at a time just before harvest on the inbred lines whose resistance or susceptibility to lodging could be predetermined as lodging occurred due to favourable environmental conditions. The data are presented in Table II.

TABLE II

| Inbred | Index |
|---|---|
| **Resistant** | |
| P5PB5-A3-f | 2980 : 1 |
| (Ven1 × Ven 400-#)-13-1-f | 2714 : 1 |
| Peru 330-A4-#-#-1-# #-# | 2569 : 1 |
| Ven1-42-f-f-# | 2670 : 1 |
| **Susceptible** | |
| Inbred | Index |
| A, Theo-21 (B)-f-#-3-f-# #-# | 8863 : 1 |
| Kl 48 | 5412 : 1 |
| Cau 303-1-f-f | 6677 : 1 |
| Cos 302-A2-1-#-2-#-# | 9702 : 1 |

It will thus be seen that an index of below 3000 with weights in gm. and height in cm. will indicate resistance to lodging. This index can be very conveniently used to screen the inbred lines as well as hybrids for their lodging resistance. As this index can be determined just prior to harvest, it can be used to screen plants in segregating generations also. Indications are there[5] that by backcrossing, it may be possible to transfer the lodging resistance to susceptible types. With the use of this new and convenient index, maize breeders can now go ahead with their programme of breeding for lodging resistance.

This work was carried out under the Co-ordinated Maize Breeding Scheme and the authors gratefully acknowledge the financial help given by the Indian Council of Agricultural Research.

Division of Botany; S. M. VAIDYA.
Indian Agricultural R. L. PALIWAL.
Research Institute, BHAG SINGH.
New Delhi, *November* 28, 1962.

1. Wilson, H. K., *J. Am. Soc. Agron.*, 1930, **22**, 453.
2. Hall, D. M., *Tech. Bull. Minnesota Agr. Expt. Sta.*, 1934, 103.
3. Koehler, B., Dungan, G. H. and Holbert, J. R., *Illinois Agricultural Experiment Station Bull.*, 1925, 266.
4. Huber, L. L., *Science for the Farmer*, 1953.
5. Shank, D. B., *J. Am. Soc. Agran.*, 1943, **35**, 976.

## A NEW SPECIES OF *PHYLLOSTICTA*

DURING the study of the fungus flora of Jabalpur the author encountered a leaf spot on *Alangium lamarckii* Thw. The disease first appears as small ash-coloured spots on any part of the leaf. At advanced stage lesions become circular to irregular and change to brown colour. Lesions may coalesce. Midrib and the chief veins are freely traversed.

Examination of the lesions revealed the pathogen to be a *Phyllosticta* (Fig. 1).

