

## SECTION A

### PART I.

#### INTRODUCTION : THE ANTHRACNOSE FUNGI.

The Anthracnose fungi are weak parasites or saprophytes, many of which however have caused and can still cause highly devastating epiphytotics and correspondingly great economic losses. In 1900 the Bitter Rot of Apple cost apple growers in the U.S.A. ten million dollars or more (quoted by Edgerton 1908). Red rot of Sugar Cane was responsible for 10% losses in Louisiana grown cane in the 1920s and was probably responsible for the failure of the noble canes in the West Indies. Wither Tip of Citrus has caused extensive losses in Citrus particularly with Limes in Dominica. Coffee Berry Disease in Kenya and Anthracnose of Rubber in the Far East are yet other examples of the scope of diseases due to these fungi.

The Anthracnose fungi have imperfect stages which have usually been ascribed to the form genera Colletotrichum and Gloeosporium and when perfect stages are found these are of the genus Glomerella. The taxonomy of the group over the course of sixty years has become an overgrown tangle of confused names and confused concepts. This is not because of carelessness of pathologists or taxonomists but rather because the biology, variability and breeding habits of these species are so different from those of well behaved higher plants for which Linnean taxonomy has been developed.

In the early days of Plant Pathology it was the custom to name fungal parasites of flowering plants according to the host plant and not to the morphology of the fungus in culture. Thus a large number of specific epithets of the imperfect genera signified host specialisation, e.g. lycopersicae, heveae,

/ gossypii ...

*gossypii*, and *coffeeanum*. More recently there has been a move in the direction of making comparative studies of the species of these genera which have been described from a particular crop or a family of plants. Tiffany and Gilman (1954) studied species of Colletotrichum from the Leguminosae, Ibrahimov (in transation Illman 1959) did similar work with the Solanaceae, while Cronin (1959) has worked with species of Colletotrichum from Tobacco and Saccas (1959) with those from Rubber.

Part II of Section A of this paper reviews a large literature extending over more than fifty years of species of Colletotrichum, Gloeosporium and other imperfect genera as well as species of Glomerella which have been described as members of the Malvaceae. This family includes a number of important economic crops such as Cotton (Gossypium spp.); Okra (Hibiscus esculentus); Deccan Hemp (H. cannabinus); Chinese Jute (Abutilon avicennae) and the pan-tropical weed Urena lobata which has also been used as an experimental Jute substitute.

Some species and varieties of Cotton have from time to time been seriously attacked by anthracnoses, seedling blights and fruit rots (boll rot) which are the usual types of disease caused by these fungi. Recently in Latin America a witch broom disease attributed to a variety of Colletotrichum gossypii has been increasing and causing some concern. Anthracnoses on Hibiscus spp. may also be serious economically.

In the third part of Section A I shall review papers concerned with the biology of parasitism extending over the whole range of described species of Colletotrichum on the basis of the view held that most 'species' of Colletotrichum are merely facets demarcated in time and space as in morphology and host speciality from a much larger biological complex. Even if this basis is unsound it is felt that the juxtaposition of much of the literature on different 'species' of Colletotrichum

/ will ...

will at least illuminate certain basic similarities.

The second section of this report deals with work carried out during the year with strains of Colletotrichum isolated by the writer in Trinidad, five of which have been isolated from Malvaceous hosts. Attempts have been made to investigate factors concerning the pathogenicity of some of these isolates on Urena lobata and the results will be discussed in the light of the conclusions of Section A.

*Acervulus* *sterigmatis* *fragilis* *forma* *obovata*; *setis* *discretis* *vel* *caespitosis* *basal* *atro-brunneis*, *apice* *subguttatis*, *septatis*, *paucis* *curvatis*, *basidia* *irregulariter* *oblongis*, *plurimas* *1-2-sterigatis* *brachiis*; *conosporis* *carneis* *11-20* x *4.5-5.5*, *basidia* *apiculatis*, *crassiusculis* *sepidis* *longioribus*, *12-15* x *3-4*, *curvatis* *paucis*.

Atkinson differs from Southworth in giving conical measurements 15-20 x 4.5-5.5. Neither Atkinson nor Southworth say of what sort of cotton their fungus was parasitic and this is important in view of the fact that Edgerton later described a perfect stage naming it Glomerella gossypii (South.) Edg. not from Gossypium hirsutum as is usually supposed but from G. herbaceum. Atkinson's Plate XVII opposite pg. 170 showing infected cotton bolls does not permit an unequivocal answer when Hutchinson's key (Hutchinson et al., 1947) is used, but the distinctly superior sporula suggests that it might have been G. glomerata s.l. 'Marie Galante'.

Southworth's description was as follows :-

Glomerella gossypii S. W. On cultivated cotton, the fungus is not part of the plant, especially in the bolls. Perithecia dark coloured, or orange with a pink powder. Acervuli erumpent at the apex of the young. Spores irregularly oblong usually with a light spot at the centre, often acute at one end, colourless singly, flesh coloured in mass, borne on short basidia or long setae. Basidia colourless varying in length, at least longer than the mature spore, very rarely branched, borne on a strand of varying thickness, 11-20 x 3-4. Setae occurring singly or in tufts, more abundant in older specimens, dark brown at base, but nearly colourless at the apex. Septulae often irregular in outline, straight or flexuose, rarely branching, often bearing spores. Mycelium separate, later