Vegetative Sports in the Bamboo (*Bambusa arundinacea* Willd.)

VEGETATIVE sports in the sugarcane are well known. Striped sugarcanes occasionally show unicoloured ones which on vegetative propogation maintain this character and *vice-versa*.

There would appear to exist, however, no record of similar sporting in the bamboo. This photograph of a clump of *Bambusa arundinacea*, showing a striped sport might, therefore, be of some interest. The avenue which was originally planted from buds obtained from the nearby forests is over 27 years old, and about half a dozen, out of a total of fifty clumps, are showing this phenomenon. These sports show marked golden yellow or brown stripes on a

green background; the stripes vary in width and depth of colour as in the sugarcane.

Ever since the hybridization between *Saccharum officinarum* (P.O.J. 213) and *Bambusa arundinacea* Willd. was successfully effected in the year 1936, a closer study of the two plants has been revealing points of similarity betewen the two in spite of the great disparity in systematic position. This adds yet another character to the list.

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March 4, 1940.

On *Epipyrops* (sp. n.): A Parasite on the Nymphs and Adults of the Sugarcane Leaf-hopper (*Pyrilla* sp.)

THE caterpillar of this microlepidoptera was observed parasitising the nymphs and adults of sugarcane leaf-hopper at Muzaffarnagar in October 1934. The parasitic caterpillar is covered with a flocculent white material and is coccid-like in appearance. Its moth was identified as a new species by the Imperial Institute of Entomology, London (*vide* Collection No. 7252, List No. 1332, dated 21st November 1935). This insect has recently been named as *Epipyrops melanoleucea* by T. Brainbrigge Fletcher.

The adult moths are dark blue in colour and measure about 10 to 12 mm. across the wings with greyish brown appendages. Males and females do not vary much in size. The former can be distinguished from the latter by their prominent bushy antennæ and comparatively slender abdomen.

The population of these moths increases after the rainy season is over. From October to middle of December, males have been observed to come out in large numbers in the open spaces in the fields at about 9 O'clock in the morning. They briskly fly about in the sun till about 12 O'clock when they go back to the fields. It is after these flights that males are generally seen in association with female moths which are docile and do not move far from the cocoons after emergence.

The general colouration of the body is pink but it is masked all over with the white flocculent material except on the ventral side in the region of the appendages. The mature larva measures about 5 mm. The head is inconspi-

cuous in size and is turned at right angle to the body. The original contours of the head continue to exist though the mouth parts undergo a change on account of the parasitic habit and work as a sucking organ. Thirteen body segments are there but thorax and abdomen cannot be marked out separately. Every segment has its own covering of the white material. The thoracic appendages have atrophied and the pseudo-legs are sessile with crochets in the form of a circle.

The female moth is fertilised within a few hours after emergence and the eggs are generally laid not far from the cocoon. The eggs are deposited singly in clusters of irregular shape on the surface of the leaf within a few hours of fertilisation which is mostly over by the afternoon. Generally all the eggs numbering about several hundreds are deposited in one egg mass if the female is not disturbed during the process of oviposition.

An individual egg is oval in shape, microscopic in size and dark brown in colour. Incubation lasts for 4 to 5 days. The young larva possesses all the characters of a caterpillar. It is brown in colour with a prominent head, appendages and other body segments. It crawls about briskly in search of its prey for a day or two and attaches itself to some part of the body of the nymphs or wings of the adults. It dies if it fails to spot a host within two days of its active existence. After assuming the parasitic habit the mouth works as a sucking apparatus. Thoracic appendages atrophy. Pseudo-legs become sessile and cease to function. The larva gets mature within a fortnight of parasitic life. During this period the host nymphs or adults move about along with their growing load of parasitic caterpillars. *Pyrilla* nymphs and adults become sluggish and lose much of their agility with the growth of the parasite. Often the nymphs and adults die after they have been released by the parasites.

The mature parasitic caterpillar rolls about on the surface of the leaf leaving behind a white track. It is from the secretion of the white sticky material and alternate strokes of the head from one side to the other that a cocoon is formed. The formation of a cocoon takes about four hours. Pupa is creamy yellow when fresh but gradually becomes brown. It is dorso-ventrally flattened with several rows of spines present on the dorsal surface at the anterior boundary of fifth to eighth abdominal segments. The adult moth emerges after a week or ten days' pupation. On the approach of emergence the cocoon gives way on one side and pupa is dragged out to the opening where it splits for the exit of the moth. An individual life-cycle takes about a month during September and October, *viz.*, egg 4 to 5 days, caterpillar 15 to 20 days, and cocoon 7 to 10 days.

