

Notes on the habits and ecology of Indonesian forest insects of minor importance

III. Curculionidae¹⁾

by

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BRACHYDERINAE, TANYMECINAE, OTIORRHYNCHINAE and EREMNINAE.²⁾

The notes on the forest inhabiting species of these related subfamilies have so far produced little that is of interest. The beetles — often greyish or greenish in colour with a lustre of bright scales — feed on the leaf margins but appear to be rather indifferent in their selection of food plants. They are a regular feature in young forest cultivations, along the borders of high forests and on the foliage of lower branches of full-grown trees. No details are available on the habits of the larvae (except in *Hypomeces*), but it may be assumed that they all live in the soil, feeding on roots. Several species collected have not yet been identified.

Dermatodes aeruginosus Boh. includes the teak forests in its area of distribution and has been seen feeding on the leaves of suckers of teak stumps and of mahogany saplings. — *D. camphorae* Mshl. was one of the factors causing continual defoliation of slow growing *Cinnamomum camphora* in experimental plantations near Garut at 1,000 m. It was also taken from the foliage of manglit (*Magnolia*) in W. Java. — *D. costatus* Gyll. is one of the common species in the plains and hills of Java and has been observed on *Tristania* in a forest cultivation. — *D. monilis* Hell. has done appreciable damage to one year old plants of *Bischofia javanica* near Wonosobo (C. Java) in the month of November. Some 25% of the plants were wholly defoliated. — *D. subfasciatus* Gyll., the most common species in West Java from the plains to the lower mountainous districts, has been found on leaves of *Turpinia*, *Eugenia* and *Nyssa* in mixed forest plantations. — *D. viridisparvus* Mshl. is another common species in these plantations.

Hypomeces squamosus F., one of the rather common leaf-feeding Curculionids in Java, up to 500 m altitude, particularly in the dry parts of the country including the teak area. The 14 mm long beetles may be found the whole year round nibbling the margins of the leaves of a very great diversity of plants. In the lowland forests they have been observed on teak, *Glochidion*, *Cassia fistula*, *Butea*, *Artocarpus integrus*, an Annonaceae ("kalak"), *Palaquium*, *Sesbania sesban* and *Leucaena glauca*, moreover on several plant species of the undergrowth in the teak-plantations (e.g. on *Leea* sp.) and on the native crops planted between the rows in the youngest forest plantations. Most probably the larvae feed on the roots of large grasses in these places as they have been found damaging the roots of upland rice and maize in the fields of the village population.

Esamus verloreinii Voll. has been found on similar plants as the former species,

¹⁾ The first numbers in this series have appeared in this journal, vol. 15 (1955), p. 438—440 (Introduction. Cerambycidae, Prioninae and Cerambycinae); id. p. 528—533 (Cerambycidae, Lamiinae).

The figures in this article have been drawn by Indonesian artists.

²⁾ For the identifications of species in these subfamilies we are much indebted to Sir Guy A. K. MARSHALL, London.

viz. *Butea*, *Glochidion*, *Sesbania*, *Homalium* and *Ceiba*, in and near the teak forests.

Episomus platina Sparrm., a rather conspicuous beetle of 14—18 mm with a nacreous lustre and a pair of black stripes on the elytra, is a common species in the teak forests and grass (lalang) wilderness. It has often been found, both feeding and not, on the foliage of *Butea* ("ploso") and occasionally resting (and feeding ?) on leaves of teak and various plants in the undergrowth such as *Derris*, *Desmodium*, *Cassia fistula*, *Leucaena glauca*, *Leea*, *Curcuma*, *Imperata*, etc.

Javaultius tuberculatus Fst., a dirty brown beetle of 4 mm, the side margins of the elytra turned up, is one of the leaf-feeding species which were injurious to experimental cultivations of *Cinnamomum camphora* near Garut at 1,000—1,200 m.

J. rudis Mshl., a dark, coarsely haired beetle of 3—4 mm, has been collected in young forest plantations where defoliation was troublesome, on Mount Dieng, C. Java.

Phytoscaphus triangularis Oliv., one of the most frequently found leaf feeding and very polyphagous weevils, with a large vertical range of distribution in Java. The species also occurs in the teak area and has been captured there from the foliage of *Albizzia procera*, *Adenanthera microsperma*, *Butea*, *Lagerstroemia*, *Eugenia densiflora*, *Leea*, *Glochidion*, from the inflorescences of teak and *Vitex pubescens*, and from the tips of *Melochia umbellata*, and in other forests from the foliage of *Altingia excelsa* and *Calophyllum inophyllum*.

Rhinoscapba amicta Wied., a weevil, 12—20 mm in size, with a very hard integument and a reddish-violet hue, has been injurious to young forest plantations on the mountain slopes. The species recurred in numbers in a *Cupressus* plantation on Mount Wilis in the wet season during a few successive years and killed 20% of the young plants by stripping them of their bark. It has also been seen on *Turpinia* and *Bischofia*.

ACICNEMIDINAE.¹⁾

The subfamily consists of the single genus *Acicnemis*, which has South East and East Asia and the Pacific for its area of distribution. Its numerous species all appear to live in the outer parts of felled trunks with the bark still on, in recently dead, still standing trees, diseased branches and the like, sharing this habitat with scores of other secondary insects, borers, etc. The beetles have a dirty greyish or brownish colour, marked with patterns of white and dark scales; they have a curved needle-like rostrum and rather long (elongated) femora, (especially in the hind legs) which are broadened apically and have a tooth on the innerside. When at rest the beetles are squeezed into crevices and are difficult to detect, owing to their cryptic colouration. They can be bred in numbers from bark covered logs. Possibly the larvae feed on the dead bark and cambium layers. No injury to the timber has been observed.

Acicnemis callosa Kl. was found on dead trunks of *Barringtonia* ("putat") and

¹⁾ Most identifications of species in this subfamily and the Cryptorrhynchinae and Zygopinae we owe to Sir Guy A. K. MARSHALL, a few to the late Dr K. M. HELLER, Dresden.

