Entomological Results from the Scientific Survey of the Tokara Islands.

I Coleoptera : Elateridae.[1)]

By Takehiko NAKANE & Takashi KISHII

With 2 Plates

Under the management of Mr. Yoshitaka TSUTSUI, director of the Osaka Municipal Museum of Natural History, a scientific survey was carried out in 1953 from 26th of May to 12th of June at the Tokara Islands which lie south of Kyushu, between Yakushima and Amami-Ohshima, in series. Nakane, one of the authors of the present paper, had an opportunity to join this party and collected insects, especially beetles, at Takarajima as well as at Nakanoshima, and moreover a number of examples of beetles were offered to him by other members of the party. As regards the insects of the Tokara Islands there have been only a few papers published up to the present time, in spite of the biogeographically interesting situation of the islands. Therefore, the material collected during the present survey is, at least for us, very important and worthy to note, including a series of new forms.

In the present paper we have dealt with the results of our study on the Elaterid-beetles out of the collection of the survey. The type-specimens of new species described here are preserved in the collection of the Osaka Municipal Museum of Natural History and of the Entomological Laboratory of the Kyushu University, as well as in our collection. Before going further we wish to express our sincere thanks to Mr. Y. TSUTSUI and other members of the Tokara scientific survey for their kind help in offering valuable material, and also to Prof. Dr. Teiso ESAKI,, Dr. Kichizo TAKEUCHI, Prof. Dr. Masaaki TOKUNAGA, Prof. Dr. Keizo YASUMATSU, and our friends for their favourable assistance given during the course of our study.

Subfamily AGRYPNINAE

Brachylacon microcephalus Motschulsky, 1858

Nakanoshima (1 ♂ 1 ♀, 9. VI. 1953, S. Uéno leg.).

Rismethus scabinula (Candèze, 1857)

Takarajima (4 ex. 27–30. V. 1953, S. Miyamoto & T. Nakane leg.); Nakanoshima (2 ex. 6–8. VI. 1953, T. Nakane & S. Uéno leg.).

Cryptolacon gen. nov.

Elongate fusiform in shape, vividly depressed above but more beneath, parallel-sided, covered regularly and scatteredly with short scales, which are tongue-shaped and

1) Scientific Survey of the Tokara Islands, Report No. 13.

acuminate at apex. Head broad, with a shallow triangular impression between eyes. Antennae clearly serrate from 4th joint to 10th, 2nd cylindrical with a distinct incision near basal inner part, subequal to 3rd which is obconical, 4th a little longer than 5th, always nearly equal to 3rd in length, basal joint gross and subequal to 2nd and 3rd combined together, apical one flat and bud-like-shaped. Pronotum : lateral edge obviously crenulate, rear angles short and obliquely cut off at apex, usually having no carination on posterior corner, nor antescutellar elevation, nor nodule on disc. Prosternal suture furrowed at anterior two thirds, propleural fore angle more or less jutting inclinately upwards, both lateral sides of prosternal process bearing a longitudinal canaliculation with a rim. Thorax beneath usually having no grooves to receive tarsi. Scutellum subpentagonal but rounded behind, rather broad, flat or slightly convex and not carinate. Elytra obliterately punctate-striate, interspaces rather sparsely and distinctly punctulate, lateral edge remarkably crenulate anteriorly as that of pronotum. Legs moderate, tarsi simple, claws bearing a long stiff hair at inner basal part. Median and rear femora, in general, barely projecting outwards beyond outer border of elytra in situ. Both sexes having no sexual character on 5th abdominal sternite. Male genitalia elongate, apex of lateral lobes bearing many long hairs at random, closely allied to that of subgenus *Sabikikorius* nov. but much stouter and less strongly narrowing towards tip.

According to the literature this new genus somewhat resembles *Compsolacon* Reitter and *Colaulon* Arnett in general outline, but easily may be distinguished by having no carination on the pronotal hind corner from the former and by having no tarsal groove on the propleuron from the latter.

