

lowlands are chiefly inconspicuous. There is a beautiful flora on the mountains above the bush-line, i. e., from 3-5,000 feet, but with the exception of a very few striking species like *Ranunculus Lyallii*,—the so-called Mt. Cook Lily,—most of the flowers are only conspicuous by their aggregation; and nearly all such are white, with, in a few cases, a tinge of blue or lilac. The individual flowers of *Pygmæa*, *Helophyllum*, *Donatia*, etc., are small, but when one comes on hummocks of from one to three feet in diameter, with the flowering branches so densely crowded that the blossoms are in contact with one another, then such species may well be considered to be conspicuous. Some of the most singular of such aggregated flowers occur in the composite genus *Raoulia*. The individual plants are small, and are only a few inches in height, while their branches grow in dense masses, each ending in a small head of florets surrounded by pure white bracts, giving them a daisy-like appearance. When in flower on the mountain side, such masses are, when viewed at a distance, readily taken for sheep, and shepherds, unless provided with a good field-glass, may be, and often are, easily deceived; hence the popular name of Vegetable Sheep has been given to some of the species, especially to *R. mammillaris*.

Though conspicuous insects are rare, and the two orders already referred to are somewhat poorly represented, yet the number of flowering plants which depend on insects for fertilization is very considerable. Fully one-fourth of the total number are entomophilous, to judge by the fact that they are more or less conspicuous, and (or) are fragrant, and (or) possess nectar-glands; and of the hermaphrodite species which may or may not be insect-fertilised, about 37 per cent exhibit decided protandry, their stamens maturing before the pistils. This fact is almost always associated with insect-fertilization, while protogynous plants on the other hand are nearly always anemophilous or wind-fertilized.

The chief agents in fertilizing our indigenous flowers are flies and flower-haunting beetles. It is somewhat unfortunate from a biologist's point of view that the natural conditions have been very much obscured during the last twenty or thirty years by the introduction and very rapid increase of insectivorous birds. Many of the large hairy flies which used to be most abundant formerly are now comparatively rare, while the clearing and burning of the surface growth over great part of the country has thinned out the beetles and other insects to an amazing extent, not only by actually burning the individuals themselves and their eggs and larvæ, but also by destroying their breeding ground.

A few of the largest of the native flowers are fertilized by birds; the agents in this work being the Tui or Parson Bird, the Korimako or Bell Bird (Honey bird), the Kaka or large bush parrot, and the two or three species of paroquets. Fuchsias, Ratas (*Metrosideros*), Flax (*Phormium*), etc., seem to be quite dependent on the birds. In recent times the imported bees, both hive and humble (*Bombus*) have taken to visiting several of the native flowers.

A feature of interest, regarding which I have no adequate explanation to offer, is the occurrence of a very large proportion of unisexual flowers in the flora. About forty five per cent of the known flowering plants are unisexual, and of these a great number are dioecious. Several of these dioecious species are inconspicuous, such as the large liliaceous *Astelia*s, and the Mistletoe (*Tupeia antarctica*), yet their flowers are most distinctly entomophilous, being fragrant and nectariferous. It is a still more remarkable fact that in the outlying islands of the Lord Auckland and Campbell groups, which are distinctly oceanic, in the sense that they are isolated from all larger masses of land by a deep ocean, there are several re-

markably fine flowering plants, such as the Composites *Pleurophyllum speciosum* and *criniferum*, and *Celmisia vernicosa*; *Gentiana cerina* and the liliaceous *Anthericum Rossii*. The last-named is dioecious, and the others are most probably protandrous (judging only by the analogy of allied forms), but all have very beautiful and conspicuous flowers, and all are confined to these islands. Again in the Chatham Islands occurs the very fine for-get-me-not,—misnamed the Chatham Island Lily,—(*Myosotidium nobile*), retaining its beautiful pale-blue colors, as if evidently to attract insects. This plant, however, is self-fertile, but this characteristic must be an acquired one of comparatively late date. The flying insects of all these islands have never been investigated, yet it must be borne in mind that all the islands are of small size and are subject to strong winds; indeed the antarctic groups are swept by south west gales during considerable portions of the year. The question naturally arises, How are the flowers fertilized,—especially when dioecious as in *Anthericum*?

These are a few of the interesting points which botanists in New Zealand have met with during the few years since the insular flora began to be closely studied. The questions which arise are perhaps not so remarkable as those which the zoölogist meets with, but they bear on the same ground, and must be studied as closely in order that true views of the past biological history of these islands and of the geographical distribution of its organisms may be arrived at.