Butea ("ploso") in the teak forests of C. Java. — *A. dumalis* Fst., perhaps the most common species in teak and other forest cultivations, was bred from logs of *Ficus* species (*elastica*, *benjamina*, *ribes*, etc.), *Artocarpus integra* and *elastica*, *Streblus asper*, *Actinophora fragrans*, *Barringtonia*, *Myristica*, cocoa and kapok trees. In Malaya the beetle has been collected from discarded shells of cocoa pods. — *A. falsa* Mshl. was bred from logs of wild *Myristica* and *Dalbergia* in Java. — *A. javana* Chevr. was collected from dead *Ficus* trunks ("kiara") in West Java. — *A. mansueta* Fst. was found also on *Ficus* logs (*F. elastica*, *F. ribes* etc.) lying in the Javanese teak forests. — *A. ornatipes* Hell. was obtained in large quantities from *Actinophora* trunks killed by *Agrilus*, and occurred in dead logs of *Barringtonia* and *Eugenia subglauca*.

CRYPTORRHYNCHINAE.

A very extensive subfamily of many genera, which are, so far as we know, all borers, some of them (including a few gall-forming species) attacking living fruits or twigs, most of them in the larval stage living as secondary (sometimes primary) borers in the bark and sapwood of trees. Resting beetles have their heads bent inwards, the needle-like rostrum fitting into a groove between the front legs. Their integument is sometimes covered with scales and bristles in cryptic colours, they are often covered with caked dirt, which gives them the appearance of a small clod of dirt without evidence of a front or hind part. Several species obtained during the forest entomological investigations in Java have not yet been identified.

Desmidophorus imhoffi Boh., appears to be associated with *Dysoxylon* trees. The beetle is a greyish-green, its integument is very rough through warts (bearing tufts of scales) and pits, the "shoulders" pointed, length 12—16 mm not including a broad rostrum of a few mm. The beetles have been observed to eat narrow strips out of the tissue of leaf petioles. The twig ends and thick petioles of infested saplings also show deep lesions, probably likewise the result of the activities of the beetles. The Indian *D. hebes* has been recorded to feed "on the young shoots and stems of various shrubs and trees (including Malvaceae), scraping the epidermis and chewing completely through the softer shoots particularly of young plants" (BEESON 1941, p. 274). Another species, *D. caelatus* has been found to be injurious as a twigborer and leaf-eater of *Hibiscus rosa-sinensis*.

Catagmatus clematidis Mshl., which belongs to the same tribus as *Desmidophorus*, has been recorded as a stalk borer and defoliator of *Clematis* in Sumatra (teste VERBEEK).

Orochlesis annularis Pasc. has been obtained together with several others insects from a dead *Ficus* trunk in the teak forest. The beetle is brownish with a conspicuous dark brown blot on the rounded declivity of the elytra.

Colobodes billbergi Boh. occurs in the lowland forests of Java where it lives as a borer in dead trunks of *Ficus*- and *Artocarpus*-species, it has also been found on dead *Dalbergia*. — *C. kalshoveni* Hell. was observed in copula on the rotten base of a standing teak tree recently killed by rootfungus. — *C. javanus* Hell. lives as a secondary borer in branches and stems of leguminous plants viz. in *Derris* and *Mucuna* in the teak forest, and in *Sesbania sesban* and *Phaseolus vul-*

garis in the fields. The species has a large vertical range of distribution. — *Eucolobodes ceibae* Voss was described from specimens bred from wounded parts of *Ceiba* (kapok) trunks.

Thisus biguttatus Pasc. emerged in large numbers from a dead trunk of *Artocarpus elastica*. It is a common species in the Javanese forests.

Dereliosus sp. was found under the bark of dead tree stumps.

Mecistocerus indignus Fst. was observed as a borer in dead trees of *Vitex pubescens*, *Grewia* sp. and *Ceiba* in and near the teak forests. In India the species has been recorded from the wood of *Vitex* and *Premna*. — *M. marci* Boh. lived as a borer in 5 year old saplings of the softwooded *Vernonia arborea*, killed by root-destroying white grubs in a mixed forest plantation at 1,000 m altitude in W. Java. The species is known from Java only. — *M. violatus* Pasc. is prevalent in all kinds of plantations of woody plants (including teak forests) in Java, where it is indigenous, and has a wide vertical distribution. — (BEESON gives details on 9 *M.* species, which have been recorded as borers in felled trunks, particularly in the sapwood, in India and Burma).

Camptorrhinus albizziae Mshl., bred from borer-infested logs of *Buchanania*, *Barringtonia* and *Albizzia lebbeck* in the teak forest of C. Java. The species has been recorded as a borer in *Albizzia* sp. and *Shorea* sp. in India, where two generations are completed annually (BEESON '41 : 263). The beetle to some extent resembles an *Acicnemis* in habitus. It is represented in long series in collections from Java and Sumatra.

Tragopus asper Boh. is commonly met with on dead trunks in Java. The beetle is very cryptically coloured and has the outlines of a spider's body.

Coelosternulum femoralis Hell. was bred from logs of *Nyssa javanica*, felled in mixed mountain forest in W. Java and infested by shothole beetles. — *Coelosternechus javannus* Hell. (syn. of *Cryptorrhynchus aversandus* Boh. ?) has been observed a few times tunnelling in the bark and cambium layers of young specimens of the fruit-tree *Spondias dulcis*, in C. and W. Java. In one case saplings, 4—8 cm thick, were infested near the root collar. Parts of the bark had turned into a wet humus-like mass in which the largest, thick-set larvae were found, while small larvae were extending the tunnels into still living bark tissue, which rapidly turned black. The trees had shed their leaves but still had some vigour. Newly transplanted saplings were attacked in an experimental garden. The borer therefore appears to be semi-secondary in its habits (translated from a passage in KALSHOVEN 1951, p. 831).