It is also allied to *Agrypnus* in certain points, but differs from the latter in the following characteristics :

1. body regularly and scatteredly (rather countable) covered with tongue-shaped scales; 2. pronotum widest in middle and its lateral edge more or less crenulate, simply rounded, not or hardly sinuate before hind angles; 3. 3rd antennal joint subequal to 2nd in length (in *Agrypnus* shorter than 2nd); 4. nearly always discovered under stones or on sandy ground.

Genotype: *Cryptolacon miyamotoi* sp. nov.

This new genus contains next 3 Japanese species: *miyamotoi* sp. nov., *scrofa* Candèze and *musculus* Candèze; and perhaps a Corean species *depressus* Candèze will be also included.

Cryptolacon miyamotoi sp. nov.
(Pl. 1, fig. 1)

This new species differs from known members of the genus in the following points:

1. body wholly reddish brown or rusty or in some individuals black (exclusive of legs, antennae and outer margin of elytra usually reddish brown); 2. propleural fore angles strongly truncate and upheaved; 3. posterior extremity of antennal furrows roundly closed; 4. canaliculation on each lateral side of prosternal process (Pl. 2, fig. 11.) parallel to the under surface in side-views (in *scrofa* (Pl. 2, fig. 12.) both approaching towards tip); 5. basal plates of hind coxae (Pl. 2, fig. 13.) hardly projecting rearwards near middle of posterior edge (in *scrofa* (Pl. 2, fig. 14.) or *musculus* (Pl. 2, fig. 15.) more or less strongly projecting backwards); 6. scutellum flat, broad behind and the narrowest and subparallel-sided in the frontal one third (Pl. 2, fig. 19, 20); 7. intervals

of elytra coarsely punctate, visibly convex except sutural ones, striae rather obscure but coarsely and deeply seriate-punctate (elytral sculpture: Pl. 1, fig. 8: *miyamotoi*, fig. 9: *scrofa*, fig. 10: *musculus*); 8. aedeagus (Pl. 2, fig. 6.): median lobe suddenly narrowing before apex and then gently so to apex (in *scrofa* gently narrowing from base to apex).

Body length: 7–9.5 mm.; width: 2.5–3.5 mm.

Holotype: 1 ♂ Takarajima, 29. V. 1953, T. Nakane leg.; allotype: 1 ♀ Takarajima, 31. V. 1953, T. Nakane leg.; paratypes: 41 ex. Takarajima, 26–30. V. 1953, 9 ex. Nakanoshima, 4–13. VI. 1953, S. Miyamoto, T. Nakane & S. Uéno leg.

Sabikikorius subgen. nov. (gen. *Agrypnus*)

The present new subgenus easily may be distinguishable from the subgenus *Agrypnus* s. str. (type: *murinus* Linné) in the following points:

1. body elongate and parallel-sided in general, much more convex above and more beneath, namely, rather cylindrical in shape; 2. pronotal disc always having no nodule nor tubercle, nor carination on rear corners, but mostly with a median longitudinal furrow on posterior half, somewhat shallow; 3. lateral border of pronotum rather thick; 4. 5th abdominal sternite lacking a smooth or scaleless space in both sexes; 5. male genitalia ordinarily elongate and considerably narrowing to apex.

Subgenotype: *Lacon fuliginosus* Candèze, 1865.

Agrypnus (*Sabikikorius*) *arenicola* sp. nov.

Black to dark brown with antennae, legs, pronotal posterior angles and outer edge of elytra reddish brown.

Body subcylindrical, covered with elongate yellowish or brownish scales on whole surface, except tip of prosternal process, anterior and posterior end of pronotum, rear edge of propleura, front margin of mesopleura and base of each elytron at middle densely clothed with tawny or yellowish long hairs, tibiae and tarsi with finer bristle-like hairs, and the antennal joints exclusive of 3 basal ones densely clothed with pubescence.