THE AMERICAN FOLK-LORE SOCIETY.

The fifth annual meeting of the American Folk-Lore Society was held in Montreal on Sept. 13th and 14th.

In the absence of Mr. H. Hale, of Clinton, Ontario, the president, and of Prof. Alcée Fortier, of New Orleans, the first vice-president, the task of presiding devolved upon Prof. J. P. Penhallow, of McGill University, Montreal.

The forenoon of the first day was devoted to the meeting of council, the report of which showed steady growth in membership and fair results in study, collection and contributions to the literature of the subject. The *Journal of American Folk-Lore* is now approaching the conclusion of its sixth volume, has proved both a stimulus to inquiry and a thesaurus of gathered data, curious and valuable. It is hoped that the scheme for the publication of special memoirs will shortly yield the first fruits of what may one day become a rich harvest. The members number more than six hundred, and there are flourishing local branches at New Orleans, Boston, Montreal and New York.

In the afternoon Professor Penhallow, as president of the Montreal Branch, delivered an address of welcome to the visiting members of the society. After touching on what had already been achieved in the working of the great northern field, he indicated several paths of folk-lore research that could be prosecuted best among the populations of Canada and called attention to many points of interest in the district of which Montreal was the centre.

Mr. W. W. Newell, general secretary of the society and editor of the *Journal*, expressed the pleasure that it afforded him to be again in Montreal. Hardly eighteen months ago he had shared in the organization of the local branch, and was naturally pleased to see it prospering. Coming direct from Chicago and the wondrous White City, which was "all mankind's epitome," it was a relief to survey a scene of repose and order and cleanliness, while still acknowledging the fascinations of the Fair, with its unique opportunities for seeing the world's diversities of speech, belief, costume and usage.

Professor Penhallow, having asked Mr. K. Boissevain to

act as secretary, vacated the chair in favor of Prof. A. H. Chamberlain, of Clark University, Worcester, Mass.

Papers were then read on "Canadian Folk-Songs," by Mr. J. Reade of Montreal; on "Some Popular Oaths," by Mr. J. M. LeMoine, of Quebec, and by Prof. Heli Chatlain, of Loanda, Africa, on "Some Causes of the Retardation of Civilization in Africa." Mr. Chatlain's paper was the first-hand testimony of one who knew them intimately by years of residence and close association, to the superiority of the African race (the Bantu) physically and intellectually. He confessed that he had been educated to regard the negroes as the lowest in the scale of human creation, an unsuccessful attempt at man-making and a clog on the wheels of progress, and that the sooner it was made to give place to the European race the better it would be for the world. But his prejudice had gradually yielded to the logic of facts. He found natives of Africa, he said, not only on a par with Portuguese, German and English, when they were given the same advantages of education, but even in advance of them. He gave instances of such superiority in business, in the professions, in literature and science, from the German and Portuguese settlements in which he had resided. How then, their intellectual powers being thus unsurpassed, has it happened that the natives of Africa have been left so far behind not only by the white, but the yellow and, some say, even the red races? To this natural question M. Chatlain replies that, after nine years of personal experience and a much larger period of study, he had come to the conclusion that the causes for the stagnation of the African race were: (1) Seclusion; (2) The lack of a system of writing; (3) Polygamy and Matriarchy; (4) Slavery, and (5) The Fear of Witchcraft. Each of these points the essayist treated clearly from his own experience of the working of the system or defect which he condemned. Professor Chamberlain having thanked Mr. Chatlain for his valuable paper and invited discussion on it, some of the members questioned the correctness of Mr. Chatlain's estimate of the negro's intellect, and declined to accept a few examples of proficiency as the basis of so sweeping a theory. Prof. Chatlain replied to these criticisms, giving the reason for his belief, which was an actual acquaintance with the negroes of several of the Portuguese, German and British colonies.

In the evening a *conversazione*, which showed some novel features, was held in the Recital Hall, St. Catherine street, and was well attended. It consisted of illustrations of the music of Canadian folk-songs; of examples of Montreal street cries, repeated by phonograph, with lantern views of the criers exercising their callings. The musical part of the programme was in charge of Mr. H. C. St. Pierre, Q. C., and Mr. St. Pierre, and the cries, the success of which was largely due to Dr. W. G. Nichol, were in the care of Mr. Prowse. Ex-Mayor H. Beaupré gave a lecture on pictographs, with lantern illustrations from La Hontan, etc. Altogether a pleasant and not uninteresting evening was spent.