Cyamonistus semilacteus Hell. has been observed as a secondary borer in diseased branches of *Mangifera* and *Canarium* in Bogor, W. Java.

Euthyrrhinus meditabundus F. bred in large numbers in newly felled trunks of *Albizzia lebbeck* in the C. Java teak forests. The beetles ranged in size from 5—10 mm. The area of distribution of the species extends over E. Indonesia and Australia.

Blepiarda apicalis Hell. emerged from a newly dead trunk of *Polyscias nodosa* ("kayu lanang") in the teak forest.

ZYGOPINAE include secondary borers in the outer parts of recently dead trunks

of softwood trees, and primary borers in hardly lignified stems. The beetles have a peculiar habitus: their body more or less boat- or spindle-shaped, its dorsum flat or slightly concave, the abdomen strongly convex. They are provided with relatively long or very long (spiderlike) legs and a curved, needle-like rostrum. The integument is often covered with variegated, hairlike scales; the ventral side is as a rule much lighter in colour than the dorsal side.

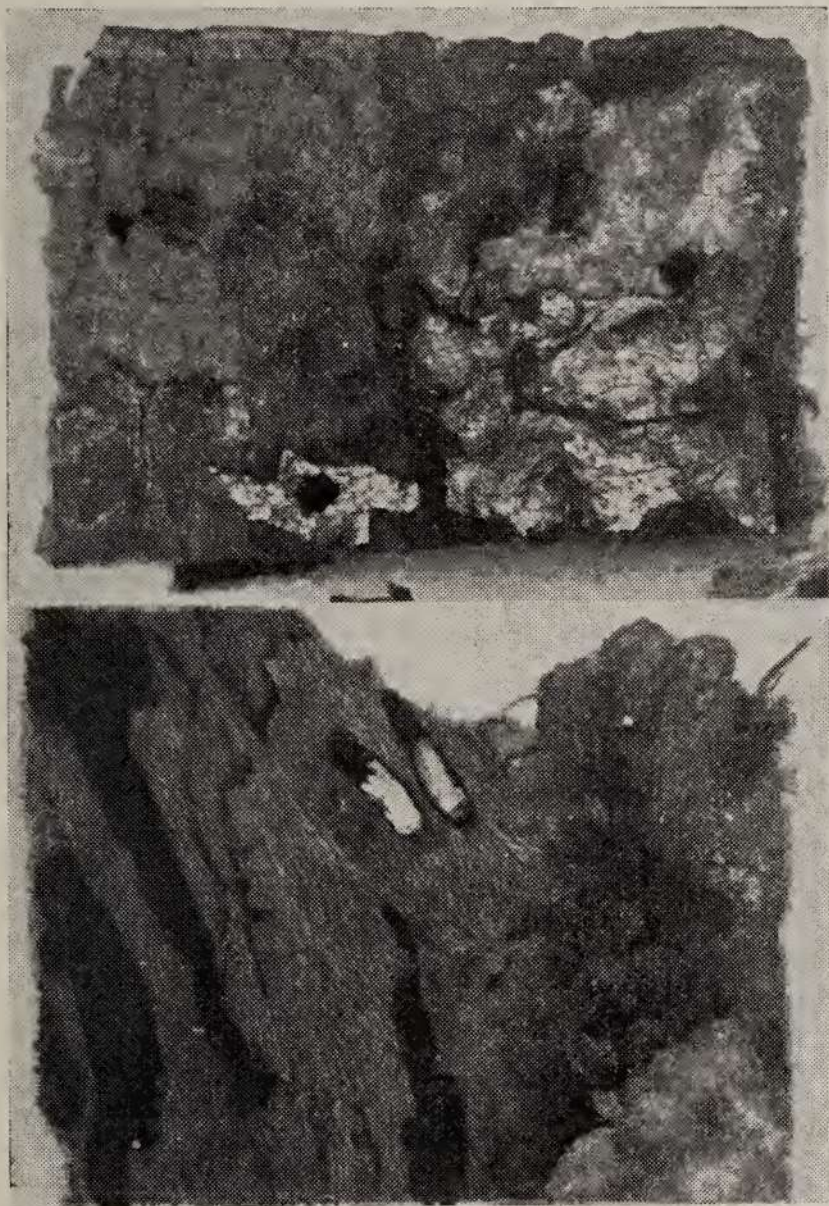


Fig. 1. *Mecopus bispinosus* Web. Bark pieces of *Ficus* showing two exit holes of beetle (top), and galleries with a larva and a pupa in situ (bottom). (Nat. size).

often occurs together with the former species in *Ficus*- and *Artocarpus*-logs. — *M. cuneiformis* Pasc., a large (10 mm) and less common species, was bred from unidentified timbers.

Phylaitis panops Walk., a beetle of 3 mm only, has been found habitually living in dead *Ficus elastica*, *F. sp.* ("sulur") and *Streblus asper* (all three Moraceae again) in the Javanese teak forests. — *Ph. pterospermi* Mshl. emerged in considerable numbers from trunks of *Actinophora* (*Schoutenia*) killed by *Agrilus* in different parts of Java. It was recorded as a sapwood borer in *Pterospermum acerifolium* in India (BEESON 1941 : 288). The same tree is a regular constituent part of lowland forests in Java.

Osphilia sp. completes its larval life as a borer in the bark of felled large *Ster-*

Mecopus. The genus has for its area of distribution Africa, S.E. Asia and a part of Australia and is well represented in Indonesia. The beetles may be seen alighting on newly felled trunks, particularly of *Ficus*- and *Artocarpus*-species. They move very quickly and favour sunlit spots (like flies), where pairing takes place too. The larvae develop while tunnelling in the thick bark. — *M. bispinosus* Web., a widespread and most common species in Indonesia and neighbouring countries, which was already observed as an inhabitant of diseased *Ficus elastica* and *Castilloa* trees at the time when these trees were still planted for rubber production. It has since been found in large numbers in teak and other lowland forests of Java on lying trunks of *Ficus variegata*, *F. annulata*, *Artocarpus integra*, *A. communis* and *A. elastica*. — *M. hopei* Ros., a smaller species,

culia trees. The small beetles have once been observed swarming in numbers around a standing dead "wunung" tree (*Sterculia* sp.) in a mixed lowland forest in East Java.