Head a little convex above, obliquely and gently bent downwards anteriorly, rather distinctly impressed triangularly between eyes, which are large but scarcely prominent and concealed by pronotum posteriorly, punctuation dense and coarse but a little less dense in middle. Each antennal joint from 4th to 10th elongate triangular, remarkably longer than wide, 2nd a little longer than 3rd which is obconical, 4th visibly longer than 5th and about a half again as long as 3rd. Pronotum clearly convex above, scarcely longer than wide, sides slightly expanded outwards in middle, gently narrowing anteriorly as well as posteriorly but distinctly sinuate before hind angles, which are flat and extending outwards, not carinate and its tip truncate, frontal verge transversely depressed conspicuously, disc with a median longitudinal channel but hardly visible on anterior part, lateral edge arcuately convex above in profile, surface densely (especially on lateral border) and unevenly punctate with variant-sized punctures not ocellate. Scutellum flat and subpentagonal. Elytra: striae visible but obliterate anteriorly, distinctly and coarsely punctate, intervals a little convex, punctuation fine and shallow but close.

Prosternum moderately convex longitudinally, chin plate separated by a transverse depression behind and bent obliquely downwards with its frontal edge gently rounded,

whole surface of prosternum (including chin plate) coarsely punctate and increasing the density of punctuation to anterior margin but the size of punctures decreasing on the contrary, process slightly inclined behind procoxae inwards and then produced straight backwards, abruptly emarginate near the tip, suture conspicuously canaliculated in anterior two thirds. Each propleuron with a clearly scaleless groove to keep profemur along posterior edge, anterior angle plainly raised up, punctuation somewhat sparser and smaller than that of prosternum. Mesosternal groove horizontal and parallel-sided. Metasternum having on each side a shallow and rather trace-like tarsal grooves which runs obliquely from mesocoxa to posterior end of metepisternum straight. Punctuation of meso- and metathorax and abdominal sternites closely allied to that of propleura but much coarser at median part of metasternum and 1st abdominal segment. Legs moderate, each tarsal claw gaff-shaped and having a long bristle on the basal inside. Without any sexual character on 5th ventral sternite.

Body length: 24.5 mm.; width: 7.5 mm.

Holotype: 1♀ Takarajima, 29. V. 1953, S. Uéno leg. (in coll. Osaka Mus. Nat. Hist.), discovered under the sandy shore.

Resembles the large-sized individuals of *A.* (*S.*) *fuliginosus* (Candèze) in shape, but easily may be separated from the latter by having the following differences:

1. body much robuster and larger; 2. each of 4th to 10th antennal joints highly longer than width (Pl. 2, fig. 4, 5.); 3. metasternum with a pair of trace-like tarsal grooves; 4. head impression much deeper and narrower; 5. pronotal rear angles much extended outwards and broader.

Agrypnus (s. str.) *scutellaris* (Candèze, 1893) comb. nov.

Takarajima (2♂, 26, 29. V. 1953, T. Nakane leg.)

Agrypnus (s. str.) *bipapulatus* (Candèze, 1865) comb. nov.

Takarajima (1♀, 29. V. 1953, T. Nakane leg.); Nakanoshima (2♀, 3–13. VI. 1953, H. Kôno & T. Nakane leg.).

Subfamily HEMIRRHIPINAE

Alaus berus Candèze, 1864

Nakanoshima (1♂ 1♀, 3–13. VI. 1953, H. Kôno leg.).

Subfamily MONOCREPIDIINAE

Aeoloderma agnata (Candèze, 1873)

Takarajima (1♂ 2♀, 29, 30. V. 1953, T. Nakane leg.).

Aeoloderma brachmana (Candèze, 1859)

Takarajima (1♂ 1♀, 29. V. 1953, T. Nakane leg.); Nakanoshima (1♀, 11. VI. 1953, S. Uéno leg.).

Subfamily AMPEDINAE

Procraerus tsutsuii sp. nov. (Pl. 1, fig. 7; ♂)

♂. Body elongate, parallel-sided, moderately convex above. Shining, fuscous to dull brown, but the frontal carina, nasal area, mouth parts, pronotal margins (rarely whole pronotal disc), propleura, prosternum, basal and humeral area of elytra, most part of hind coxal plates, antennae and legs yellowish or paler than the ground colour, finely clothed with rather long yellowish pubescence on whole surface.

