3. The larva eats the leaves of burdock (*Arctium Lappa* L.) and thistle (*Carduus crispus* L.) belonging to *Compositae*, being unable to complete the perfect life cycle on the both leaves. The feeding tests were carried out on the other plant leaves of fourteen species in six families, but all of them were negative. The larva, however, showed the positive preference to the potato-tubercle and could grow until the second instar.

4. The older instar becomes more polyphagous than the younger one. The shorter the period of the fourth instar becomes, the more the curve showing its feeding feature simplicates (Fig. 4).

5. The food value for the fourth instar is assumed as the following order (Table 5).

Potato>Black night shade (*Solanum nigrum* L.), Tomato, Thorn-apple (*Datura Tatula* L.) >Egg-plant > Pumpkin > Burdock(*Arctium, Lappa L.*)

6. The writer has discovered that the larva can ingest its own eggs and grows to finish the whole life, further some larvae are grown by feeding its own pupae to reach the second or the third stage (Table 6). This fact suggests that the Epilachnid beetle has originated from the Coccinellid one which shows sarcophagy.

7. Aberrant forms of the beetle were found from individuals grown on the several foods (Fig. 5, 6).

8. The larval preference to the foods may be effected by an unknown volatile attractant contained commonly in the available foods but is thought to have more or less relation to the mechanical structures of the food surface and to the biting ability of the larva.

9. The potato-leaf brings the best result on the breeding of the beetle. The black night shade and *Scopolia japonica*, when the potato-leaf wants, can be used for the food, as well as the tomato and the thorn-apple; the former two species suit better than the latters. In addition to the above foods, the egg-plant, the cucumber, the pumpkin, and the potato-tubercle are suitable enough for the food, if they are given to the larva in the older stage.

On Thysanoptera from Sikoku with Description of a New Species. Mikio KUROSAWA (Agricultural Experimental Station, Nihon Tokushu Noyaku Seizo K. K., Hino, Tokyo). Received Nov. 2, 1956. *Botyu-Kagaku*, **22**, 94~97, 1957.

16. 四国のアザミウマ

黒沢三樹男（日本特殊農薬製造株式会社 農事試験場）31. 11. 2 受理

謹んで春川忠吉博士の古稀を祝賀し奉る。

四国のアザミウマは，まだ充分に調査されていないが，今度7属14種の記録が出来た．標本のうち，土佐の黒尊から南方系の *Gigantothrips* 属に属する珍しい1新種が発見されたので，多年わが国の応用昆虫学の発展に尽され，且，害虫としてのアザミウマに関心をよせられた春川教授に種名を捧献する次第である．

Since the collectings of thrips have not sufficiently been carried out in this locality, the Thysanopterous fauna is very poor, but in this paper 14 species are represented one of which is described as new to science. For the material upon which these descriptions are based, I am indebted to Messrs. S. Kono, K. Sato, K. Ōbayashi, H. Ishikura, I. Kamioka and K. Morikawa. The type specimens are deposited in the writer's collection.

Suborder Terebrantia

Family Thripidae Uzel

1. *Thrips japonicus* Bagnall

Habitat : Baishinzi near Matsuyama, 5 ♀♀ in silverberry flower, 23. X. 1939 (K. Sato); Tokushima, 22 ♀♀, 2 ♂♂ in Japanese medler flower, 23. XI. 1955 (M. Kurosawa).

2. *Thrips oryzae* Williams

Habitat : Dōgo near Matsuyama, 36 ♀♀, 7 ♂♂ on rice plant, 19. VI. 1930 (S. Kono).

3. *Thrips tabaci* Lindeman

Habitat : Zentsūji, 10 ♀♀ on onion, 20. IV. 1948 (H. Ishikura); Baishinji near Matsuyama, 2 ♀♀ in silverberry flower, 23. X. 1939 (K. Sato).

4. *Thrips setosus* Moulton

Habitat : Matsuhomura, Iyo, 2 ♀♀ in sesame flower, 23. VIII. 1943 (I. Kamioka).

5. *Thrips hawaiiensis* Morgan

Habitat : Baishinji near Matsuyama, 30 ♀♀ in silverberry flower, 5. VIII. 1940 (K. Ōbayashi); Tokushima, 5 ♀♀ in Japanese medler flower, 12. XI. 1955 (M. Kurosawa).

6. *Microcephalothrips abdoimnalis* Crawford

Habitat : Kagawa, 2 ♀♀ in wild chrysanthemun flower, 17. VIII. 1943; Tokushima, 5 ♀♀ in chrysanthemum flower, 23. XI. 1955 (M. Kurosawa).

