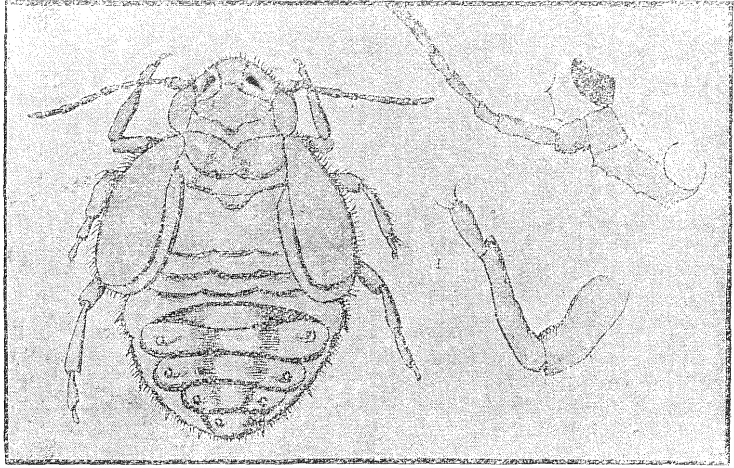


From the Calcutta Agri-Horticultural Society were received, in the early part of July 1890, blighted indigo shoots, with the information that, according to an estimate made by Messrs. Jardine, Skinner & Co., the indigo crop

Indigo blight.



in Bengal has been reduced by about one-third this season, the loss, which amounts to several lakhs of rupees, being ascribed to blight. The indigo shoots were found to be covered with minute black scales, each containing a partially developed homopterous insect, which was at first supposed to be one of the Aphidæ, but which has since been described by Mr. G. B. Buckton as the pupa of a new species of Psyllidæ, which he names *Psylla isitis*. The description kindly furnished by Mr. Buckton is as follows:—

*Psylla isitis*, nov. sp.

"*Pupa*.—Colour shining yellow with the edges of the abdominal somatic rings rich brown. Vertex bristly, eyes angularly faceted, large and red. Rostrum short and stout, proceeding from between the eyes, and lying between the fore coxæ. Pronotum corrugated and tuberculose. Antenna with eight joints, the two basal joints stout and somewhat globose; the third and eighth joints the longest. Wing-cases double, but not separate. Abdomen globose, the somata edged with rich brown, and marked with stigmata. Tarsus obscurely two-jointed, ending with one claw and two bristles. The larval form is smaller than the pupal, and has less developed antennæ and feet. Size 0·05 × 0·03 of inch."

## INDIAN MUSEUM NOTES.

## No. I.—MISCELLANEOUS NOTES FROM THE ENTOMOLOGICAL SECTION OF THE INDIAN MUSEUM.

By E. C. COTES.

During the year 1890-91 the collection of information on the subject of the Economic Entomology of India went on as usual in the Entomological Section of the Indian Museum. The chief work of the year may be classed under the headings of, (1) Locusts, (2) Silk insects, (3) Reference collections, (4) Lectures, (5) Miscellaneous insects.

In the matter of Locusts, the habits and history of *Acridium peregrinum*, which is the chief locust of North-Western India, were investigated, and a detailed report was issued on the subject.

In the matter of Silk insects, all available information was collected concerning the wild species which produce silk in India, but which have not hitherto been cultivated, and progress was made with a report upon the subject, for publication in these *Notes*. The silk insects which are actually cultivated have been already dealt with in a report which was issued as Volume I, No. 3 of these *Notes*.

In the matter of the Reference collections which are being gradually got together in the Indian Museum, specimens of the insects sent to the Museum for report, were, as far as possible, preserved and identified zoologically for future reference. Help in the identification of the species was received from Entomologists in several quarters of the globe: for in India, where there are, at a moderate computation, some twenty thousand different kinds of insects, many of them unknown to science, the zoological identification of a species is often a matter of very considerable difficulty, while it is necessary that the insects should be identified, as without identification it is impossible to avail ourselves of what has been ascertained in other parts of the world about similar or allied forms. Communication therefore has been established with many of the chief Entomologists in different parts of the world, and several of them have assisted gratuitously by identifying the insects belonging to the particular groups which they have specially studied. In this connection may be mentioned the following Entomologists who kindly gave help during the past year in the identification of species of economic importance:—Dr.