On Thursday, the 14th, Professor Penhallow presiding, the reading of papers was continued. Mr. Newell treated of "The Study of Folk-Lore, Its Material and Objects." Having defined folk-lore, in its most comprehensive sense, which transcended the bounds set by the literal meaning of "folk" as virtually equivalent to the Latin "vulgus," with which it is allied, he went on to show the vast range of the science. Contemplating its mental and spiritual bearings, he suggested, as possibly acceptable generations hence, the term "palæo-nology" (analogous in formation to palæontology) to indicate the scientific history of mind through the long course of its development. Then, after surveying the field in the old world and the new he directed attention to the great mass of practically un-

known folk-lore existing in Canada. Of this he urged the importance of a systematic quest.

Professor Chamberlain read (in part) a paper on "The Mythology of the Columbian Discovery," pointing out the far-reaching revival of Hellenized Celtic and other myths due to the disclosure of cis-Atlantic land four centuries ago. He referred to the Terrianoge (or land of perpetual youth), Valhalla, Avelion, St. Brendan's Voyage, Chicora, Cebola, Norumbega, Eldorado, as well as to the old Atlantic myth, the Garden of the Hesperides, the *Insulæ Fortunatæ* and other divagations of Greek and Roman mythology, and from passages in Shakespeare, his contemporaries and the writers that followed them down to a comparatively recent date, he showed how the renaissance of these old-world stories influenced the minds of succeeding generations. He mentioned the Quetzalcoatl-St. Thomas hypothesis and other theories of white culture heroes visiting the western world; Madoc, the Amazons, the notion of Albino and negro Indians and other imaginary or monstrous beings.

Mr. Newell read an interesting paper by Mr. F. D. Berjeur on "Dextral and Sinistral Ceremonial Circuits," which treated of popular ideas as to the direction in which certain processes, culinary, industrial, medicinal and religious, should be conducted. A paper was also read on "Devil-Worshippers of India," by Dr. Thomas S. Bulmer, of Salt Lake City. Papers on the folk-lore of the Azorian Portuguese of New England, by Prof. W. R. Lang; a comparative study based on one of the Brer Rabbit cycle of folk-tales, by Professor Gerber; a paper on Irish folk-lore, by Mrs. E. Fowell Thompson, etc., were presented by the Secretary.

The Committee on Nominations made the following report:

President, Prof. Alcée Fortier, New Orleans; First Vice President, Capt. W. Matthews, U. S. A., Fort Wingate, N. M.; Second Vice President, Rev. J. Owen Dorsey, Bureau of Ethnology, Washington, D. C.; New Councillors, Professor Penhallow, Montreal; Prof. M. M. Curtis, Hudson, O.; Dr. A. H. Chamberlain, Worcester, Mass.; Curator, Stewart Culin, Philadelphia. The other officers are, W. W. Newell, Cambridge, Mass., Permanent Secretary; Prof. J. Walter Fewkes, Boston, Mass., Corresponding Secretary; Dr. John H. Houton, New York City, Treasurer. The committee proposed as honorary members the following: J. Lawrence Gomme, President of the English Folk-Lore Society; Prof. E. B. Tylor, LL.D., Superintendent Pitts-River's Museum, Oxford; H. Gaidoz, editor of *Melusine*, Paris; Paul Sebillot, Secretary of the Societe de Traditions Populaires, Paris; Dr. F. S. Krauss, Vienna; Jean Karlowitz, Warsaw; Dr. Kaarle Krohn, Helsingfors, Finland; Dr. Giuseppe Pitre, Palermo, Sicily; Prof. J. C. Coelho, University of Lisbon; John Batchelder, Hakodate, Japan; Horatio Hale, M. A., Clinton, Ont.; Major J. W. Powell, Director of the Geographical and Geological Survey and of the Bureau of Ethnology, Washington; Dr. D. G. Brinton, University of Pennsylvania, Philadelphia, Pa.

The foregoing nominations being submitted to the meeting, were approved. New Orleans was proposed as the next place of meeting, but no decision was arrived at.

R. V.

SOME REMARKS ON THE KINETIC THEORY OF GASES.*

BY S. TOLVER PRESTON, HAMBURG, GERMANY.

THE theorem that the velocities of the molecules of a gas vary "between zero and infinity" (between zero and a

*Reprinted, by request of the author, from the *Philosophical Magazine* for May, 1891.