac disease, and an article on the beechwood industry of the Chilterns by Mr. W. Dallimore. The lilac disease caused by the hyphomycete, *Helminthosporium syringae*, shows first as a brown stain on either side of the leaf; the stained area extends and darkens, and olive-brown patches of fruit appear; later on, spores are formed in great abundance. Spraying with a solution of potassium sulphide in an early stage serves to check the disease. Mr. Dallimore deals more particularly with the chair-making industry centred in High Wycombe, and the brush-making industry of Chesham.

Recognising the difficulties of delineating the various species of Castilla (Castilloa), Mr. H. F. Pittier designates his careful and well-illustrated revision of the genus in the Contributions from the United States National Herbarium (vol. xiii., No. 7) a preliminary treatment, although his conclusions are based largely upon experience in the field. Ten species are distinguished, of which four from South America are placed in a separate group, while the second consists of Central American species, differing more or less from *Castilloa elastica*. The practical object of the publication is to make known the diversity of species that may be under cultivation as *C. elastica*. It is noted that *C. nicoyensis* is a good latex producer, and that *C. costaricana* is tapped by the native collectors.

A catalogue of non-herbaceous phanerogams cultivated in the Royal Botanic Garden, Calcutta, published as vol. v., No. 1, of the Records of the Botanical Survey of India, is not a mere list of species, but is designed to identify and locate every tree or shrub growing there. For this purpose the plan of the garden is divided into squares distinguished by letters and figures, and in addition each plant receives and is labelled with an individual number; thus one specimen of *Schleichera trijuga* is listed as O 10, 1641. At points corresponding to the intersection of lines posts are inserted in the garden to locate the squares. Further, a record of source and history is tabulated for each individual plant to be registered in a filed system, and special sheets have been designed for keeping note of seeds. The present index part will be supplemented by a systematic part furnishing the "stock account" of the garden.

REPORTS ON GLACIOLOGY.[1]

(1) STUDENTS of glaciology owe a debt of gratitude to M. Rabot, because information on this subject is scattered over a wide field and in unexpected places. To collect that contained in the present number of the *Revue* must have been a heavy task, and its value is increased by a careful classification. The earlier sections deal with matters such as precipitation, its form and relation to altitude, the rate at which snow melts, avalanches and their consequences, the formation of glaciers, their structures, their dates of movement, and their erosive effects, in regard to which last diverse opinions are quoted. If we can believe Prof. Hans Hess, a glacier deepens its bed by 1 metre in from thirty to fifty years, or, in other words, the erosive power of ice is at least ten times as great as that of running water. Figures are cited to support this conclusion, but a tolerable familiarity with glaciers and their works, for at least that time, leads us to suspect there is something wrong with the figures or the observations.

[1] (1) Revue de Glaciologie. No. 3 (avril 1903–1er janvier 1907). By Charles Rabot (Mémoires de la Société Fribourgeoise des Sciences Naturelles, vol. v., Band v., Géologie et Géographie). Pp. 344+30 figures. (Fribourg, Suisse, 1909.) Price 6 francs.

(2) Les Variations périodiques des Glaciers. XVme Rapport, 1909. Rédigé par Dr. E. Brückner et E. Muret. Extrait des Annales de Glaciologie, t. v. Janvier, 1911. Pp. 177—202. (Berlin: Borntrager Frères, 1911.)

Many as are the important facts from almost every part of the globe which the present number contains, it must suffice to notice only the chapter on the causes of variation in glaciers. The data there cited show that, at any rate under certain conditions, the winds are factors, especially in the removal of snow, more potent than has been hitherto supposed. In regions of low temperature, but of high winds, these drive the snow before them, like sand in the desert, and thus check the formation of glaciers. The volume of an ice-stream, speaking in general terms, is a function of two variables, the one alimentation, the other ablation. Hitherto the effect of the latter has been underestimated, the advance or retreat of a glacier having been supposed to be mainly dependent on the amount of the snow which falls on the upper part of its basin.

M. Rabot classifies the years from 1826 to 1906 in groups, according as the rainfall or the summer temperature at Geneva was above or below the average, and states that in the former case the Swiss glaciers, as a rule, retreated, and in the latter advanced. Similar, though less precise, evidence is obtained from other regions, so that it is very probable, to quote Prof. Forel's words, that the variations in summer temperature produce more effects upon glaciers than has hitherto been supposed. On the latter subject, and especially on the changes during the last few years, a very large amount of information is given. In short, its editor has made the *Revue* indispensable to all interested in the study of glaciers.