GYMNETRINAE.¹⁾

In this subfamily the larval stages appear to be passed boring in parts of living plants. The beetles are provided with a rather long, stout rostrum which is used for making holes in the plant tissue.

Alcidodes (formerly *Alcides*), a very extensive and well-known genus, widely spread over Asia and Africa. The larvae tunnel into the stems, twigs and top parts of woody plants or live as fruit-borers in forest trees. The beetles of the former group are cylindrical, often slender in build, marked with a pattern of light-coloured scales or powdery matter; those of the latter group are thick-set.

(Details on *A. leeuweni* Hell, the kapok-twigborer, *A. cinchonae* Mshl. twig-borer of *Rubiaceae* and *A. sulcatulus* F. stem and topborer of *Pueraria* and *Vigna* (Leguminosae) may be found in the author's handbook on Pests of Indonesian Crops, II, 1951, p. 836—840).

A. patruelis Fst., a species of common occurrence in Java and Sumatra. It has been observed as a borer in the tips of saplings of *Eugenia polyantha* in forest cultivations and on *Melastoma*-shrubs in open fields and fallow grounds. — *A. angulus* F. The beetle has repeatedly been met with resting and feeding on leaves and twigs of *Leea* sp. in the teak forests of C. Java and has occasionally been found on other plants too. The habitat of the larva has not yet been discovered. —

A. pectoralis Boh., resembling *sulcatulus* in its zebra-like design of white and black stripes, likewise appears to be associated with leguminous plants. This species inhabits the lowland forests and has been observed on *Desmodium* sp. and *Butea* in the teak plantations.

A. crassus Pasc. (fig. 2), a large borer in the fruits of Dipterocarpaceous trees, appears to have as its hosts in Java the "palahlar" trees (vernacular name for four species of *Dipterocarpus*, most of which also occur in other parts of Indonesia). Infested fruits were present in consignments received from the lowland forests of C. Java (Pekalongan) as well as from mountain forests in East Java (Arjuno), but not in material received from West Java. The borer has long been known from India, where it has been recorded from four *Dipterocarpus* spp., one *Hopea* and one *Shorea* sp. The species also occurs in the Philippine Islands. — Infested fruits, still inhabited by a larva or

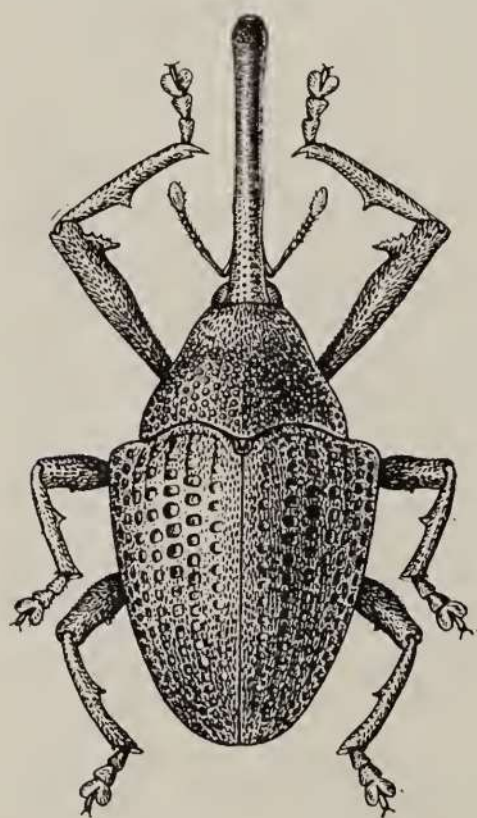


Fig. 2. *Alcidodes crassus* Pasc., the large fruit-borer of Dipterocarpaceae. (3.5 ×)

¹⁾ The identifications of species of Gymnetrinae and the next subfamilies are due to Dr Guy A. K. MARSHALL, London.

pupa, may be recognized from a small hole in the calyx, with some resin oozing from it. Eggs and larvae of various sizes were found in fruits, collected in November in Pekalongan. The beetles emerged from this material from December to February. In fruits received from E. Java in the beginning of October the beetles appeared in the same month. A considerable part of these fruits showed traces of having been opened by a rather large mammal (possibly a squirrel?); and it was evident in a few cases that the animal had been after the big larva and not after the ripening seeds. The beetles of *crassus* are long-living. A few specimens were kept alive in the laboratory for 5½ to 6 months when provided with water; most of them however succumbed after two months. — *A. shoreae*

Mshl. is a small borer of Dipterocarpaceous fruits, also found in "palahlar" fruits in Java (but less frequent than the former species) and in tengkawang nuts (the fat-containing seeds of *Shorea* and *Isoptera* species) in Borneo. — *A. hopeae* Mshl. is a borer in the small fruits of *Hopea men-garawan* in S. Sumatra.

