

OILSPOT OF TEA LEAVES—A NEW DISEASE?

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During the last two or three years a few upcountry estates at elevations between 5,000 and 7,000 ft. have been alarmed by the increasing occurrence of an apparently hitherto unknown leafspot disease. The condition was tentatively given the name "spotted leaf" on one estate but was later renamed as "oilspot," the latter being a more descriptive expression. The disease has now been found on seven estates a few of which have an incidence of about 5% in badly-affected fields.

The symptoms can be described as follows: The spots which first develop on the underside of the leaf are small and numerous. They start as little translucent spots which later develop a dark grey colour in the centre and finally appear as dark brown spots in reflected light. These show a translucent halo in transmitted light. The spots have no characteristic shape or size and in severe cases may coalesce and colour the whole undersurface of the leaf dark brown. Some bushes develop excrescences on the underside of the leaf and the spots therefore appear slightly elevated as in the case of scab. The difference with scab is not always quite clear. Scab, however, develops only on the older leaves and is, therefore, a harmless disease. Oilspot on the contrary develops on young and very tender leaves, and leads to severe defoliation. The new leaves which develop on the affected shoots are small and underdeveloped, and these too eventually fall. This successive defoliation leads to starvation and finally to the dieback of the shoots from the tips and death of part of the bush.

The disease usually starts on one side and gradually spreads to the rest of the bush. This may take a very long time. Some of the bushes showing the disease on one side had dead stumps on the same side, indicating the long duration of the progress of the disease.

The pattern of symptoms largely depends on the kind of bush affected. So far no preference for any type of tea has been found to exist in the field. Low jat and high jat seedlings are both affected. The appearance of the disease is, however, completely different in the two jats. The symptoms are more acute and the spots bigger, but due to the faster growth less deleterious, on high jat than on low jat bushes. On low jat bushes the development is slower but defoliation is more complete, and ultimate death of part of the bush more likely.

The experience of one planter is that, after pruning, the symptoms return in the new growth on the same side of the bush. This seems to indicate the presence of a causative agent in the bush instead of in the leaves. This phenomenon can, however, be explained in other ways also.

As to the causes of the disease no conclusions have yet been drawn. Work on the isolation of a parasitic fungus has shown consistently the presence of a certain fungus in the affected leaves. It is still doubtful, however, whether this fungus is the cause, as inoculation experiments so far have not led to any infection. Moreover, reports on the identification of this fungus have indicated that it is normally not able to cause a spot on leaves, but is known to occur on the bark of older branches.

