

absolutely free from the mite. Owing to such a phenomenal control, through this natural agency, some observations on the population of the predator were made. Twelve leaves of sugarcane were taken at random on 16th July with the consideration that they had large number of either larvæ or adults of the predator present on them. The maximum number of larvæ found on a single leaf was 36 and that of adults was 94. The average of various stages, except eggs, found were 10 larvæ, 11 pupæ and 35 adults.

The final stage in the drama was reached on 29th July when the entire sugarcane block was found free from mite, and only a very small number of pupæ of the predaceous beetle and some adults were found scattered in the plots last affected.

This predator thus seems to possess all the desired characters of an efficient agent in the biological control. It preyed on all the stages of the pest, a single adult consumed as many as 50 mites in 24 hours, and it multiplied in a very short time. From the observations made subsequently, it appears that this predator remains active almost all the year round. During June and July it was found, as stated above, on sugarcane, in September it was observed feeding on *Paratetranychus indicus* attacking a wild weed, *Digera arvensis*, in October its adults were noticed feeding on a scale insect on *Dalbergia sissoo*, and again in February-March 1944 it was found feeding on *P. indicus* infesting *Sesbania ægyptiaca* and *S. grandiflora*.

The host plants of this mite have been recorded from South India (Cherian, 1933) and the Punjab (Rahman and Sapra, 1940). None of them, however, found it on the three hosts, *Digera arvensis*, *Sesbania ægyptiaca* and *S. grandiflora*, recorded in Sind.

It is not possible to indicate all the environmental factors that may have favoured the increase of either the host or the predator, but it was interesting to observe that very hot and dry conditions prevailed during June-July 1943 while both of them were found in very large numbers. The mean maximum temperature of

June was 109° F., the highest temperature reached was 123° F. on two days, the mean minimum was 85° F., and the mean relative humidity was 58 per cent. at 8-30 hours. During the first ten days of July the climatic conditions were equally severe, but with a few small showers of rain from 11th July onwards the temperature fell down and the mean maximum for the remaining period was 103° F. with a mean relative humidity of 69 per cent. at 8-30 hours. There was no rainfall in the month of June, but 0.5 inches was recorded in the last three weeks of July.

It is interesting to record that Rahman and Sapra (1940) also found this mite very common on sugarcane during hot and dry months of May and June at Lyallpur, where the setting in of monsoon rains in July kills all the stages of the pest except the eggs. At Sakrand, as stated above, the pest was entirely controlled by the predator, and the rainfall received during the two months of its activity was negligible.

This short note is written in the hope that it will stimulate the study of the relationship of pests and their enemies under natural conditions. One often records the severe outbreaks of pests and tries to explain their causes, but little attention is paid to the role of parasites and predators in suppressing them. Some of the useful natural enemies, such as *S. gracialis*, hitherto considered of little importance in the biological control, may turn out to be of great value.

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## COLLECTION OF MALAYSIAN HEPATICÆ

THE Farlow Herbarium of Harvard University has received word that a valuable collection of over 3,000 specimens of Malaysian hepaticæ, chiefly Epiphytic Lejeuneaceæ, gathered by Dr. Frans Verdoorn as well as some other collections assembled by him between 1925 and 1926, which were on loan, at the outbreak of the War, to the Botanical Institute of the University of Jena, is safe. Professor Th. Herzog who, with a number of assistants and graduate students, is working on this collection, writes that he placed most of it during the early war years, for safeguarding in a country home near Jena. This house was almost entire-

ly destroyed by a bomb, the specimens, however, were found in undamaged condition in the wreckage of the basement. They were removed subsequently to a part of the basement at the Botanical Institute. This building and most of the basement were entirely destroyed at a later date when nine students were killed and the Director, Professor Renner, was seriously wounded. The bryological collections were fortunately in a wing where the basement withstood the bombing and work on them is now being continued by Prof. Herzog and his assistants, Drs. Benedict and Schuchardt.

—Courtesy of Dr. Frans Verdoorn, Editor, *Chronica Botanica*.