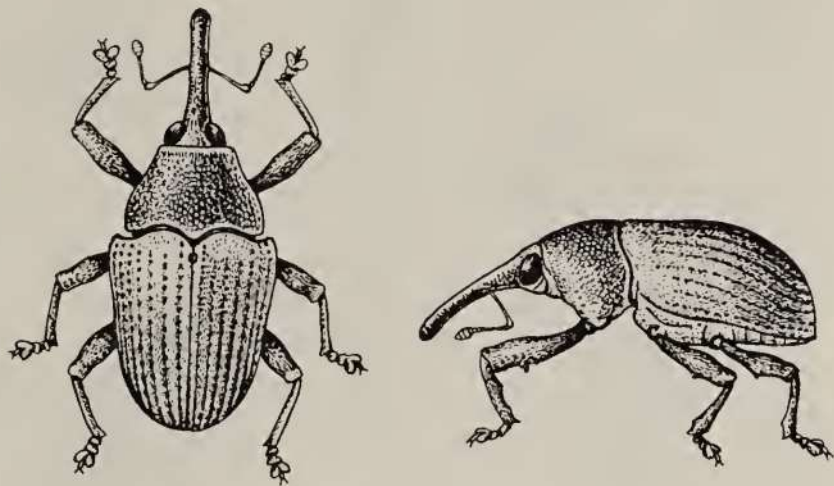


Fig. 3. *Alcidodes hopeae* Marsh., small fruit-borer Dipterocarpaceae (× 5).

NANOPHYINAE.

Ctenomerus lagerstroemiae Mshl. is a regular borer in fruits of the "wungu" or "bungur" tree (*Lagerstroemia speciosa*) in Java, the details of which were published in an early paper (*Tectona* 17 (1924), p. 455).

Nanophyes dipterocarpi Mshl., a small borer in large fruits of Dipterocarpaceae, first detected in West Java, afterwards in Sumatra (Tapanuli). No outward signs of infestation are visible before the beetles emerge through a small hole at the top of the fruit. The larvae bore in the inner parts of the seeds, particularly at the tops where pupation takes place. The beetles are 6 mm long, black with small white spots. As much as 80% and 90% appeared to be infested in two lots of fruits of "palahlar" (*D. trinervis* and *D. hasseltii*) collected from trees on Mount Gedeh (1,000 m) and near Garut (W. Java).

The host plants of several other *N.* species occurring in Java are still unknown.

ANTHONOMINAE, PRIONOMERINAE.

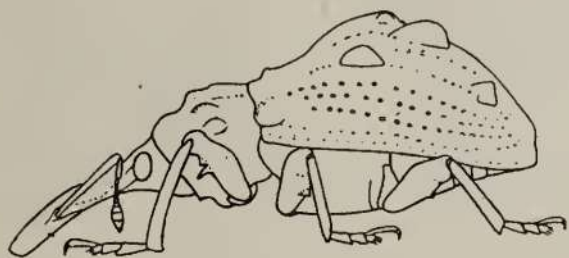


Fig. 4. *Tachypterellus nodulosus* Marsh. Fruit-borer of *Pygeum*. (× 7).

Tachypterellus nodulosus Mshl., fruit-borer of *Pygeum* sp., discovered in the forest reserve of Tjibodas (1,500 m) in W. Java. The fruits already become infested when green, when the seed contents are still partly liquid. Small warts with a little central hole (fig. 5a) are to be seen in the skin, apparently caused by the weevils for

feeding and egg-laying (some of them correspond with a small tunnel in the fruitskin). Similar punctures may be found in the leaf nerves. The larva lies doubled up in its burrow feeding on the seed skin and the developing cotyledons and turning them into wet frass. Pupation occurs just beneath the skin of the

