DISEASES OF ACACIA MODESTA WALL.

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Acacia modesta. is a medium sized thorny deciduous tree with a bushy rounded crown and drooping branches. Bark is rough with numerous irregular cracks. Sap wood is generally white and heartwood is dark brown. Leaves are broadly ovate or obovate, oblique and abtuse. Flowers are pale in colour.

It is a very slow growing tree. It obtains a height from 20 to 30 feet. It occurs more or less gregariously in dry hills up to 4,000 feet. It is found in various geological formations and is capable of growing in poor dry shallow soil where few other species can survive. It may occur pure or in mixture with other trees. It is not found in loamy soil but has been introduced. (3). In West Pakistan it is mainly found in Attock, Jhelum and Rawalpindi Forest Divisions. It is also found in small quantity in Baluchistan, Sind and Hazara (N. W. F. P.).

It is used as fuel wood, for agricultural implements and for hedge purposes. In some places the wood is also used for building small houses. Phulai Gum localy known as "Chir", is also extracted from the trees in small quantities. It is used in medicines as restorative (2).

Acacia modesta, Forests were surveyed for various diseases. The most destructive disease was found to be "Spongy Heart Rot" caused by *Phellinus badius* syn. *Fomes badius.*

1. *Spongy Heart Rot.*

Causal organism:—

Phellinus badius (Berk.) S. Ahmad.
Syn. *Fomes badius* Berk.

(Hymenochaetaceae-Basidiomycetes).

Oecurance of *Phellinus badius* with very few exceptions is observed to be restricted to *Acacia modesta* on which its serious attack is confined to the heartwood where decay is caused. During survey it was seen that trees of all ages were liable to attack by this fungus.

It is a wound parasite and attacks the tree through injuries caused by animals and illicit loppings. Cankers present on the trees facilitate the fungus entry. Diseased trees are not totaly killed. They do not loose vigour and therefore it is difficult to distinguish them from healthy trees by external appearance. The furit bodies however develop on the stems of affected trees, so that their presence is a ready means of identifying the diseased tree (5).

The fungus attack turns the durable dark brown heartwood into light brown, soft, spongy and fibrous mass. Small pockets filled with felty my-celium also appear on the wood.

Sporophore is large and is usually 15 X 7 X 9 cms. or even larger. It is hoof shaped, perennial, woody and is easily detachable from the host. Upper surface is brown to black and cracked. Lowers surface is dull brown. Pores are small and rounded. Spores are discharged and carried by wind to cause infection to healthy trees. They are globose to subglobose and are thick walled, yellowish brown and measure 5 — 8 X 4.5 — 6.5 u.

Unlike the annual sporophores the sporophores of *Phellinus badius* do not disintigrate every year. At the beginning of each growing season a fresh hymenial layer develops on the previous one. The age of the sporophore thus can be roughly determined by counting these layers.

2. *White Heart Rot.*
   Causal organism:—
   Ganoderma applanatum (Pers.) Pat.
   (Polyporaceae-Basidiomycetes).

This fungus is not very common on this host. *Ganoderma applanatum* enters the host through wounds and attacks heartwood as well as sapwood. In early stages the wood is blackened and light areas encircled by darkbrown bands are formed. These bands move into the sound wood as the decay progresses. Later on the wood becomes soft, white, spongy and motteld.

Sporophores are perennial and are usually sessile and reflexed. They are usually 25 X 15 X 10 — 12 cm . and are sometimes still larger. Upper surfaee of the sporophore is dull coloured, zoned, uneven and with raised lumps. Context is dull brown to deep brown and lower surface is light brown. Pores are minute. Pore tubes are greyish brown. Spores are brown, thick walled, elliptic and slightly echinulate measuring 7 — 10.5 X 5.2 — 6.5u.

3. *Rust.*
   Causal organism:—
   Ravenelia taslimii Mund.
   (Uredinalees).

It is found as small pustules on the branches of the host. Uredia are subcuticular, minute and yellowish brown. Uredospores are oval or oblong. Telia are amphigenous, black and in groups. Paraphyses are absent. Telial heads are convex, hemispheric to orbicular, smooth and brown. Pedical is short, thick, hyaline and deciduous.

In addition the following fungi were also recorded on the host but they do not cause serious damage.

1. *Botryosphaeria stevensii* Shoemaker.
   (Botryosphaeriaceae-Ascomycetes).
2. *Cucurbitaria Pakistanica* Petr.
   (Pseudosphaeriales-Ascomycetes).
3. *Diplodia acaciae* Penz.
   (Sphaeropsidaceae-Deteromycetes).
4. *Haematomyxa Pakistanica* Mueller and Ahmad
   (Petellariaceae-Ascomycetes).
5. *Microdiplodia phyllodiorum* Penz.
   (Sphaeropsidaceae-Deuteromycetes).
6. *Petolsphaeria acaciae* E. Mueller and Ahmad.
   (Pleosporaceae-Ascomycetes).
7. *Pleospora chamaeropis* (Dur and Mont.)
   (Pleosporaceae-Ascomycetes).
8. *Teichospora bovei* speg.
   (Pleosporaceae-Ascomycetes).

