The Zoological Society of Japan

ON TWO NEW SPECIES OF PHLŒOTHRIPS.

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During the month of July and August, 1898, the rice-farmers of Japan received great damage from a very tiny insect. The damage was especially severe in the north-eastern part of the Main Island. On close examination I found two species of this insect; one was sent me by Mr. Kuwagorō Haga of Yamagata, with the information that great numbers of it were infesting the young ears of the rice plants, causing them to become fruitless; the other was brought me from Fukushima by Mr. Tetsuzō Gotō, one of our college students with the same information as that given by Mr. K. Haga. More recently Mr. Toraji Tanaka has briefly written about the latter insect in the Report of the Agricultural Society of Tokyo, No. 204. According to his description, the injuries are entirely restricted to a high-land rice field in the Prefecture of Niigata, and its damages somewhat resemble those the Cicadulid insects are yearly doing to the rice plants. Both species belong to the genus *Phlœothrips* and seem to be new to science. I named the former species *P. oryzæ*., and the latter *P. japonica*.

Phlœothrips oryzæ, sp. nov.

Length, 0,9—1,2 mm. Type, *P. acullata* of Fabricius. Body smooth, glittering black; the two apical joints more or less distinctly reddish brown. Head somewhat quadrate, a little narrower toward the front; disk with many transverse wrinkles. Eyes dark brown, ovate, strongly facetted, remote from the base. Ocelli brownish. Antennæ dark yellow, with the two basal and two apical joints fuscous; the 4rth largest, the 3rd inverted conical, the 8th small and somewhat pointed. Abdominal segments gradually increase their width towards the apex, attainning maximum size at the 6th; but on a profile view the segments 1 and 2 largest, the rest gradually converge towards the tip. Pygidium a little longer than the penultimate joint. Head and thorax scarcely haired, with 3 or 4 long hairs on the pronotum. Some short and stiff hairs may be observed at the lateral margin of the abdominal segments, especially from segments 5—9, in a slanting direction towards the tip. A number of long

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bristles also along the posterior margin of the 10th. Anterior femur much more thickened than that of the rest and without teeth. Median femur a little thicker than the posterior. Wings linear, transparent, yellowish brown at the base; strongly fringed with long fuscous hairs. The number of the fringes in the primaries 91; nearly without vein. The antecostal area broad; the rudiment of the radial vein narrow, long and a little waved; median vein can be scarcely traced. Two long bristles and a number of hair holes present below the radial vein near its ending. Five or more short bristles can also be seen around the large bristles. Basal appendix nearly conical, with one long bristle at the apex. The tip of the primaries of the female reaches to the 8th segment, while that of the male to the 10th.

Secondaries traversed by a longitudinal broad vein ending about the middle. The number of fringes 88.

Habitat—Yamagata.

I have not yet received this species from any other place except Yamagata, and it seems to be quite local to that region.

Entomologically it belongs to the Order Thysanoptera, Family Thripidæ, Group Tuberifera. The tubular ovipositor of the female is very clearly seen under a microscope, when the specimens are embedded in Canada balsam, after having been in turpentine. It just begins near the apex of the 9th segment. Abdomen is very flat, but the lateral margin being upturned and incurved so as to form a semitube, it seems to be cylindrical when seen in profile. It is really 10 segmented, but at first sight appears to be only 9 segmented, this being so because segments 1 and 2 are as if soldered together, when seen in vertical view. Prothorax has the form of a trapezium, mesothorax is very short and fused together with metathorax. Scutellum is in the form of a high equilateral triangle. Two ocelli can be distinctly seen between the eyes, but the other one being on the apex of the head between the antennæ can not be well seen. It has a large conical unjointed beak reaching to the anterior coxæ. Maxillary palpi is two jointed, the first being very small. Labium is small and on its end has a two jointed labial palpi of a comparatively large size. Antennæ is eight jointed, each joint has many sensory hairs and pits. Anterior tarsus is two jointed, the first joint (which is not haired) has a conical projection in an oblique direction toward the tip. The second joint (one or two haired) is smaller and very much constricted at the juncture. The median and posterior tarsi are tri-jointed.

