

Bald<sup>8</sup> also finds that potato rugose mosaic (viruses X+Y) reduces the yield to about 50 per cent that of healthy plants, and the reduction is proportional to the diminution of leaf area caused by the disease.

The economic significance and complex nature of the virus problem make it one of the major challenges to modern biological investigation. A patient amassing of the facts, as typified by the eight papers here reviewed, is manifestly the only sure way of approach, and it is not until this is accomplished on a wide scale that any great practical results can be expected.

JOHN GRAINGER

<sup>1</sup> *Brit. J. Exp. Path.*, 27, 81 (1946).

<sup>2</sup> *Ann. App. Biol.*, 33, No. 1, 13 (1946).

<sup>3</sup> *Ann. App. Biol.*, 33, No. 1, 66 (1946).

<sup>4</sup> Bawden, F. C., and Kassanis, B., *Ann. App. Biol.*, 33, No. 1, 46 (1946).

<sup>5</sup> *J. Coun. Sci. and Ind. Res.*, 18, No. 3, 219 (1945).

<sup>6</sup> *J. Coun. Sci. and Ind. Res.*, 18, No. 3, 209 (1945).

<sup>7</sup> *Phytopath.*, 35, No. 8, 591 (1945).

<sup>8</sup> *Phytopath.*, 35, No. 8, 585 (1945).

## BANANA LEAF SPOT

THE leaf spot disease of bananas, caused by *Mycosphaella musicola* Leach (*Cercospora musae* Zimm.), long known as a destructive malady in the Australasia region, was not observed in the New World until 1934, when a small outbreak was observed in Trinidad. This was soon followed by news of the disease in Suriname, Jamaica and Central America, and the Caribbean region generally. In the course of the few years during which the disease waxed to epidemic proportions it was under constant observation. Hence it may fairly be claimed that among plant epidemics the leaf disease of bananas is among the most fully documented and best known scientifically. The progress of the disease has been marked by a number of important advances in our knowledge, such as the details of infection, the progressive development of symptoms in plantations, and the ultimate effects of the disease on commercial fruit intended for refrigerated transport overseas. Not least important, as a result of imaginative innovations on a gigantic scale, the large fruit companies operating in Central America showed how the disease could be controlled by frequent spraying with appropriate fungicides.

The Colony of Jamaica, with its many and varied types of banana plantation, large and small, on hillside and plain, presented special difficulties in the matter of disease control. It was realized that further investigations both of a fundamental and applied character were necessary if rational control measures were to be forthcoming. To this end Mr. R. Leach was appointed as mycologist for the investigation of leaf disease. His report, the result of four years of work, is now before us (R. Leach, "Banana Leaf Spot", Dept. Agric. Jamaica, Govt. Printer, Kingston, pp. 118, illustrated, 2s.). This work, largely based on direct field studies of the pathogen, covers a great deal of new and interesting ground and can only be dealt with summarily here. What, in brief, Leach set out to do was to obtain, by direct observation and experiment, a comprehensive knowledge of the main features of the disease on which basic principles of control could be developed. In the course of these studies, not only was the ascigerous stage of the pathogen discovered, but also it was found that there were differences in symptoms between ascospore and conidial infections; and that a peculiar relationship existed between soil conditions and the

type of fructification produced in the leaf spots. Certain soil conditions, which affect the metabolism of the leaves, are attended by the development of an abnormally large number of perithecia throughout the year, ascospore infection being reduced only during the colder months. The adverse soil factors include poor aeration, marked fluctuations in the oxidation/reduction conditions, and shallow tilth layers. Hence the importance, particularly in Jamaica, of measures designed to conserve fertility by attention to drainage, maintenance of soil structure, etc.

The details of spot development, and their distribution on the leaf surface; the development, dissemination, germination and viability of spores; the factors affecting infection; the principles of control by spraying; the seasonal variation in disease intensity; and other matters have been the subject of close observation and experiment, the whole constituting a substantial body of fact and a real contribution to our knowledge of this important disease. Mr. Leach and the Jamaica Department of Agriculture are to be congratulated on having carried through to a successful conclusion this difficult and comprehensive series of investigations.

C. W. WARDLAW

## FORESTRY IN UGANDA

IN the annual report of the Uganda Forestry Department for the year 1945 (Government Printer, Uganda, 1946), the objectives of the forest policy are laid down: first, to reserve in the State sufficient land either already under forest or capable of afforestation, to maintain climatic conditions suitable to agriculture; to preserve water supplies; to provide forest produce for the agricultural industrial development, and to maintain soil stability in areas where the land is liable to deterioration if put to other uses; secondly, to manage the forest property of the State to the best financial returns, such as are consistent with the primary aims set out above; to encourage and assist the practice and science of forestry by native authorities, and private enterprise; and lastly, to foster by education and propaganda a real understanding among the people of Uganda of the value of forests to them and to posterity, and to educate selected Africans in technical forestry.

These objects and ambitions have been enumerated in one form or another in the British Empire ever since the Indian Forest Service was formed more than eighty years ago. In many parts of the Empire, however, extraordinarily little progress has been made, and by its unchecked utilization of available timber supplies both in and outside the Empire, which the late War necessitated, the attainment of these objectives might seem to be farther off than ever. But the institution of conservation boards in connexion with agriculture and forestry in many parts of the world gives hope that at length the policy so well outlined above, which practically covers the whole of the aims and objects of forestry, will be given effect to; and above all that the close interrelation between forestry and agriculture will at length be given some measure of recognition in Africa, both West and East.

It is a credit to Uganda that its Forestry Department is among the first to write and publish effective working plans for some of its forest areas. Local plans produced for local areas but not made public