Head moderately convex above, frontal carina well defined and projecting roundly downwards, punctuation ocellate, coarse and dense, mandibles conspicuously and strongly bifurcate, eyes large but less prominent. Antennae slender but thick, fully reaching beyond rear corner of pronotum, dilated and slightly serrate from 4th joint, each with a median longitudinal smooth carina, but diminishing the lucidity and finally vanishing entirely from 7th, basal joint oblong, rather broad and its inner edge carinate, 2nd the smallest, somewhat cylindrical, 3rd a little longer than 2nd, subconical, 4th a little larger than 5th and much larger than 3rd, apical one oblong, broad but slightly narrower than the preceding. Pronotum a little shining, shallowly ocellate-punctate by large punctures, of which interspace clearly shagreened, much denser than those of head, slightly narrowing from base to apex and side margins strongly bent downwards to the under side of eyes in side-views, hind angles extending backwards and their tip acuminate and bearing a long hair, with a distinct carina, median longitudinal impression distinct near base only. Scutellum elongate tongue-shaped, visibly convex especially on frontal half, punctuation minute and interspace rather shagreened. Elytra elongate, delicately punctate-striate, intervals a little convex above, sparsely and finely punctate by rasp-like punctures, apex conjointly rounded, not truncate nor emarginate.

Prosternum punctate as head but in middle much sparser, remarkably convex longitudinally near procoxae, process projecting backwards, suture distinctly double and impunctate, entirely closed. Propleura very shining, punctuation very much sparser (rather countable) and coarser than that of prosternum, a little depressed on anterior corners and entirely impunctate and smooth on posterior ones. Metasternum distinctly and evenly punctate, with a median longitudinal furrow very shallow and somewhat evanishing anteriorly. Basal plate exceedingly projecting backwards at middle of posterior margin then slightly narrowing outwards. Punctuation of abdomen like that of metasternum, interstitial space of punctures smooth but with fine, weak and transverse creases under microscope (×72). Legs moderate, 1st to 4th tarsal joint diminishing in length, claws simple.

♀. Rather robuster than male. Body coloration similar to male, but the prothorax usually clear reddish yellow on whole surface.

Antennae short and not reaching base of pronotum. Pronotum distinctly convex above, the length nearly equal to or a little longer than the width.

Closely allied to *Procraerus helvolus* (Candèze) (comb. nov.) but easily separated from the latter by the antennae much robuster and broader (Pl. 2, fig. 1, 2.), elytra usually black to fuscous and not yellow, and male genitalia (Pl. 2, fig. 8.) differently formed.

Body length: ♂ 3.5–4 mm., ♀ 4–4.5 mm.; width: ♂ 3/4–1 mm., ♀ 1–1 1/3 mm.

Holotype: 1 ♂ Nakanoshima, 6. VI. 1953, T. Nakane leg.; allotype: 1 ♀ ditto; paratypes: 120 ex. Nakanoshima, 3–13. VI. 1953, S. Miyamoto & T. Nakane leg.

Xanthopenthes konoi sp. nov. (Pl. 1, fig. 2: ♀, fig. 3: ♂)

♂. Elongate, subparallel, rather flat but the pronotal disc a little convex above, rather opaque especially on elytra.

Wholly yellowish or brownish testaceous, with the exception of apical most of mandibles, frontal crest, side margins and posterior carinae of pronotum, border edges of thoracic sterna and pleura, basal border of elytra and scutellum more or less blackish or brownish, moreover carination on each antennal joint, scutellum, meso- and metathorax and abdomen somewhat darker in colour. Rather densely covered with long yellowish hairs, but antennal joint, palpi and abdominal sternite (except 5th very densely clothed with rather long hairs especially on rear border) more shortly pubescent. Head a little convex above, frontal crest well defined, arcuate-produced forwards, between eyes lateral margins highly curved and the narrowest part (at middle) hardly twice of each eye in width, punctures various-sized, not ocellate, coarsely and densely cribrate-punctate, interspace feebly shagreened. Mandibles conspicuously large and curved, with an acuminate apex and with a distinct but not so sharp tooth near middle above. Palpi slender, apical joint the longest, securiform, with its apical margin very narrowly laminate and somewhat transparent. Nasal area broad, vertical, with a median longitudinal impunctate elevation, roughly sculptured and rugose. Antennae (Pl. 2, fig. 3) slender and much longer than head and prothorax combined together and about a half as long as body or somewhat more, slightly serrate from 3rd joint, gently and faintly increasing in length from 3rd to 11th, each of 3rd to 7th with a median fine longitudinal carina but diminishing the lucidity progressively, 2nd the smallest and globose, basal joint a little stout. Pronotum a little longer than wide, with a feeble median longitudinal impression evanescent anteriorly, hind angles less acutely projecting backwards, having two distinct carinae and the outer carina pretty longer than the other, punctuation a little coarser, sparser and fairly shallower than that of head, especially on basal part, interspace exceedingly shagreened. Scutellum tongue-shaped, a little convex. Intervals of elytral striae granulated, apex slightly truncate but hardly perceptible. Eyes very large and semicircularly prominent laterally.