Proportion of male and female moths is more or less equal. The male moth is a quick flier than female. Both live for about a week in captivity. They were tried to live on honey solution in the laboratory but there was no prolongation of their life. The parasite is equally fond of *Pyrilla* nymph as adults.

The over-wintering cocoons issue forth the moths of first brood by the beginning of April when *Pyrilla* adults are quite common. A few cases of parasitisation can be observed in the field at this period. The moths of second brood come out by the first week of May but no sign of parasitisation has so far been observed in the field during the hot weather. With the advent of rain in July the parasitic cases can be seen again. The parasitisation is abundant from August to October and parasite-bearing nymphs and adults as well as cocoons on the leaves are a common sight. Their activity begins to slow down from the beginning of December when the parasitic caterpillars secrete cocoons to lie dormant in winter.

The percentage of its parasitisation increases with the increase of *Pyrilla*. This parasitic species of microlepidoptera remained of academic interest for long. Its economic importance was better understood in the *Pyrilla* epedemic of 1937–38 when they were observed to parasitise about 40% of the nymphs and adults. The one great benefit of this parasite is that adult females of *Pyrilla* become incapable of

oviposition after they have been parasitised by *Epipyrops*.

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A Note on the Lady-bird Beetles (*Coccinellidae*) Predating upon the Cane White-Fly, *Aleurolobus barodensis* Mask.

THE cane white-fly, *Aleurolobus barodensis* Mask., is a serious pest in Banki which is an important sugarcane-growing tract in Orissa. The conditions which seem to favour the growth of the pest are:—

(*i*) The temperate-humid climate of the place, (*ii*) the practice of ratooning and (*iii*) the application of ammonium sulphate to the canes in order that they may quickly grow high up and escape the regular menace of floods. This practice, however, gives the crop a succulent leafy growth which finds favour with this pest, as with all other sucking insects.

The white-fly being thus abundant on the canes in that area it is not unusual to find its natural enemies like the parasitic hymenoptera and fungi and the coccinellid predators. While the former two categories of enemies have found, however meagre a place in the literature, one finds that practically no attention has been paid to the coccinellid predators. This appears to be due to the fact that the study of Indian *Coccinellidæ* on the whole has been neglected.

During my short stay in the Banki sugarcane tract of Orissa in July and August 1939, I observed the following nine species of coccinellids actively predating upon the various stages of the cane white-fly. For the majority of these coccinellids a record of their preying upon the cane white-fly is new.

1. *Cœlophora octo-signata* Muls.
2. *C. perroteti* Muls.
3. *C. unicolor* var. *romani* Muls.
4. *Cœlophora* sp.
5. *Chilomenes sexmaculata* (Fab.)
6. *Chilocorus nigritus* (Fab.)
7. *Verania discolor* (Fab.)
8. *Scymnus nubilus* Muls.
9. *S. gracilis* Mots.

Of these *C. octosignata*, *C. perroteti*, *C. sexmaculata* and *V. discolor* were breeding in the fields and their grubs were also actively preying upon the pest. *S. gracilis* preyed upon younger stages of the white-fly and also on the mites which were found in certain fields but not very commonly.

I wish to record my thanks to Dr. H. S. Pruthi, Imperial Entomologist, for identifying certain species of coccinellids mentioned in the text and also to Dr. V. K. Badami, Deputy Director of Agriculture, Orissa, for his many acts of kindness during my stay in that Province.

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A Note on the Chemical Examination of *Celastrus paniculatus*

THE fixed oil from the seeds was examined by O. N. Kumaraswamy and B. L. Manjunath.[1] From the dark brown extract which they obtained with petroleum ether it appears that the 'rich orange coloured arillus' was rejected. They reported the presence of various saturated and unsaturated fatty acids and a sterol melting at 136°. In the course of this work they did not get 'satisfactory evidence for the presence of any alkaloid'.

Gunde and Hilditch[2] have also examined the oil from the husk and from the seeds. But from the dark brown colour that they have noted of the fruit coat extract, they appear to have investigated an old sample of the husk, as it has been noted by the present author that the bright red colour of the husk fades on being exposed to atmosphere. They have not investigated the unsaponifiable fraction besides noting the percentage yield.

The present author took up the examination of the bright orange coloured husk of the seeds