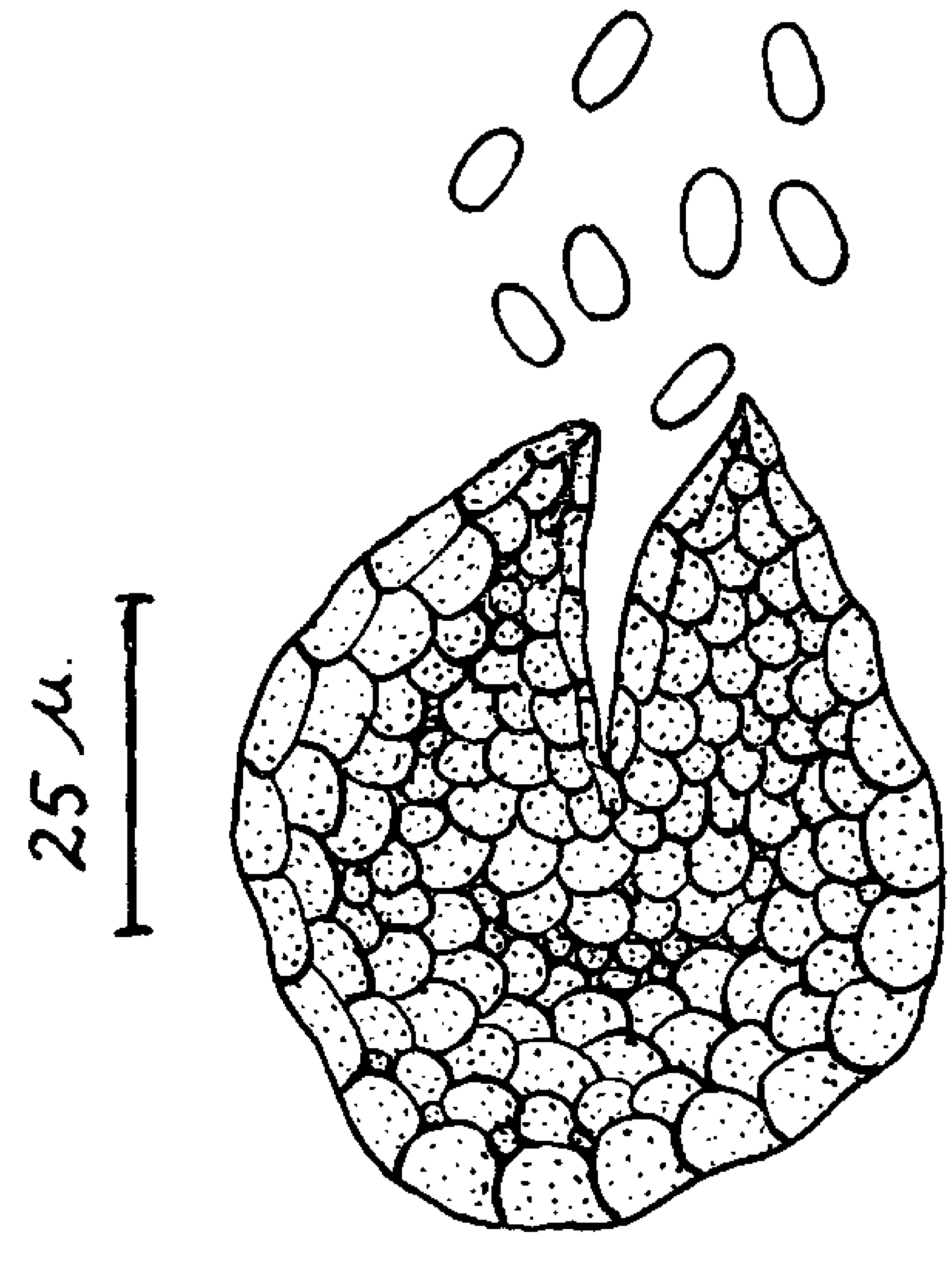


FIG. 1. *Phyllosticta alangii*—Pycnidia with conidia.

Pycnidia brown, superficial, globose to subglobose, 45–156 μ in diameter; conidia hyaline, single celled, ovoid to cylindrical, 11·3–23 × 3·3–6·6 μ.

The specimen was examined by Mr. Deighton, Assistant Mycologist, Commonwealth Mycological Institute, Kew, England, who reports that "very few fungi have been described on *Alangium*". So far there is no record of *Phyllosticta* on any species of *Alangium*. It is, therefore, being presented here as a new species: *Phyllosticta alangii*.

***Phyllosticta alangii* HASIJA SP. NOV.**

**Pycnidia brunnea, superficiales, globosa vel subglobosa, diametientia 45–156 μ; conidia hyalina, semel cellulata, ovalia vel cylindrica, 11·3–23 × 3·3–6·6 μ.**

**In foliis viventibus *Alangii lamarckii* Thw. ad Jabalpur in India, mense martio anni 1961, leg-Hasija.**

**The type specimen has been deposited in the Commonwealth Mycological Institute, Kew, Herbarium No. 85349 (*b*).**

**The author expresses his grateful thanks to Dr. G. P. Agarwal, for his guidance, to Dr. J. C. F. Hopkins, Director, Mr. Deighton,**

Assistant Mycologist, Commonwealth Mycological Institute, Kew, England, for help in the identification of the species.