Prosternum rounded anteriorly and posterior part moderately convex longitudinally, with a median impunctate line, punctuation a little stronger than that of pronotum, interspace feebly shagreened on frontal half and smooth on the other, process behind procoxae suddenly bent inwards obliquely and then horizontally extending backwards, with a pair of carinations between procoxae, each side conspicuously and longitudinally grooved, apex simply acuminate, prosternal sutures closed and double, very minutely and sparsely punctulate. Propleura punctate alike the prosternum but more or less coarser and sparser, and punctuation on lateral border denser and smaller, interspace weakly shagreened, rear margin impunctate. Meso- and metathorax less coarsely punctate in comparison with prosternum and the punctures, in general, even and visibly increasing in density and diminishing in size towards hind verge on metasternum, with a median longitudinal impression gradually shallowed frontally. Basal plate of hind coxae (Pl. 2, fig. 18.) bluntly jutting backwards at interior one third of rear edge. Punctures on abdominal sternites oblong in shape, even, clearly sparser than that of metasternum, interspace finely shagreened, 5th sternite with a large conspicuous impression on each side near middle of lateral margin. Legs simple, slender.

Male genitalia (Pl. 2, fig. 7.) peculiarly formed from that of the general shape of Ampedinae-species, much narrower and lateral lobes without any projection and position of hairs different.

♀. Somewhat darker than male in general coloration, except each rear corner of pronotum being pale yellowish.

A little more convex than male above, especially on pronotum. Eyes less prominent, the narrowest width between them broader than twice of the width of an eye. Antennae short, barely equal to head and pronotum combined together in length. Abdominal 5th sternite simple and having no impression.

Body length: 12 mm.; width: 2.9 mm.

Holotype: 1 ♂ Takarajima, 26. V. 1953, S. Uéno leg.; allotype: 1 ♀ ditto, 25. V. -2. VI. 1953, H. Kôno leg.

According to the literature the present species resembles *Ganoxanthus bicarinatus* Lewis (comb. nov.), but the punctuation on head is not ocellate, the body is not shining but rather opaque and the apex of each elytron is feebly truncate. It is also closely similar to *X. robustus* Miwa and *X. granulipennis* Miwa, but easily can be separated from them by much denser punctuation on whole surface especially on pronotal disc, the pronotum is much elongate and the apex of elytra is not distinctly truncate.

The present species probably should be placed between the species of *Ganoxanthus* and of *Xanthopenthes* on account of the form of elytral apex being feebly truncate (namely microscopically) or sometimes hardly perceptibly so in the female, therefore the validity of the differentiation between both genera is very doubtful.

Subfamily HYPOLITHINAE

Quasimus cordatus Miwa, 1934

Nakanoshima (30 ex. 4–13. VI. 1953, S. Miyamoto, T. Nakane & S. Uéno leg.)

It is closely allied to *Q. minutissimus* Germar, but the carination on the scutellum is different and the scutellum itself transverse and semicirculary formed.

Subfamily CARDIOPHORINAE

Paracardiophorus tokara sp. nov.

In the outline this new species is the very image of *P. pullatus* or *P. sequens* of Candèze, but may be separated from them in the following points:

1. usually legs and basal joints of antennae (one, at times two or three and sometimes three together with base of 4th too) reddish yellow or brown; 2. pronotal anterior border smooth, a little raised and its hind limit crenulate by a row of shallow fovea which are opened posteriorly; 3. punctuation of pronotum fine, various-sized and a little sparser; 4. anterior fovea of scutellum much shallower; 5. intervals of elytra plainly convex above; 6. basal plates of hind coxae not enlarged backwards at middle (Pl. 2. fig. 16, 17.); 7. in male genitalia inside projection on apical portion of lateral lobes very different in shape as well as in position (Pl. 2. fig. 9: *tokara*, fig. 10: *pullatus*.).