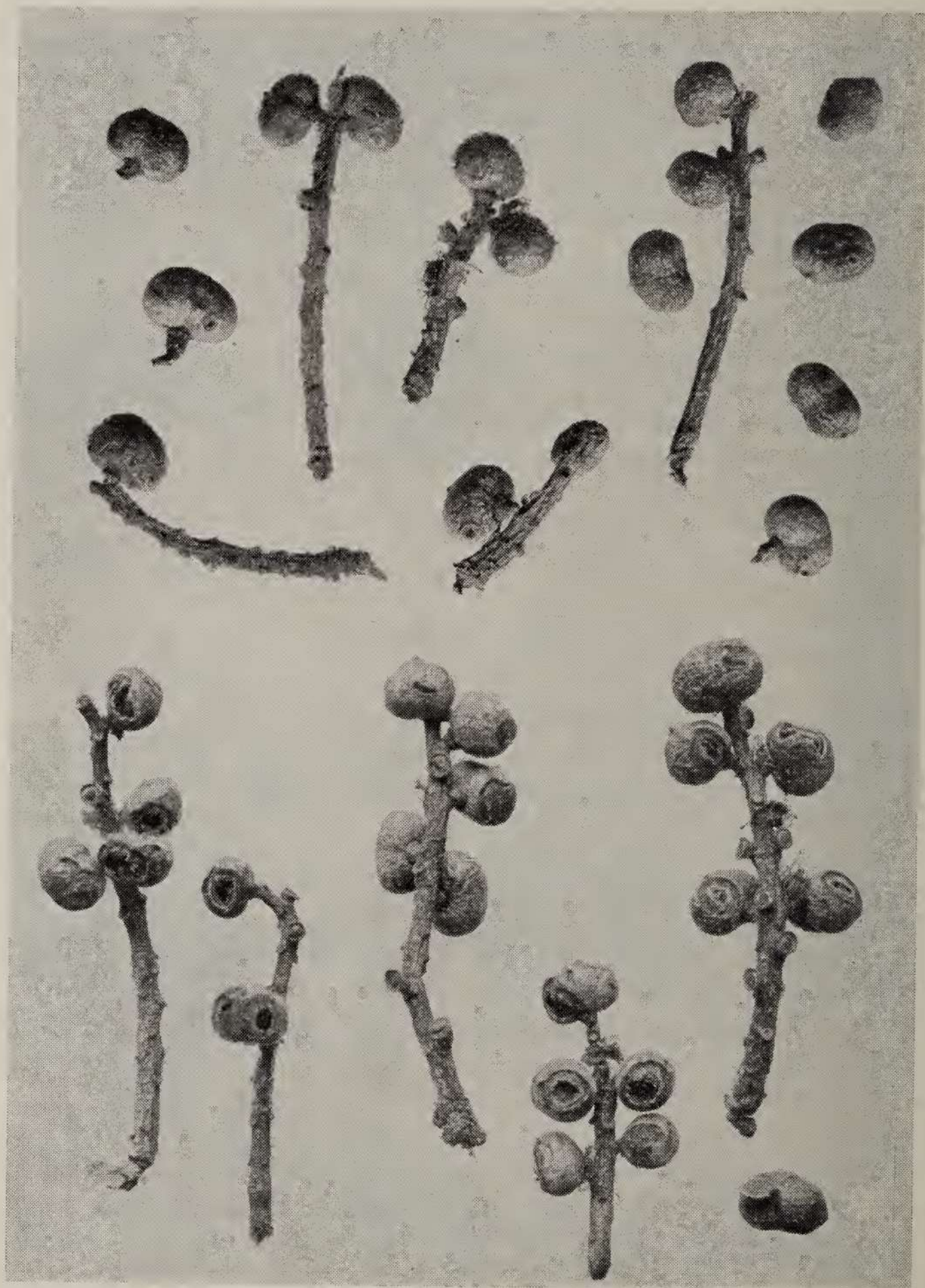


Fig. 5a. Punctures on fruits of *Pygeum*, indicating infestation by *Tachypterellus*.
Fig. 5b. *Pygeum* fruits damaged by animals (? birds) that were looking for weevil larvae (natural size).

fruits. When emerging the young beetle cuts a lid in the skin. The beetles are brown with tubercles on the elytra, 6 mm in length. The rostrum is shaped like a fine, curved needle. When at rest the beetles resemble a withered small blossom. — There is a wasp parasite of the borer which makes a white cocoon. Besides, birds appear to prey on the borer as the fruits — even not infested ones — often show a square hole in the skin sometimes exposing an empty borrow, while the seeds are never eaten (fig. 5b). A considerable part of the fruits may be spoilt by this primary and secondary injury. In one case only 14% of a batch of fruits was sound.

Bathrorygma rectirostre Mshl., a small, thick-set beetle (length 3 mm, breadth $1\frac{1}{2}$ mm) bred from fruits of *Cyrtandra sandei*, a semi-ligneous shrub belonging to the Gesneriaceae, not uncommon in the forest reserve of Tjibodas, Mount Gede, W. Java, 1,000 m.

Ochyromera kalshoveni Mshl., fruitborer of *Nauclea orientalis* ("gempol") in the teak forests of C. Java. The beetles are 5—6 mm long, light-brown with yellowish stripes on the elytra. Another *O.* species has been reported as a fruit borer of *Artocarpus integra* in India and a third as a leaf miner of *Diospyros kaki* in Formosa.

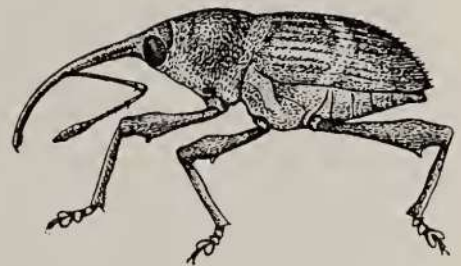


Fig. 6. *Curculio* sp., fruit-borer of *Eugenia* spp. ($\times 5$).

CURCULIONINAE, RHYNCHAENINAE, TYCHIINAE¹).

A *Curculio* sp. (fig. 6), so far unidentified, is an ordinary fruitborer on wild and cultivated *Eugenia* trees in Java (e.g. *E. cumini*, *E. polyccephala*, and the clove tree *E. caryphyllata*). Several other species of the wellknown and characteristic genus have been collected in Java but their hosts are not known. In some species the beetles have an exceptionally long, curved needlelike rostrum evidently for piercing the fruit skin.



Fig. 7. *Cionus radermacheri* Marsh., injurious to twig tops of *Radermachera* ($\times 6$).

Cionus radermacheri Voss, feeds on the top-ends of twigs of *Radermachera gigantea* in Java. The beetle is thick set, semi-globular, blackish, with stripes and tufts of white pubescence, 5—6.5 mm in length (fig. 7). It has often been observed on the terminal

¹) Most identifications in these and the remaining subfamilies have been contributed by Herrn Ed. Voss, Berlin-Charlottenburg.

shoots of saplings and on suckers from stumps of newly felled trees, but the larva has not been detected. However, the larvae of a *Cionus* in India, living on *Buddleia* have been described as covered with a shiny substance and pupating in an almost spherical brown horny cocoon (BEESON 1941 : 263).

Fig. 8. *Endaeus calophylli* Marsh., leaf-miner of *Calophyllum inophyllum* ($\times 12$).