Henri de Saussure of Switzerland; Messieurs Bigot and Desbrochers de Logis of France; Lord Walsingham, Colonel Swinhoe, and Messrs. Buckton and Moore of England; Mons. Kerremans and Dr. Auguste Lameere of Belgium; Mr. Maskell of New Zealand; Mr. Howard of the United States. Progress has necessarily been somewhat slow, but named specimens are accumulating, and it is already becoming the rule, instead of, as heretofore, the exception, when an insect is sent to the Museum as attacking a crop, for it to be practicable to identify it without delay and to refer to what is known about it.

In the matter of Lectures, a course on Forest Entomology was given in the Forest School in Dehra Dun, and it is hoped that the subject will be taken up hereafter by other agricultural bodies.

In the matter of Miscellaneous insects, a large amount of information was collected from the reports and specimens which have been received from Government officers, as well as from private individuals in all parts of India, a large portion of it being furnished through the various directors of Land Records and Agriculture, from whom much assistance has been received. It will be found embodied in the following *Notes*, which are necessarily very incomplete, though it is hoped that they will serve to bring to light points that were previously unrecorded in connection with the insects that attack crops in India. In compiling these *Notes* care has been taken to indicate what is already known about each pest, so as to facilitate the investigations which it is hoped hereafter to institute locally; for the experience gained during the past few years, in the attempt that has been made in Calcutta to investigate the subject of the pests and other insects, which in some cases are not to be found nearer than the other side of India, shows clearly that it is useless to expect to obtain anything like complete information, unless facilities are afforded for visiting the localities where the insects are actually at work.

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From the Secretary to the Municipal Committee in Amritsar were received in October 1890 caterpillars of a microlepidopterous moth which was said to have proved very destructive to millet and maize around Amritsar, none of the fields being free from it. The damage was variously estimated at from one-sixth to one-tenth of the crop. The caterpillars proved to be either identical with, or very closely allied to, the Sugarcane Borer (*Diatraea saccharalis*), described on pages 22 to 28 of Vol. I, No. 1 of these *Notes*. The maize stalks in which the caterpillars arrived having become somewhat dry, the caterpillars were transferred to pieces of sugarcane, into which they tunnelled eagerly. The sugarcane was periodically changed, but as yet (3rd March 1891) the insects are still

in the larval stage, showing that the insect passes the whole of the cold weather in the caterpillar stage within the stalks.<sup>1</sup> In the case of *Diatraea saccharalis* the eggs are deposited at the base of the leaf sheaths and the larvæ tunnel into the stalks, the chrysalis being formed in the tunnels and several generations being gone through in the year; and this no doubt will also be found to hold good when the insect attacks maize and sorghum. In their work on *Field and Garden Crops* Messrs. Duthie and Fuller notice that in the case of maize this insect is known as *Salai*, while in the case of sugarcane it is known as *Silai*, and in the case of sorghum as *Bhaunri*, the poisonous effect which *Sorghum vulgare* shoots sometimes have on cattle being attributed to it.

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<sup>1</sup> One moth emerged on 31st March, and four more on the 4th and 5th June, soon after heavy rain; these all undoubtedly belong to the species which habitually attacks sugarcane in India. In the North-Western Provinces, according to Duthie and Fuller, maize is sown about May or June, and is reaped about the end of August; so the caterpillar probably lies up in the maize stalks from the time of cutting until the plant springs up again, in the following June. In this case, on Dr. Eiley's estimate of thirty days for a generation, about two or three generations would be passed through during the growth of the plant, followed by a nine months' hybernation. The evidence for this, however, is incomplete, and it is by no means impossible that intermediate generations may be passed through in sugarcane, which springs up considerably earlier in the year than maize.