Body length: 5–6 mm.; width: 1.5–2 1/3 mm.

Holotype: 1♂ Takarajima, 31. V. 1953, T. Nakane leg.; allotype: 1♀ ditto, 28. V. 1953, T. Nakane leg.; paratypes: 34 ex. ditto, 26–31. V. 1953, T. Nakane leg., 1 ex. ditto, 30. V. 1953, S. Uéno leg.

Subfamily MELANOTINAE

Melanotus regalis Candèze, 1860 (Pl. 1, fig. 4.)

Nakanoshima (1♂ 3♀, 5–9. VI. 1953, S. Miyamoto, T. Nakane & S. Uéno leg.).

Melanotus loochooensis Miwa, 1929 (Pl. 1, fig. 6.)

Nakanoshima (1♀, 25. V. 1953, T. Nakane leg., 6♂ 10♀, 3–13. VI. 1953, T. Nakane, H. Kôno & O. Tsujimoto leg.). Takarajima (1♀, 26. V. 1953, T. Nakane leg.).

Melanotus tamsuyensis Bates, 1866 (Pl. 1, fig. 5.)

Takarajima (1♀, 29. V. 1953, S. Miyamoto leg.).

Melanotus umber Bates, 1866?

Takarajima (1♀, 29. V. 1953, T. Nakane leg.).