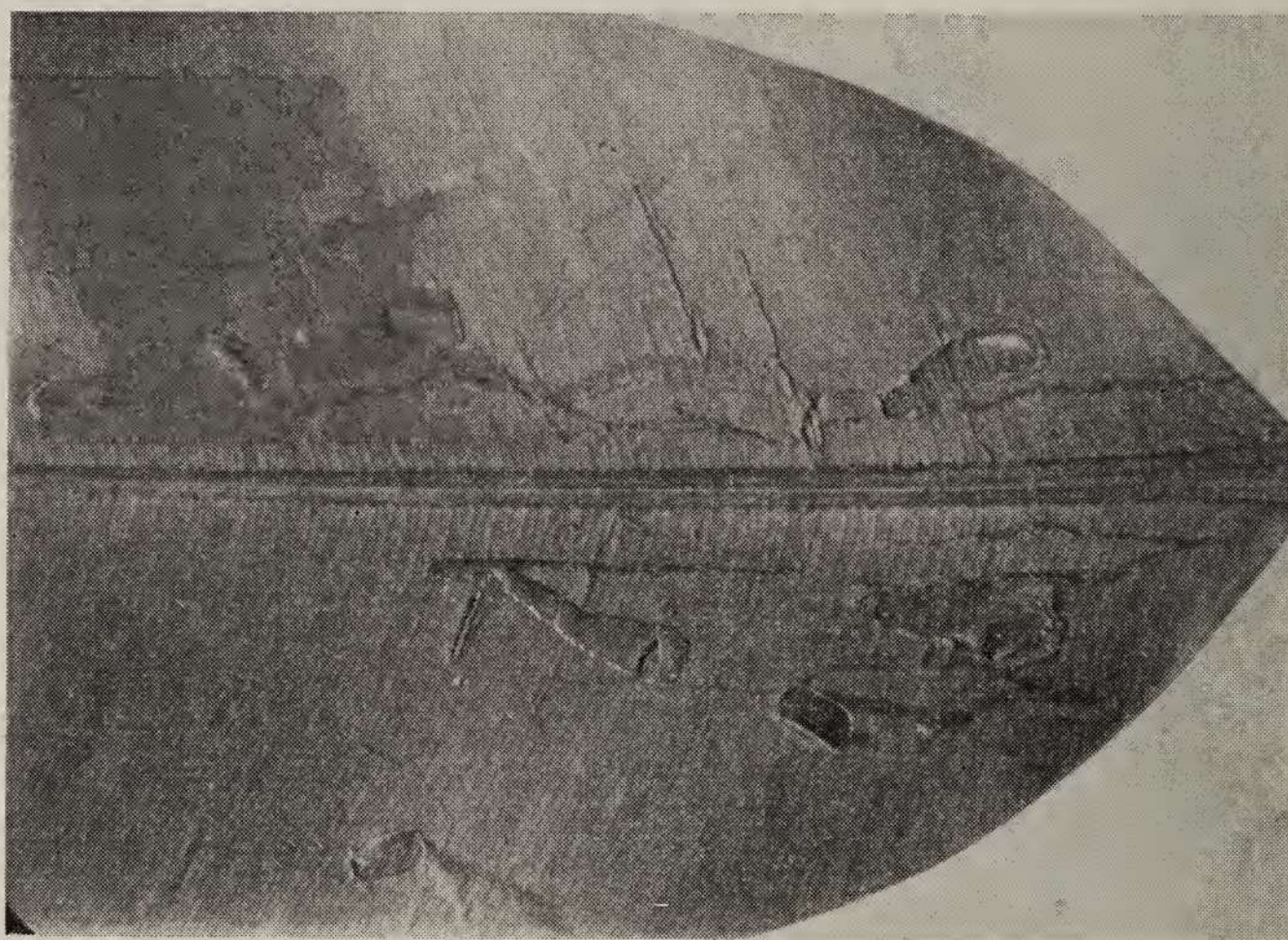
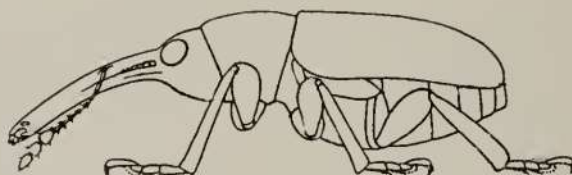


Fig. 9. Characteristic mines of *Endaeus* in mature *Calophyllum* leaf. (nat. size).

Rhynchaenus lauraceae Voss is a leaf-mining species on "huru" or "wuru" trees (fam. *Lauraceae*, possibly *Litsea* sp.) in the mountain forests of Java. The beetle is black with a greyish pubescence, only 2 mm in length (size of the rostrum $1\frac{1}{2}$ mm). (*Rh. flavirostris* Mshl. is a leaf-miner of *Mangifera* in Java, see KALSHOVEN 1951 : 846).

Dinorrhopalus schouteniae Voss, leaf-miner of *Actinophora* (*Schoutenia*) *fragans* in the Mid Java teak forests. The beetles have a very curious habitus; they are dark brown, the legs and mouthparts have a light colour, the elytra with tubercles, the hindlegs put sideways with lengthened femora (club-shaped on a narrow base); length 4 mm. Leaves mined by this species have seldom been found though its host-tree is rather common. In collections the species is rare.

Endaeus calophylli Mshl., leaf-miner of *Calophyllum inophyllum*, observed

near Bogor in West Java. The larvae live in linear mines in the thick leaves (fig. 9). The beetle is a yellowish-brown, 3 mm in length (fig. 8).

RHYNCHITINAE.

Rhynchites lauraceae Voss has killed the top ends of "wuru" saplings (fa. Lauraceae) by its punctures, in mixed forest cultivations in the mountainous districts of Java. It has also been found on the shoots of the avocado fruit tree (another Lauraceae). The beetle is black, 5—6 mm long including its 2 mm long rostrum. — *Rb. balneator* Voss has frequently been observed on the foliage of *Murraya paniculata* (fam. Rutaceae) in the teak forest of Central Java. The beetle is brown, 4 mm in length and has been recorded also from the Philippine Islands. — *R. bicuspis* Voss, a dark violet glossy species has been taken from top ends of *Buchanania arborescens* (fam. Anacardiaceae). — *R. flavolineatus* Voss. The larva tunnels the shoots of *Shorea platyclados* in S. Sumatra. The beetle is brown with a yellow streak on the elytra, 7 mm in length. — *R. acaciae* Voss was reported long ago as very injurious to the top ends of *Albizzia montana* in virgin forest on the mountains in Java.¹⁾ This injury has not been observed since, but the beetle was found on the exotic *Acacia decurrens*, in a plantation in West Java (Priangan), 1,600 m above sea level.

Deporaus papei Voss has been listed among the noxious insects in *Derris elliptica* plantations in West Java and has been taken on wild *Derris* ("tungkul") in the teak forests of M. Java. The head and prothorax of the beetle are lightbrown, the elytra dark brown, it measures 4—4½ mm. — *D. sericeus* Voss, a black species with a red brown bent streak on the elytral base, has been taken from tops of young trees in forest covered hills in W. Java.

Anuletobius acaciae Voss, causes leaf galls on *Acacia leucophloea* (the "pilang" tree), the larvae living in the small leaflets, which become swollen. The beetles are 2 mm in length only, shiny green in colour. So far young infested trees have been observed in plantations in the Semarang, Bodjonegoro and Madiun districts of the Javanese teak area. The deformation of the leaflets is very inconspicuous, however, and the species may well be a rather regular inhabitant of the "pilang" tree.