Control:—

1. As the serious diseases are caused by fungi which gain their entry into the host through injuries, it is suggested that care should be taken not to inflict injury to the trees. This can be done by stopping illicit lopping for grazing and fuel wood.

2. Serious fungi are perennial. They continue to produce spores for successive years for detriment to the adjoining trees. The fruit bodies, therefore, should be removed and destroyed.

3. Diseased trees should be extracted as soon as the sporophore appears on the trees. In severe outbreaks periodic extractions should be carried out.

4. Crop should be mixed with miscellaneous species which are not easily attacked by these fungi.

ACKNOWLEDGEMENT.

This research has been financed in parts by U. S. D. A. under PL-480 programme "Survey of Diseases of Conifers and Selected Hardwoods in West Pakistan.".

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EXPLANATION OF PLATES.

1. (*a*) Lower surface of *Phellinus badius.*

   (*b*) Basidiospores of *Phellinus badius.*

   (*c*) Upper surface of *Phellinus badius.*

2. (*a*) Lower surface of *Ganoderma applanatum.*

   (*b*) Basidiospores of *Ganoderma applanatum.*

   (*c*) Upper surface of *Ganoderma applanatum.*

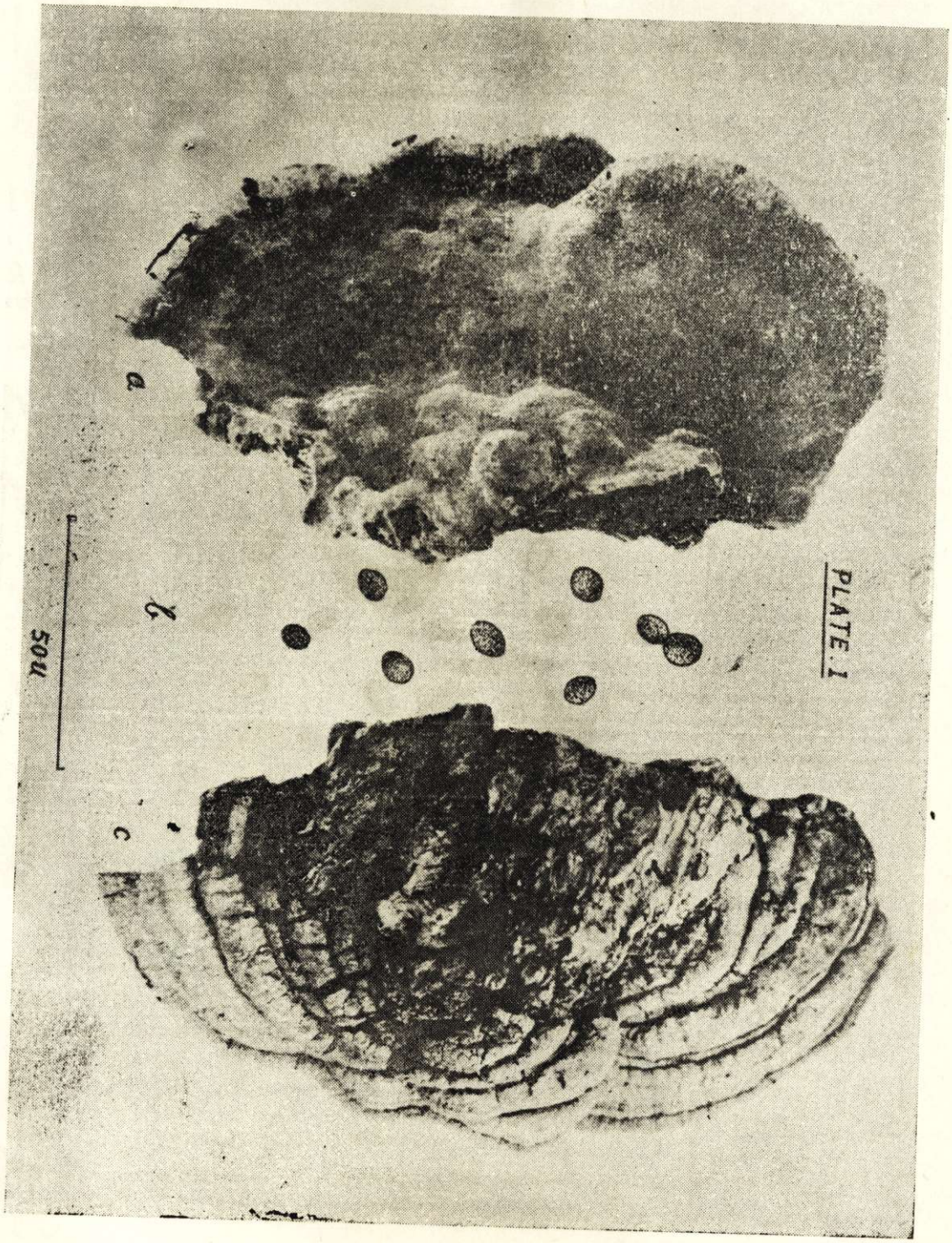

PLATE. 1

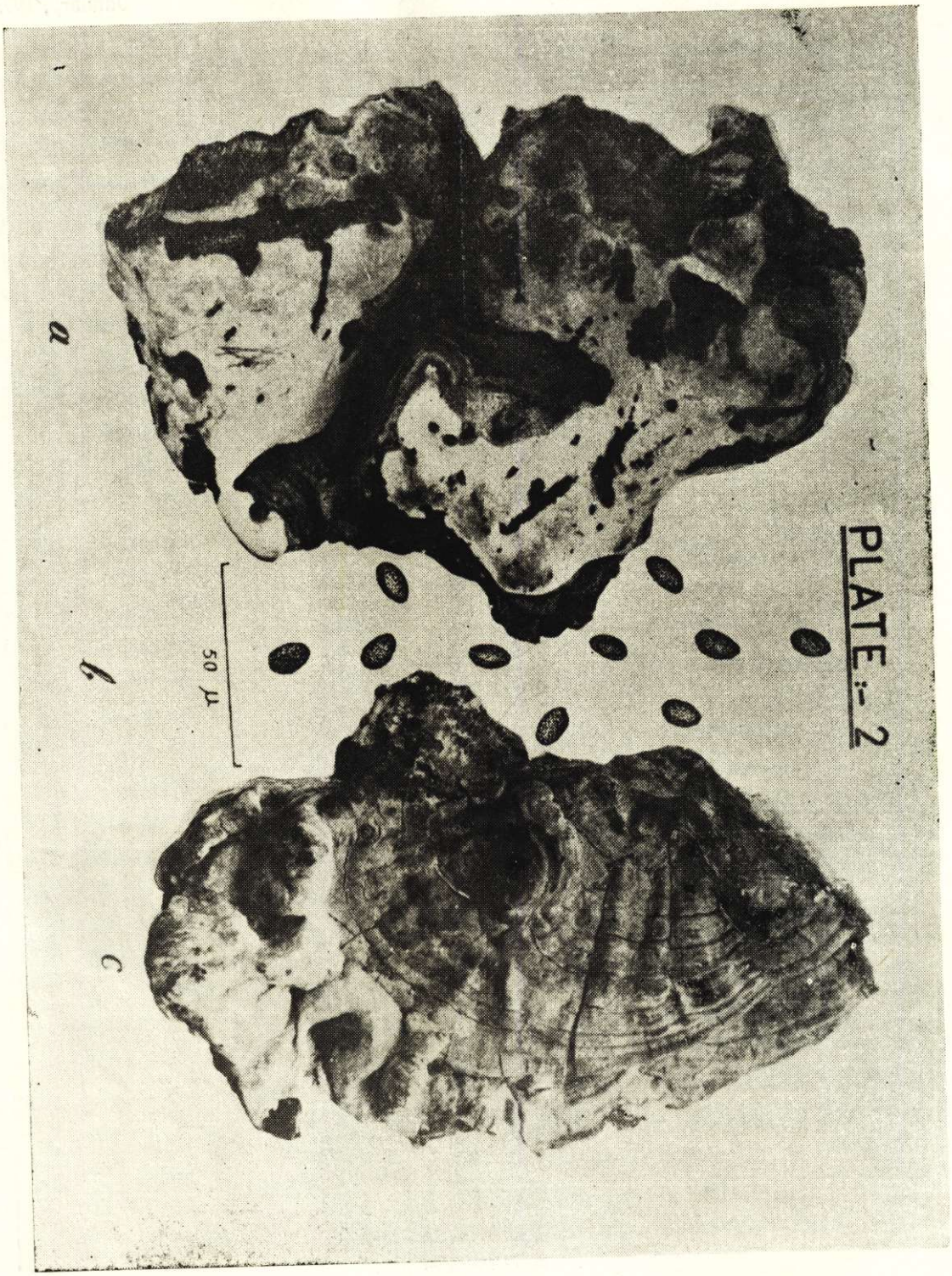

PLATE :- 2