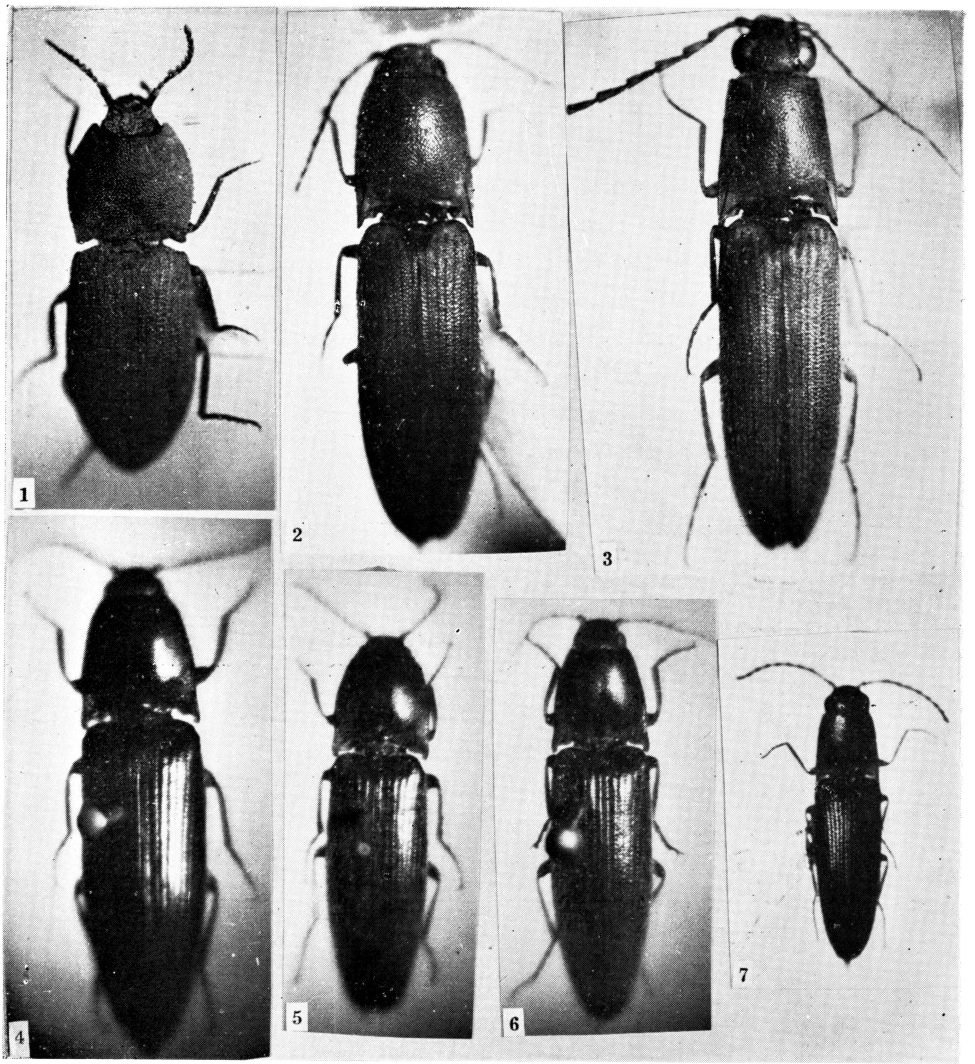
Melanotus legatus Candèze, 1873

Nakanoshima (4♂, 3, 13. VI. 1953, T. Nakane & H. Kôno leg.).

EXPLANATION OF PLATE. 1.

Fig. 1. *Cryptolacon miyamotoi* sp. nov. paratype.
2. *Xanthopenthes konoi* sp. nov. ♀. allotype.
3. *X. konoi* sp. nov. ♂. holotype.
4. *Melanotus regalis* Candèze.
5. *M. tamsuyensis* Bates.
6. *M. loochooensis* Miwa.
7. *Procraerus tsutsuii* sp. nov. ♂. paratype.

Fig. 8–10. Elytral sculpture.
8. *Cryptolacon miyamotoi* sp. nov. paratype.
9. *C. scrofa* (Candèze) comb. nov.
10. C. *musculus* (Candèze) comb. nov.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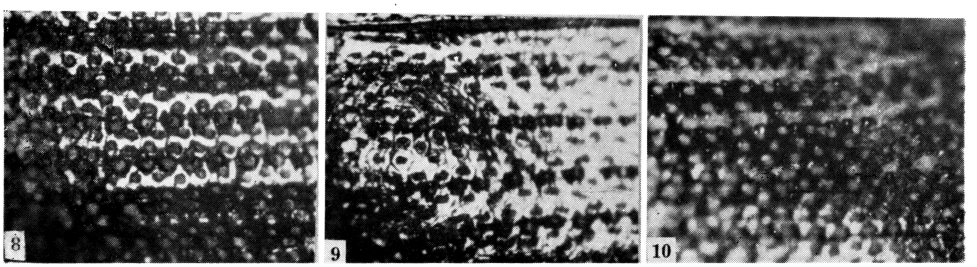
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EXPLANATION OF PLATE. 2.

Fig. 1–5. Right antenna in upper view.

1. *Procraerus tsutsuii* sp. nov. (left: ♂; right: ♀)
2. *P. helvolus* (Candèze) comb. nov. („)
3. *Xanthopenthes konoi* sp. nov. („)
4. *Agrypnus* (*Sabikikorius*) *arenicola* sp. nov. ♀
5. *A.* (*S.*) *fuliginosus* (Candèze) comb. nov. ♀

Fig. 6–9. Male genitalia.

6. *Cryptolacan miyamotoi* sp. nov. paratype.
7. *Xanthopenthes konoi* sp. nov. holotype.
8. *Procraerus tsutsuii* sp. nov. paratype.
9. *Paracardiophorus tokara* sp. nov. paratype.

Fig. 10. Apex of right lateral lobe in *Paracardiophorus pullatus* and *P. sequens.*

Fig. 11–12. Prosternal process in lateral view.