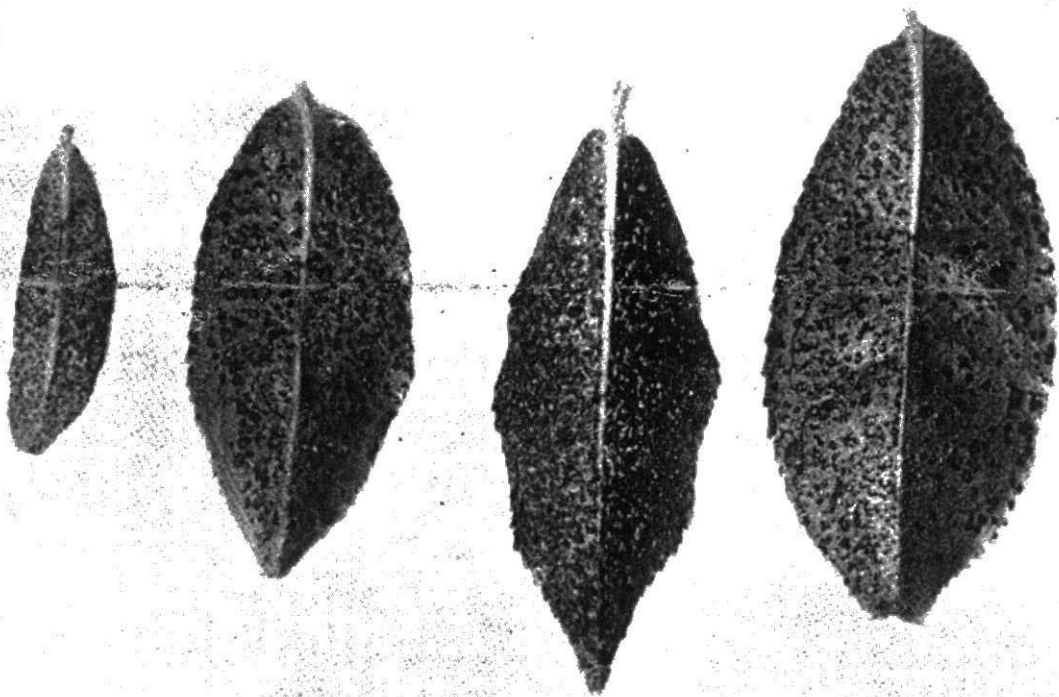


FIG. 1.—Oil spots and corky excrescences on lower leaf surface



FIG. 2.—Oil spots on the flush



FIG. 3.—Small leaves on some of the shoots

Therefore the fungus that has been isolated is probably merely a secondary invader of tissue that, for some reason, became liable to infection.

We have failed so far to isolate a bacterium from the young spots.

Trials with cuttings from affected bushes show that the new growth from leaf cuttings is normal. This would indicate that either no parasite is present, or for some other reason the new growth was not infected. As the moisture conditions around cuttings which are shaded and watered frequently are favourable for infection, one would expect the new growth to be infected. Therefore, it could be concluded that no parasite is present, in which case we would have to look for a cause in the roots. The fact that diseased bushes show the disease, after pruning, on the same branches might further lead one to think on these lines. However, the roots of diseased bushes that have so far been examined did not show any abnormality.

In order to ascertain whether temperature had any effect on the spread of the disease in a bush, one bush which showed the symptoms on one side was transplanted from 5,000 ft. elevation to St. Coombs at 4,500 ft. where the disease had not occurred so far. It was thought that by transferring the bush to warmer weather conditions the spread of the disease in the bush would be checked and that it would recover. The result was, however, to the contrary. The transfer took place on August 16th. The recovery of the bush from transplanting was normal, but in January the bush started to show symptoms on all the leaves, and by April 13th defoliation was progressing rapidly.

With a view to determining whether fungicides were effective in the control of the disease, a spraying experiment in which a copper oxide, a zinc carbamate and a fungicide known as Captan were used at five day intervals (from 29-1-59—28-4-59) was carried out. This showed, however, that fungicides were ineffective in controlling the disease.

In the literature we find a description by Bitancourt and Jenkins (1) of scab caused by a fungus *Elsinoe theae* which belongs to a group of fungi causing anthracnoses. Tourje (2), however, in a recent book on "Camellia culture" cites work done by Plakidas *et al* in Louisiana. The latter first isolated *Sphaeloma* sp. from different types of scab but failed to prove that this was really a parasitic fungus. Inoculations gave no result and spraying with fungicides did not affect the disease. Plakidas concluded that scab is physiogenic in nature and caused by fluctuations in soil moisture. He was able to control scab by the use of sprays such as wax solution which reduce the transpiration. This would indicate that at least a certain type of scab, *e.g.* corky excrescence, is related to soil moisture and conditions controlling transpiration.

Because of the fact that oilspot develops only in areas with very high humidity and rather low temperatures it is possible that oilspot might also be due to a lack of balance between the uptake of water by the roots and its transpiration by the leaves. The invasion of weakened tissue by a weak parasite like the fungus that has been isolated by us, could thereafter cause the defoliation and death of branches. Further research to test the above hypothesis is, therefore, necessary.

References

1. TOURJE, E. C., "Camellia Culture" 1958 (Macmillan) from which the following are quoted:
 - (a) Plakidas, A. G., 1948, American Camellia Yearbook.
 - (b) Plakidas, A. G., 1951, American Camellia Yearbook.
2. PLAKIDAS, A. G., 1948, *Phytopathology*, 38, 21.
3. BITANCOURT, A. A. and JENKINS, ANNA E.—*Aquivos do Instituto Biologicos*, 10, 1939: 193.