7. *Frankliniella formosae* Moulton

Habitat : Matsuhomura, Iyo, 1 ♀ in cotton flower, 23. VIII. 1943 (I. Kamioka); Tokushima, 10 ♀♀ in rose flower, 12. XI. 1955 (M. Kurosawa); Matsuyama, 5 ♀♀ in morning flower, 8. XI. 1953 (M. Kurosawa).

8. *Taeniothrips distalis* Karny

Habitat : Baishinji near Matsuyama, 11 ♀♀, 8 ♂♂ in silverberry flower, 23. X. 1939 (K. Sato); Tokushima, 5 ♀♀ in Japanese medler flower, 12. XI. 1955.

9. *Taeniothrips* sp.

Habitat : Matsuhomura, Iyo, 3 ♀♀, 2 ♂♂ in cotton flower, 23. VIII. 1943 (I. Kamioka).

Suborder Tubulifera
Family Phloeothripidae Uzel

10. *Haplothrips floricola* Priesner

Habitat : Baishinji near Matsuyama, 5 ♀♀, 2 ♂♂ in silverberry flower, 23. X. 1939 (K. Sato).

11. *Haplothrips chinensis* Priesner

Habitat : Matsuhomura, Iyo, 3 ♀♀, 1 ♂ on giant knotweed, 23. VIII. 1943 (I. Kamioka).

12. *Haplothrips aculeatus* Fabricius

Habitat : Zentsūji, on wheat ears, 20. IV. 1948 (H. Ishikura).

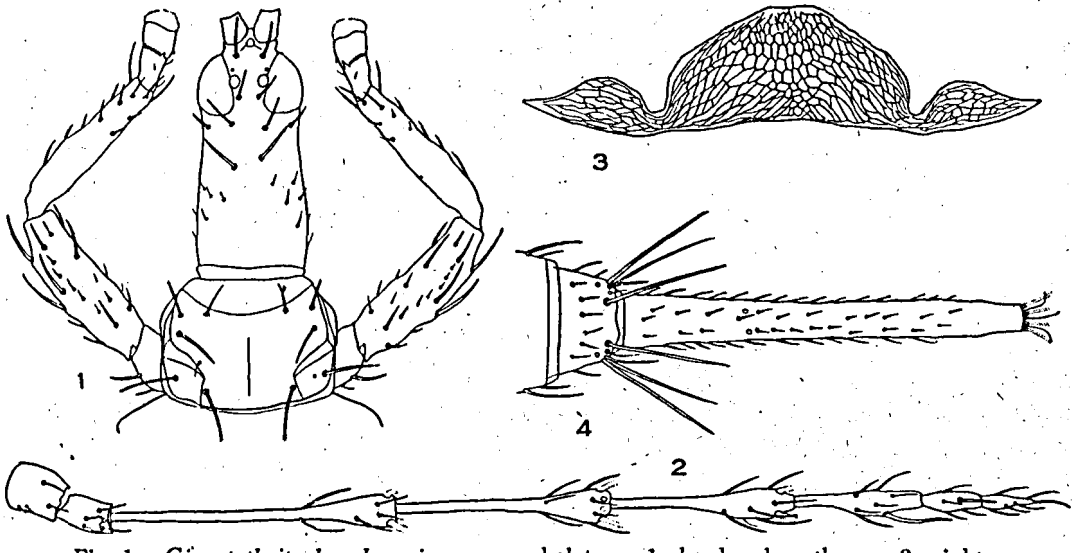
13. *Liothrips floridensis* Watson

Habitat : Matsuyama, 5 ♀♀, 2 ♂♂, 18 larvae, on camphor tree, 7. X. 1951 (K. Morikawa); 7 ♀♀, 1 larva, 12. XII. 1950 (M. Kurosawa).

14. *Gigantothrips harukawai* sp. nov.

Female (macropterous) : Length about 5.3 mm. Colour coal brown; fore and middle tibiae shading yellowish in the distal fourth; hind tibiae shaded with yellowish in the distal half; all tarsi yellowish brown, with a dark spot at the tip. Antennae with joints I—II dark brown, III—VI yellow, III—IV shaded with brown in the extreme tip, V shaded with brown in the distal fourth, VI shaded with brown in distal half; VII—VIII dark brown. Wings transparent, with a brown median vein, the scale of forewing brown; tube concolorous with head, slightly lighter at apex. Setae on body yellowish brown.