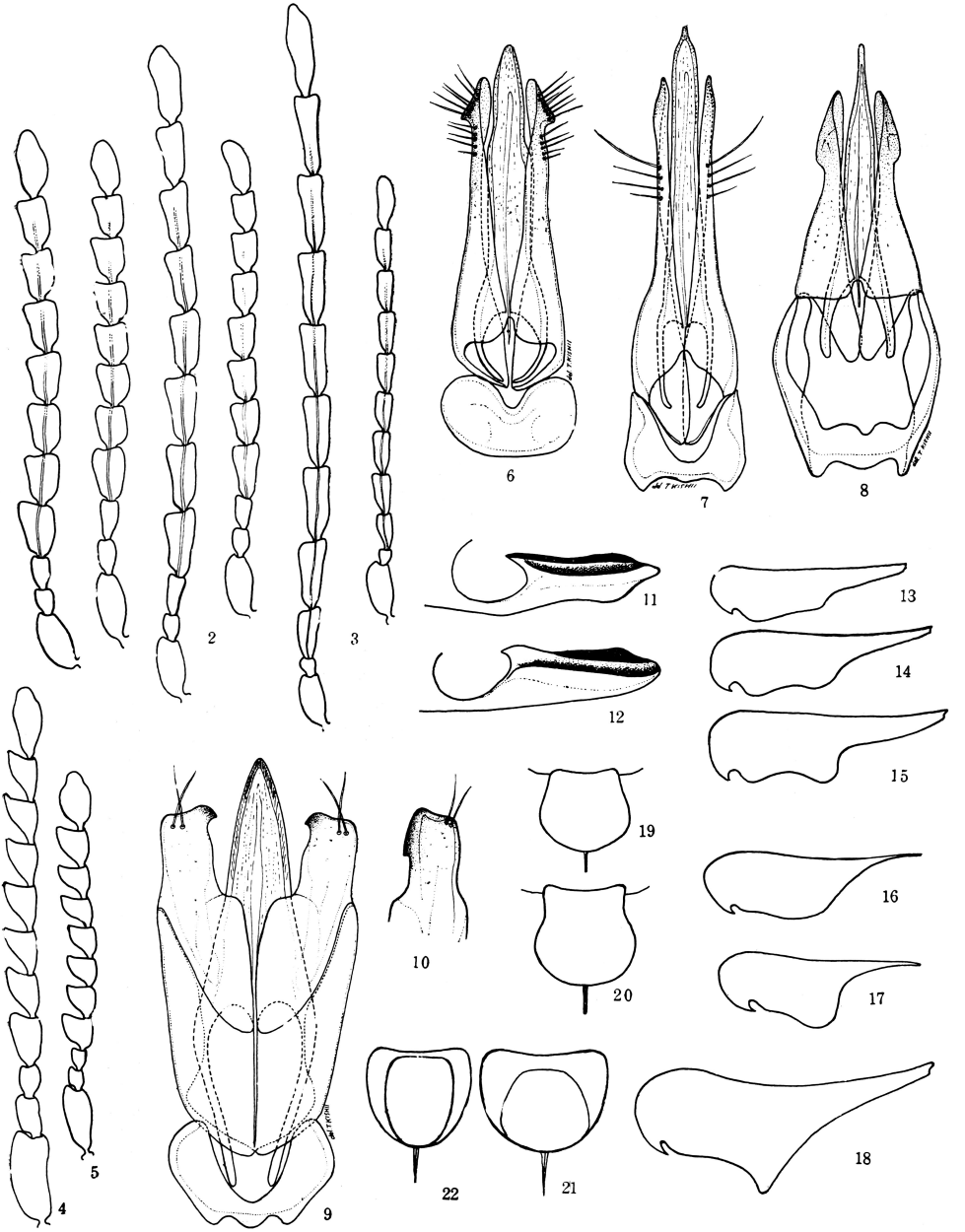
11. *Cryptolacon miyamotoi* sp. nov. paratype.
12. *C. scrofa* (Candèze) comb. nov.

Fig. 13–18. Right basal plate of hind coxa in ventral view.

13. *Cryptolacon miyamotoi* sp. nov. paratype.
14. *C. scrofa* (Candèze) comb. nov.
15. *C. musculus* (Candèze) comb. nov.
16. *Paracardiophorus tokara* sp. nov. paratype.
17. *P. sequens* (Candèze)
18. *Xanthopenthes konoi* sp. nov. ♂

Fig. 19–21. Scutellum in dorsal view.

19. *Cryptolacon scrofa* (Candèze) comb. nov.
20. *C. miyamotoi* sp. nov. holotype.
21. *Quasimus cordatus* Miwa
22. *Q. minutissimus* Germar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