

at the ancient connection between South Africa, Australia and South America. His sketch of the geology of Central Africa, written in 1857, his description of the former plutonic activities of the south-west Tanganyika region, of the coal-bearing strata of the Ruvuma and west Nyasaland, and his hearsay reports of the gold and copper of Katanga have stood the test of time in their substantial accuracy. His meteorological records of the rainfall, temperature and climate of Central Africa still await publication.

Indeed, it is possible that much of Livingstone's scientific research work has never yet been published, and that when it is disinterred and printed we may find ourselves still further indebted to this missionary-consul-explorer for valuable information about the southern third of Africa.

H. H. JOHNSTON.

#### PLANT DISEASES AND INSECT PESTS.

**M**OST of the investigations on this subject are carried out at agricultural research institutions and have for their primary object the discovery of means for destroying the pest, rather than the elucidation of the relationship between the host and the parasite. Yet the latter problem must be of extraordinary interest, and we can only hope that the investigators will turn to it as soon as some of their pressing economic problems are solved.

Of the British Colonial departments, the West Indian is among the most prolific in publications on these subjects. The papers are issued in the reports of the various schools and departments and in *The West Indian Bulletin*. No. 4, vol. xii., of this journal contains papers by H. A. Ballou, J. R. Bovell, and F. W. South on the use of entomogenous fungi in combating scale insects in Barbados, one of the most interesting methods of pitting one organism against another for the benefit of mankind. Fungi parasitic on the insects are cultivated and the spores distributed: they are then applied to the insects directly these appear on the tree. The authors are very hopeful about the method; one, indeed, thinks it may enable most of the insect pests to be kept in check.

The bud rot of the cocoa-nut palm, described by J. B. Rorer in another paper, is an interesting example of a bacterial disease of plants. The disease has been much studied in the United States by Johnston (Bull. 228, U.S. Dept. of Agriculture), who comes to the remarkable conclusion that it is caused by *Bacillus coli*.

The United States Department of Agriculture and the entomological laboratories of the various colleges are, however, by far the most active investigators of plant diseases and insect pests. From the department itself issues a continuous stream of publications which we cannot pretend adequately to review. A. L. Quaintance has recently, in Circular 154, described the leaf blister mite (*Eriophyes pyri*, Pagenstecher), one of the smallest animals (they are not true insects)

attacking horticultural crops. H. M. Russell, in Circular 151, deals with the greenhouse thrips (*Heliothrips haemorrhoidalis*, Bouché), which does considerable damage in attacking ornamental plants. E. S. Tucker, in Circular 152, describes the rice water-weevil (*Lissorhoptrus simplex*, Say), the larvæ of which feed on the roots of rice plants, while the adult weevils cause some harm by feeding on the rice leaves; altogether, this insect is regarded as the most serious enemy of rice in the southern States.

The Hawaiian Station has issued an account of Dr. Lyons's investigation of the curious sugarcane disease known as *iliau*, endemic in the island and not known elsewhere. He traces it to a fungus producing two types of fruiting bodies: a perfect form belonging to the genus *Gnomonia* and an imperfect form referable to the genus *Melanconium*; he proposes to call it *Gnomonia iliau*.

#### NOTES.

THE ninth International Congress of Zoology now sitting at Monaco, under the presidency of H.S.H. the Prince of Monaco, was opened on Tuesday at the Oceanographical Museum. There are seven sections and one subsection, as follows:—(1) Comparative Anatomy and Physiology; (2) Cytology and General Embryology; (3) Systematic Zoology; (4) General Zoology, Palæozoology, and Zoogeography; (5) Oceanographical Zoology and Plankton; (6) Applied Zoology, Parasitology, and Museums; (7) Zoological Nomenclature; subsection, Entomology. Every consideration for the convenience and comfort of members has been given. The sections meet in the Oceanographical Museum and Lyceum, close by. The common subject of conversation of members is concerning zoological nomenclature; we learn that there have been several preliminary unofficial meetings, and that proposals are forthcoming which will probably result in a decision satisfactory to zoologists in general. The Prince of Monaco opened the proceedings on Tuesday at 6 p.m., after which there was a reception in the museum. The programme shows that there are many and interesting communications. British membership on the opening day exceeds eighty out of a total of 723, the largest yet recorded for any international zoological congress. There is, however, not a proportionate number of British communications; those on the list on Monday were by Prof. Elliot Smith, of Manchester; Prof. J. Arthur Thomson, of Aberdeen; Dr. R. F. Scharff, of Dublin; Mr. E. Hall, of London; Dr. E. J. O. Hartert, of Tring; Dr. W. S. Bruce, of Edinburgh; Dr. M. Annandale and Dr. B. L. Chandhuri, of Calcutta; Dr. R. J. Anderson, of Galway; and Dr. Hornell, of Madras. Lord Walsingham will move an important resolution on zoological nomenclature, and among British members who are likely to take part in this discussion are Dr. S. F. Harmer and the Hon. Walter Rothschild.

EXCEPTIONALLY wild and stormy weather was experienced over the south of England on Saturday, March 22. A severe thunderstorm occurred in the