

BLISTER BLIGHT IN INDIA.

In the *Quarterly Journal of the Scientific Department of the Indian Tea Association*, Part 1, 1927, Mr. A. C. Tunstall, the Mycologist of the Association, records the occurrence of Blister Blight (*Exobasidium vexans* Masee) on Tea in the Surma Valley in the districts of Sylhet and Cachar. From the various localities from which the disease has been reported it appears that it is now distributed all over the northern part of the Surma Valley.

Blister Blight was first mentioned in India about the year 1868, but even in 1903 Watt and Mann were able to write, "So far as we have been able to observe, this blight is, and has always hitherto been, exclusively confined to Upper Assam. It has never been definitely reported below the Jorhat district on the South, and the North Lakhimpur district on the North, bank. It has never visited either Cachar, Sylhet, Darjeeling, or the Duars."

For about forty years, Blister Blight was known only in Upper Assam. In 1908, however, severe attacks broke out in the Darjeeling district, and since that date it has been permanently established there.

Thus, the first appearance of the disease was in the extreme North-east of the tea districts of Northern India. Forty years later it appeared in the North-west corner. And after about another twenty years, it has been found in the extreme South. It may be said that Blister Blight now occurs at the three corners of the triangle covered by the North Indian tea districts.

It was formerly stated that Blister Blight would flourish only in the cooler tea districts, where the fungus may be found at any time of the year on bushes growing in damp shady places. Its occurrence in Cachar and Sylhet, however, negatives that idea, and it must now be considered probable that the disease will be found capable of existing in any tea district.

In the present state of our knowledge, it is difficult to formulate any explanation of the extraordinary manner in which this disease has extended its range. Practically it has jumped successively from one corner of the tea area to another. As far as natural agencies are concerned, one would suggest that each of these three major infections was independent of the other, and was due in each case to infection by windborne spores from some plant in the jungle. *Exobasidium vexans*, however, is not known to attack any plant except tea. Tunstall states that an *Exobasidium* occurs on *Camellia drupifera* in the jungle to the north of the Surma Valley, but it is a different species. Consequently, the idea of infection from neighbouring jungle lacks support.

It was formerly suggested that Blister Blight of tea was identical with a similar disease of Rhododendrons, and that the Darjeeling out-

break was due to an infection from the Rhododendrons on the Himalayas. That idea appears to have been abandoned. If it were true, we should expect to find Blister Blight on tea at high elevations in Ceylon, since the Ceylon tree Rhododendron is commonly attacked by *Exobasidium Rhododendri*, which produces, on the Rhododendron leaves, blisters similar to those caused by *Exobasidium vexans* on tea. The absence of Blister Blight from the tea in the neighbourhood of the infected Rhododendrons is evidence against the view that the Blister Blight of tea originated from that plant.

Tunstall states that it is difficult to account for the present distribution of the disease in the Surma Valley except on the assumption that the spores have been conveyed by the wind, but he is unable to suggest whence they were derived, in the absence of a detailed mycological investigation of the jungles on the hills to the north of the Valley. Here we meet with a difficulty which crops up repeatedly in pathological investigations, viz., that, except in some temperate countries, where the work has been carried out by amateurs, no one knows what fungi the forests or waste lands harbour. Some day it may be realized that a knowledge of the fungus flora of a country is often as important as a knowledge of its flowering plants.

The possibility of the transference of the disease to the Surma Valley in consignments of seed was investigated by Tunstall, who states that in none of the cases investigated had any seed been imported from infected areas for over a year previous to the appearance of the disease, and that the distribution of the disease on the individual gardens did not favour the suggestion that the spores were introduced with seed.

Against that it may be remarked that, supposing that the spores of Blister Blight were transferred with tea seed, one would not expect a widely-distributed attack on mature tea in the year the seed was imported. The first appearance of the disease would be expected to occur in the nursery, and if it was overlooked there, it would spread to mature tea.

Further, the occurrence of Blister Blight at the same time on estates "all over the north of the Surma Valley" does not favour the view that the infection of the district occurred in the season when it was first observed.

There is, as yet, no adequate explanation of this periodic extension of Blister Blight through the tea districts of Northern India, and in these circumstances it would be unwise to relax the regulations against its possible introduction into Ceylon.

As previously recorded elsewhere (*Diseases of the Tea Bush*, p. 85), Blister Blight of tea occurs in Japan and Formosa. It has also been recorded from Italy, on tea in the Botanic Garden at Pavia.

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