ATTELABINAE AND APODERINAE.

Lamprolabus bispinosus Gyll. (syn.: *Attelabus b.*) is one of more common leafrollers in Java and Sumatra. "Huru" trees (Lauraceae) have been noted as host plants in mixed forest cultivations in W. Java (1,000 m), and "sarangan" (*Castanea* sp.) in C. Java. The beetles have been seen feeding on the foliage of other trees, where no rolls had been formed. They are easily recognisable from the pair of black spines, one on each elytron; for the rest they are shiny brown, 8 mm in length.

Hoplapoderus gemmatus Thunb. is a widespread species in S. E. Asia, which has often been observed as a leafroller of "djlumpang" shrubs (*Helicteres hirsuta* and *H. isora*) in the Javanese lowland forests (including those of teak). *Ougeinia*

¹⁾ SITSEN, A. E. Een gevaarlijke parasiet van *Albizzia montana* Benth. *Teijsmannia* 1913 p. 75—78 (with a coloured figure).

and *Sida* are the host-plants recorded by BEESON for India. The beetles have black tubercles on the pronotum and elytra; their length is 5 mm. — *H. bystrix* F., has the same food-plants as the former species in Java but is less frequent. BEESON's record of its host-plants in India includes *Helicteres isora*, besides *Sterculia* and seedlings of *Xylia*. The elytra of this species are covered with spines.

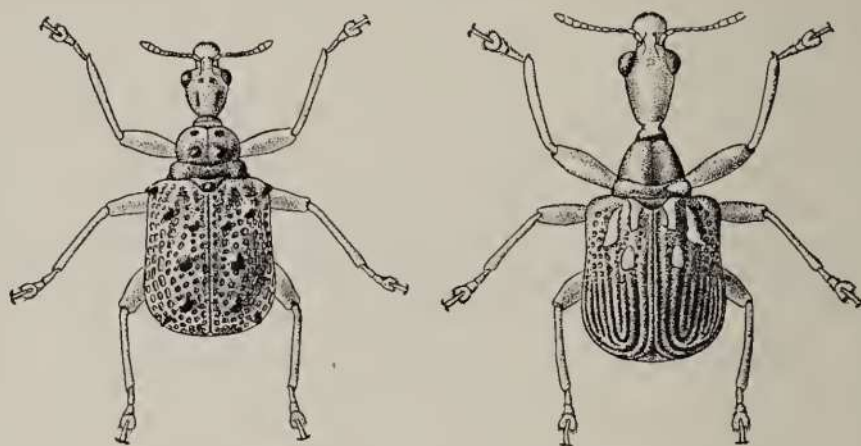


Fig. 10. *Hoplapoderus gemmatus* Thunb. (left, $\times 3$)
Apoderus trinotatus Fst. (right, $\times 3.5$).

Apoderus trinotatus Fst., uses young leaves of different trees for making its brood rolls, notably *Lagerstroemia speciosa*, *Glochidion* sp. and *Antidesma tetrandrum* in the teak forests, and *Chydenanthus excelsa*, *Elaeocarpus grandiflora*, *Derris* and *Lagerstroemia ovalifolia* in village plantations, parks etc. The brown beetle is marked by three short, yellow, linear elevations on the elytra. The species is found in Java and Sumatra. — *A. cinchonae* Rpk., originally met with on small-leaved *Cinchona*, has since been found to use the young foliage of 'rasamala', *Altingia excelsa* as well. Several brood rolls were collected in a 3 year old plantation of this forest tree in May. The development of the beetle takes some 2 months. The beetles are brown, dull (through their finely pitted sculpture), 7 mm long. The species inhabits the mountainous districts of West Java. — *A. quadripunctatus* Gyll. has repeatedly been observed as a leaf-roller on *Butea frondosa* in the teak forests of Java. It also occurs in mixed forest plantations, up to 600 m altitude, and has *Derris* sp., *Millettia* sp. and *Quercus*

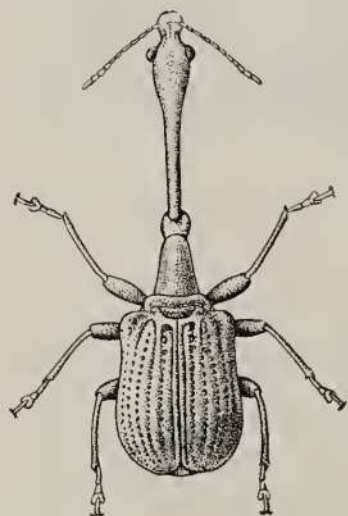


Fig. 11. Male of *Paracynotrachelus cygneus* F. ($\times 3.5$).

sp. div. as its host-plants. In *Derris* plantations in West Java it has caused some defoliation. As a rule the leaves are cut from two sides up to the midrib, but in *Butea* the midrib is often severed. Development from egg to beetle takes only 12—15 days according to laboratory observations at Bogor (VAN DER VECHT, 1936, *Entom. Med. Ned. Ind.* 2 : 9). Often there are only two black stains on the elytra instead of four, or the elytra may be entirely blackish. Size: 6—7 mm. — *A. rufus* F. is a less regular inhabitant of *Butea* in the teak forests of Java, but has been observed in *Derris* plantations in N. E. Sumatra. (Notes on *A. corporaali* Voss, *A. javanicus* Jek. and *A. suturellus* Voss may be found in KALSHOVEN "Plagen" II, 1951, p. 845).

Paracynotrachelus cygneus F., a widespread species in S. E. Asia, has the common shrub *Bridelia stipularis* ("kutu") as its regular host in the Mid Java teakforests. In the male beetles the "neck" is much elongated (2—3 mm), which gives the insects a curious appearance (fig. 11).