

must have occurred during the elevation of the Andean ranges; at such a time a water communication may have been established between the two oceans and the fruits of a Polynesian *Pritchardia* deposited on an island in the Caribbean Sea.

The fruits, which are plum-like in structure, but with comparatively little flesh, vary in the different species from the size of a large pea to that of a date. The smaller ones would attract pigeons, which, though now unknown in Hawaii, may at some time, when greater land connections existed between the remoter islands of eastern Polynesia and those of Papuaia

and western Polynesia, have contributed to stock the islands of the Hawaiian group. But there is still the difficulty of explaining the presence of large-fruited *Pritchardias* on the most inaccessible summits of the mountains of Hawaii. Prof. Beccari suggests that these represent a surviving element of the vegetation which covered the plains before the cataclysms which resulted in the elevation of the present mountains and broke into fragments the originally much more extensive land area. The monograph is illustrated by twenty-four plates, mainly reproductions of photographs taken by Prof. Rock.

Agricultural Experiments at Ithaca, N.Y.

THE Report of the Agricultural Experiment Station of Ithaca, N.Y., for 1919 contains a number of memoirs of considerable interest, especially from the botanical and entomological points of view.

Work on the stimulation of growth by various chemical compounds indicates that treatment with potassium permanganate may result in a very marked increase in the root-growth of various woody cuttings. Other compounds of manganese, iron, and boron may show at times a slight stimulating effect, but nutrient solutions are, as a rule, injurious to the root-growth of cuttings. In another paper the effect of manganese compounds on soils and plants is discussed. The general conclusion reached is that with wheat, manganese salts presented in high concentrations exert a toxic effect, but in lower concentrations a marked stimulation is observable. When added to soil, manganese salts were found to form manganese dioxide in proportion to the basicity of the soil and to develop a power to oxidise organic matter.

In genetics two papers deal with chlorophyll inheritance and aleurone colour in maize, and another with the weak awn in certain *Avena* crosses. In some crosses of awned and awnless varieties (as Burt and Sixty Day) there is an almost complete dominance of the awnless condition, the factor for awning being apparently prevented from operating by an inhibition which is closely linked with the factor for yellow colour in the variety concerned. Environment seems to affect the production of awns, and observations suggest that an increase in the moisture-content of the soil and of its organic matter and nitrogen tends to decrease the number of awns.

Soil conditions are dealt with in memoirs on the translocation of calcium and on the reversibility of the colloidal condition of soils. In the first case it was found that the translocation of calcium through a clayey silt loam soil with a rather large lime requirement is extremely slow, since in the experiment no upward or downward movement of this element was perceptible twelve months after various amounts of calcium salts had been applied to the soil. In the second case it was demonstrated that drying a surface soil once produces as much effect in the colloidal

material as repeated dryings alternated with moistenings, the drying producing a change in the colloidal material from which it does not immediately recover on being wetted. The drying indirectly affects the reversibility of its colloidal condition, the change being directly produced through biological and chemical action.

On the bacteriological side attention is directed to the effect of low temperature on soil bacteria and to the number and types of bacteria found in ice-cream during storage. In the soil there appears to be no change in the bacterial flora due to freezing, the bacterial activities being influenced only in so far as the physical properties of the soil are affected. The concentration of the medium, the length of time of exposure, and the degree of cold are the three important factors that determine the power of resistance of the bacteria to low temperature. The death of the bacterial cell when exposed to low temperature seems to be due to the withdrawal of water from the semi-permeable membrane or outer layer of the cell.

An outline is given of the life-histories and methods of control of various insects injurious to the hop in New York, special attention being devoted to the hop grub (*Gortyna immanis*, Guenee) and the hop redbug (*Paracalocoris Hawleyi*, Knight). The hop grub causes considerable financial loss, and in years when the insects are plentiful they may cause an almost total loss to some growers. The larvæ damage various parts of the vine, working in the buds, stem, and roots, thus weakening the plants in various ways. For control, clean cultivation is advised, with a ploughed border several yards wide round the field. The use of carbon bisulphide as an insecticide is unsatisfactory, but paradichlorobenzene has been successful when added to the soil of each hill in May.

The plant-lice injuring the foliage and fruit of the apple (*Aphis pomi*, de Geer, *A. sorbi*, Kaltenbach, and *A. avenæ*, Fab.) are described and fully illustrated, and the first part of a detailed systematic account of the crane-flies of New York is issued, dealing with the distribution and taxonomy of the adult flies.

W. E. B.

The Lhota Nagas.

AT a meeting of the Royal Anthropological Institute held on March 14, Dr. W. H. R. Rivers, president, in the chair, Mr. J. P. Mills, of the Indian Civil Service, read a paper on the Lhota Nagas of Assam. He said that in spite of its long contact with the plains of Assam, this tribe has retained its primitive dress and customs. It occupies a portion of the Naga Hills lying to the S.E. of the Brahmaputra Valley, and numbers some 18,000 souls. Like the Angamis, the Lhotas trace their origin to a mythical hole in the earth near the Kezakenoma stone. In dress they resemble closely their neighbours, the Aos, the men wearing a small apron and

body cloths of various patterns, and the women a small skirt of very dark blue, with a light blue median band. Warriors in full dress wear human hair tails, elaborate baldricks with fringes of goat's hair dyed scarlet, and bear's hair wigs ornamented with hornbill feathers.

The villages, which are permanent, may contain any number up to 300 houses and are built on the tops of the ridges. The highest is at about 5000 feet. Each village contains one or more "bachelors' halls" in which boys and unmarried men sleep. In the middle of the village stands the head-tree, usually a *figus*, on which heads taken in war were hung. Under it are