(2) The Commission Internationale des Glaciers decided at Stockholm last August that this report should appear at an earlier date. Hence a supplement will be necessary to contain documents which have not yet been received. Still, this number includes Europe, with Russian Asia and the United States of North America. The results show a general but slow decrease of the glaciers. To this rule there are local exceptions, which, however, are few except in Scandinavia; and even here they are in a minority. It is suggested that in Norway changes in the humidity of the air, due to the shifting of ocean currents, produce more effect on climate and glacial oscillation than those in temperature. Some sets of observations in the French Alps are more than usually systematic, for the investigators take account of avalanches and calculate the rate of flow and of ablation at the surface of glaciers between two stations. They note that 683 out of 740 avalanches followed a customary course, and estimate the amount of débris brought down by them at 2243 cubic metres. Altogether the number contains not a little interesting information.

THE ASSOCIATION OF ECONOMIC BIOLOGISTS.

THE tenth general meeting was held in the University of Birmingham, under the presidency of Prof. G. H. Carpenter, on April 6 and 7. There was a good attendance.

The president communicated a paper on some dipterous larvæ which last year caused considerable damage to crops of swedes near Dundalk, Ireland. These belonged to an apparently new species of gall-midge and to *Scaptomyza flaveola*. In connection with this species, several points of interest in the structure of the larva were demonstrated by means of photographs and drawings shown in the lantern.

Mr. H. Maxwell Lefroy, in a very interesting address, spoke on the training of economic entomologists. Not the least difficulty in making economic zoologists in England was the preponderance of the academic view and the total absence of the economic view based on experience. He pointed out that, in addition to a training in zoology, botany, and chemistry, a course in agriculture should be taken, and a knowledge of field work in entomology was useful.

Mr. Walter E. Collinge read a paper on house-flies and public health, in which it was pointed out that there was now no longer any doubt that cholera and typhoid fever were both spread by these insects, and that there was accumulating evidence that infantile diarrhœa, dysentery, and tuberculosis were also. Mr. Collinge contended that a proper system of control and prevention were essential on the part of every corporate body having anything to do with the health of the general public. After briefly referring to the ordinances and regulations in force in other countries, he commented upon the inadequate conditions for the keeping of food in the modern dwelling house, and the necessary regulations for the disposal and storage of manure, &c. In concluding, he pointed out that it remained with the general public to educate the authorities in these and like matters if we have to remove from our midst a danger full of potentialities to ourselves and our children, and detrimental to the public at large.

An interesting discussion on the standardisation of economic nomenclature was opened by Mr. H. Maxwell Lefroy, and a committee was appointed to deal with the matter.

Dr. G. H. Pethybridge gave an account of some recent work on diseases of the potato plant in Ireland, where the potato crop is peculiarly liable to suffer. Great advances have been made in recent years in checking the ravages of different diseases, but there are still many that have not yielded to treatment. A considerable amount of attention has been given by the author to these, and the results were very fully described and illustrated.

Mr. W. B. Grove described four little known British fungi, viz. *Mucor spinosus*, *Monilia lupuli*, n.sp., long known to brewers as occurring on spent hops, but hitherto undescribed. *Rhopalocystis nigra* was a new name proposed for *Aspergillus niger*, and *Hormodendron cladosporoides*, a species often confounded with *Cladosporium herbarum*.

Mr. Walter E. Collinge directed attention to the extremely serious nature of the plague of eelworms and white worms which are at present attacking different crops throughout the country, and to the scanty nature of our knowledge of their life-histories and bionomics. Dr. J. H. Priestley initiated a discussion on the systematic recording of diseases of economic plants. The occurrence of the beetle *Necrobia rufipes* in cotton bales formed the subject of an interesting communication by Mr. Joseph Mangan. Mr. G. E. Johnson demonstrated some stages in the life of the nematode living in the nephridia of the earthworm. The association accepted the invitation of Prof. Carpenter to meet in Dublin in 1912 at a date to be fixed later.

THE CONSERVATION OF OUR NATIONAL WATER RESOURCES.

AN interesting paper on the above subject was read by Mr. W. R. Baldwin-Wiseman before the Surveyors' Institution on January 27. This may be considered as the complement to the paper read by the author before the Royal Statistical Society in 1909 on the increase in the national consumption of water. In the earlier paper Mr. Baldwin-Wiseman dealt with the enormous increase in the consumption of water, and the reasons for such increase, and he referred very shortly to the necessity for the creation of a central authority which should be charged with the duty of water conservancy in its widest application, and, for that purpose, should engage in a close and exact study of the water resources of the country. He now deals with some of the methods adopted by different countries to conserve and use in a systematic way the water which they possess. It is rightly pointed out that the particular use of water to which greatest attention is required varies in different countries. In the United Kingdom the water supply for domestic purposes and trade uses is all-important, and with it must be coupled the prevention of stream pollution. In Italy, Switzerland, Norway, and Canada water-power development is predominant. In Egypt, India, parts of Australia, and certain regions of the United States and Canada irrigation claims first place. In Germany and Belgium inland navigation is of extreme importance, while Holland devotes attention to drainage and reclamation.

The author's researches as regards what has been done by various countries for the conservation of water for the different purposes mentioned are of a careful and exhaustive character, and it must have taken considerable time and