Head (Fig. 1-1) long, its total median dorsal



Fig, 1. *Gigantothrips harukawai* sp. nov., holotype. 1, head and prothorax. 2, right antenna. 3, first abdominal tergite "chervon". 4, 9th and 10th abdominal segments.

length about 2.1 times its greatest width, which is across the basal fourth; cheeks nearly parallel, narrowed slightly behind the eyes and swollened at the basal fourth, again narrowing to the basal collar; without ordinary setae on the cheeks; dorsal surface of head with closely striate; vertex conical in form, slightly overhanging, bearing the median ocellus at its extremity, not extending to frontal costa; interocellar setae very long, situated outside of the ocellar triangle, 125μ long, with dilated tip, about 87μ apart at their base; postocular setae about half the length of eyes, 100μ apart, with slightly dilated, distance from the posterior margin of the eyes 25μ; a pair of laterals behind the eyes 65μ long; dorsal cephalic setae longer than postoculars, 140—150μ long, 85μ apart and situated about midway between the interocellar seta and the base of head. Eyes normal, with minute facets, and inner margin somewhat concave opposite posterior ocelli, their length about one-fourth that of head, in holotype 210μ long, 130μ wide and 65μ apart. Ocelli of posterior pair about 40μ in diameter, interval 55μ, distance from median ocellus 100μ, the latter 25μ in diameter. Antenna (Fig. 1-2) about 2.2 times as long as the head, very slender, chaetotaxy and shape of the joints as shown in the figure; joint III about 9 times as long as wide; IV about 6 times as long as wide; a sense area on joint II near the distal margin and placed on small tubercle; formula of sense cones as follows: III, 1—1; IV, 2—2; V, 1—1; VI, 0—1; VII with one on dorsal. Mouth cone rounded at apex, extending about 250μ beyond dorsal margin of head. Prothorax small, very shorter than head, about 0.4 times as long as head and 1.8 times as broad as long; pronotum with a long apodema in the middle; all prothoracic setae present, with blunted tips, their length as follows: anterior marginals 65μ, anterior angulars 90μ, mid-laterals 130μ, epimerals 170μ, posterior marginals 160μ, coxals 75μ. Pterothorax very broad, about 1.9 times as broad as prothorax except coxae; meso and metascutum with feeble sculpture; metascutum with a pair of long setae on anterior margin, its length 325μ and 200μ apart. Fore wing long, broad, pointed at tip, with a brown median vein which extending to the distal third; with very closely black fringes, with 64—67 accessory hairs; three subbasal setae similar in shape to prothoracic setae, their lengths B.1, 140μ, B.2, 150μ, B.3, 225μ, yellowish brown in colour. Hind wings similar to fore wings in shape, and colour. Legs long and slender; the fore femur with several major setae, slightly dilated tips and arising from low tubercles, two of them on outer margin; fore tarsus with a tiny tooth which is invisible. Abdomen long and slender, narrower than metathorax, broadest near base of segment II, with sides straight and tapering from segment II to the base of tube; tergum I with clearly sculpture area, chevron in form (Fig. 1-3), other tergum with feeble sculptures; setae long, most of them pointed and brownish in colour; tergum II—VII with two pair of sigmoid, wing-retaining setae; IX with a row of six short setae on median dorsal and one pair of pore, their lengths subequal, 45—50μ; major setae on posterior margin, pointed at apex, measuring as follows: B.1, 310μ, B.2, 265μ (broken at tip), B.3, 250μ. Tube (Fig. 1-4) very long, about 1.4 times as long as head, and 6.3 times as width at base, which is 1.5 times the width at apex; sides nearly straight, slightly narrowed at apex; covered with many short setae which are about two-thirds the width of apex; terminal setae broken off in the specimen.

Measurements of female (holotype) in mm; Length about 5.3 (fully distended 7.2); head, median dorsal length 0.777 (from the frontal costa to the base of head), length 0.685 (from the anterior margin of eyes to the base of head), width across eyes 0.345, least width behind the eyes 0.315, greatest width across cheeks (at the basal fourth) 0.360, width across the base of head 0.340; prothorax, median length of pronotum, 0.305, greatest width (except the coxae) 0.555; mesothorax width, 0.962; metathorax width 1.036; fore wing, length 3.075, subbasal width 0.204, width near middle 0.240; abdomen greatest width (at the base of segment II) 0.925; tergum IX, median length 0.225; tube, length 1.144, greatest subbasal width 0.180, least apical width 0.115; total length of antenna 1.560.