Hitherto the tarsi of all thripid insects were known to be two-jointed, but according to my observation this is obviously tri-jointed. The juncture between the first

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and second joints is in an oblique direction, along which a row of short spines can be distinctly seen. The second juncture is not so much in an oblique direction as the first, but along it also a row of short spines can be traced; so that the first segment is in the form of a triangle, the second trapezium, and the third subquadrate.

Phlœothrips japonica, sp. nov.

Very closely resembles the former species, but differs from it in the following peculiarities:—

1. Length, 1.4—1.8 mm.
2. Head not narrower towards the front.
3. The 2nd joint of antennæ inverted conical, the 3rd long ovate, the 4rth broad ovate, the apical joint bluntly ends with many hairs, the 6th, 7th and 8th much darker.
4. The two apical joints of the body not reddish brown.
5. Tip of the primaries of the male does not reach the 10th segment.
6. The form and the rudimentary veins of the primaries differ.—The antecostal area being much narrower than that of *oryza*; the radical vein broader, shorter, and straight; the median vein distinct, much longer than the costal vein; only one or two hairs may be seen at the base; the basal appendix broader and a little shorter than that of *oryza*, with one small bristle at the apex. The form of the basal junction part is not excavated so much as that of *oryzæ*. Fringes 100.
7. Mouth not conical, a little narrowed at the middle.
8. The tubular sheath of the pygidium originates just from the base of the 10th segment.
9. Bristles of the lateral abdomen erect and a little shorter, while that of the ventral side can scarcely be seen.

Habitat—Niigata, Fukushima, Iwate, Tokyo and many other places.

This species may possibly be identitcal with the European species *P. frumentaria*, Bel. which is known to attack wheat and rye, but owing to lack of good description it can not be well determined.

The life history of these insects is not wellknown, but according to some description it seems that they are two brooded in a year; the first brood appears in the latter part of June, attacking the young leaves of the rice-plants, just before being planted out, they roll the leaves longitudinally, and greedily suck the juice. A great

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many of them are found in one rolled leaf, at first producing many yellowish spots, but soon all parts turn yellow and consequently they die off. The second brood comes in August, just when the young ears of rice are coming out of the sheath. They are deeply seated within the earlets, sucking the juice of the flowers and consequently that of the ovules. Sometimes several hundreds of them are found in one ear, sudden jarring only bringing a few of them to the ground. It is very brisk in its movements, both in walking and flying, but cannot leap like other thripid insects. The larvæ are reddish in color, as those of other phlœothripids are.

EXPLANATION OF PLATE I.

Phlœothrips oryzæ, n. sp. (1—11).

1. ♀ imago, magnified 60.
2. ♂ „ „ 56.
3. Head and its conical beak, magnified 63.
   1 Mouth beak, *2* Maxillary palpi, *3* Labial palpi.
4. Tip of abdomen showing tubular sheath (♂), magnified 63.
5. Antenna, magnified 266.
6. Basal part of anterior wing, magnified 532.
   1 Radial vein, *2* Basal appendix, *3* Bristles, *4* Junction part, *5* Ante-costal area.
7. Posterior wing, magnified 60.
8. Anterior „ „ „
9. Apical part of anterior wing, magnified 532
   7 fringes in two rows.
10. Posterior leg, magnified 266.
    1, *2*, *3*.....1st, 2nd and 3rd tarsi respectively.
11. Anterior leg, magnified 266.
    1, *2*.....1st and 2nd tarsi respectively.

Phlœothrips japonica, n. sp. (12—18).

12. ♀ imago, magnified 45 (*o*) ocelli.
13. Head and its beak, magnified 48.
    1 Mouth beak, *2* Maxillary palpi, *3* Labial palpi.
14. Tip of abdomen showing tubular sheath (♂), magnified 48.
15. Antenna, magnified 266.
16. Basal part of anterior wing, magnified 532.
    1 Radial vein, *2* Basal appendix, *3* Bristles, *4* Junction part, *5* Ante costal area.
17. Posterior wing, magnified 45.
18. Anterior „ „ „

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