Department of Botany, S. K. HASIJA.
Govt. Science College,
Jabalpur, *September* 4, 1962.

---

## PRIMARY PRODUCTION IN THREE UPLAND LAKES OF MADRAS STATE, INDIA

VERY little information is available on primary production in fresh-water lakes, especially in this part of the World. Rodhe[1] has given an account of production in Swedish lakes and Verduin[2] furnished data on photosynthesis by phytoplankton communities in L. Ohio and L. Erie. Fish[3] has worked out the productivity of fish ponds in Malaya. Rodhe[1] is of opinion that classification of Lakes based on "...... trophic" typing is misleading and that a better procedure would be to determine the primary production in these lakes. A detailed study of the physico-chemical condition of three cold-water lakes in tropical area has been made by the author[4] and the present data indicate a correlation between the lake typology and primary organic production. Organic production was estimated from oxygen production in light and dark bottles, at various depths. The results were calculated per unit area, *i.e.*, $m^2$.

The results obtained for one occasion are presented in Table I. The yields appear to be very high, especially in the case of Ooty Lake and to a lesser extent in Yercaud Lake. Kodaikanal Lake shows the lowest production among the three lakes. Its low pH value, very low conductivity, the high transparency, low plankton volume, dominance of desmids and absence of nutrients-phosphate and silicate mark it out as 'oligotraphic'. Carbon assimilation in this lake is the lowest noted so far by us in any water. Production was greater in Yercaud Lake, which is considered to be turning "eutrophic"—this is a slightly polluted lake with a bloom of *Microcystis æruginosa*. The high pH value of 8·6 is indicative of high degree of photosynthetic activity. Only this lake shows phenolphthalein alkalinity at times, indicating the complete use up of free carbon dioxide. The phosphate and silicate content and other physico-chemical conditions are more favourable for productivity than in Kodaikanal lake. The plankton volume was high and the sechi disc reading low.

It is however the Ooty Lake which, though situated at a high altitude of 2,500 m. and having a cold climate, shows a very high level of primary production, even far exceeding those of other tropical ponds and reservoirs examined (Sreenivasan, unpublished). This also exceeds the maximal photosynthetic rates instanced by Verduin.[2] This lake has become so eutrophic as to become 'senescent'. However this lake differs from the Yercaud Lake in having a low

TABLE I

| Date | Lake | Elevation above sea level m. | Organic production gross C./m.²/day grams | Dominant plankton species |
|---|---|---|---|---|
| May 1962 | Ooty Lake 'C' section .. | 2500 | 6·209 | *Syncrypta, Anabæna, Microcystis* Vol. 0·2 c.c./L. |
| | ,, 'B' ,, .. | | 11·023 | |
| July 1962 | Yercaud Lake .. | 1340 | 3·113 | *Microcystis, Melosira oscillatoria* Vol. 0·7–0·8 c.c./L. |
| May 1962 | Kodaikanal Lake .. | 2285 | 0·750 | *Batryococcus ceratium staurastrum* Vol. 0·02 c.c./L. |

| Date | Lake | Physico-Chemical Conditions | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Temperature 0° | pH | Electrical conductivity mhos | Hardness p.p.m. $CaCO_3$ | Sechi disc. visibility m. | Compensation depth m. | $SiO_2$ mg/L. | $P_2O_5$ mg./L. |
| May 1962 | Ooty Lake 'C' section .. | 21·8 | 6·9–7·1 | 207 | 68·0–74·0 | 0·30 | 2·5 | .. | .. |
| | ,, 'B' ,, .. | 20·3–23·0 | 7·1 | 207 | 68·0–74·0 | 0·50 | 2·0 | 0·4 | 0·04 |
| July 1962 | Yercaud Lake .. | 22·0–22·4 | 8·6 | 130 | 47·0–70·0 | 0·55 | 1·5 | 0·8 | 0·04–0·08 |
| May 1962 | Kodaikanal Lake .. | 20·4–22·4 | 6·1–6·8 | 25 | 8·0–16·0 | 3·5 | 2·0 | 0·02 | 0·00 |