Antennal segments	I	II	III	IV	V	VI	VII	VIII
Length in μ	115	90	475	355	300	215	100	95
Width in μ	82	55	55	60	50	40	35	20

Holotype: 1♀, Kuroson, Kōchi-ken, 11. VII. 1939 by K. Ōbayashi.

Host plant : Unknown.

Type locality : Tosanokuni, Shikoku, Japan.

This species may be easily separated from all other species of the genus *Gigantothrips* by the following characters : the presence of the major setae on the fore femur, the prolonged intermediate joints of antenna, the long, cephalic setae on the head, the presence of four sense cones on the third antennal joint and with long tube that is about 5 times as long as the ninth abdominal segment.

The above characters are possibly of new generic value, therefore I will be confirmed as the generic rank when a good series of this species are obtained.

I take pleasure in naming this species after Professor C. Harukawa who is a famous applied entomologist.

Ecological Studies of May-beetles in the Forest Nursery. Sukehisa Aino (Division of Entomology, National Forest Experiment Station, Tokyo). Received Nov. 6, 1956. *Botyu-Kagaku*, **22**, 97～104, 1957, (with English résumé, 103).

17. 苗畑に棲息加害するコガネムシ類について.

藍野祐久（農林省 林業試験場 保護部 昆虫科）31. 11. 6 受理

謹んで春川忠吉博士の古稀を祝賀し奉る.

林業苗畑て棲息加害するコガネムシの種類及びその発生消長を知るために，成虫に対しては青色蛍光誘蛾灯を苗畑附近に点灯調査し，幼虫に対しては苗畑の掘取り調査を行つた．また苗木に対する加害時期並びに被害量調査は，幼虫の棲息密度調査と平行して行い，コガネムシ類幼虫の棲息深度の季節的変化ついては地温の測定と共に周年掘取り調査を行い，それらについて考察を行つた．以上は苗畑て棲息加害するコガネムシ類幼虫の質量と生態の調査研究によつて，合理的な防除研究の基礎資料を得んとしたものである．

林業苗畑に於けるコガネムシ類幼虫の被害は古くより問題となつており，今迄に種々と調査研究されてきた．戦後養苗並びに造林事業の拡大に伴つて，幼虫による苗木の被害と成虫による林木の被害とは，林業経営の集約化につれて被害度を増してきたようである．その被害程度は幼虫の種類及び棲息密度によつて異なり，極端に棲息密度の高い場合は8，9月頃までに播種苗も移植苗もその大半は枯損するか，或は成長阻止されて廃苗となり，地肌の見えるような激害を受けるものである．このような苗畑の重要害虫であるコガネムシ類の幼虫を合理的に防除するには，全国的に本害虫の種類及び生態を窺知することが必要なので本研究を行つた．

本調査研究を行うに当つて，林野庁研究普及課，業務課，各営林局署，各県の保護専門技術普及員並びに東京農業大学助手後閑陽夫氏らの協力を得た．ここに感謝の意を表する．

青色螢光誘蛾灯に誘殺されたコガネムシの種類

成虫は直接苗畑に於て加害することは少ないのであるが，産卵する可能生があるのでその種類，発生消長及び発生量の調査を行つた．使用した青色螢光誘蛾灯は20ないし30ワットで，苗畑附近に点灯した．コガネムシ類についてはその生活史の不明なものもあり，クロコガネ，オオクロコガネ及びビロウドコガネ亜科のものは成虫で越冬するが，多くの種類は幼虫で越冬し，6，7月頃から羽化成虫となり，交尾産卵を終つて発生の終熄するのは9月上，中旬である．ただ成虫で越冬する種類は，ビロウドコガネ亜科のようにその発生は早い．本州，四国，九州の各営林局署並びに県に依頼して点灯採集してもらつたコガネムシ類のうち，本州で採集したものを表示すると第1表の如くである．採集方法は，連夜点灯採集と1週1夜点灯採集である．従つて，後者の点灯日数の少ないことと，現地の点灯期間が設計の点灯期間即ち5月下旬よりはるかに遅れている所が多かつたことから，第1表に記録もれのしている種類もあると考えられる．

第1表で判明するように，採集されたコガネムシ科の昆虫は33種であり，そのうち苗木を食害する可能性のあるものは30種内外と考えられる．発生量の最も多い種類は，ヒメコガネで，8箇所のうち5箇所に於て優占種となつており，他の3箇所に於ても亜優占