

Studies on the Buprestidae (Coleoptera) of Asia

3) Notes on *Dicerca corrugata* and Description of its New Relative

Takaharu HATTORI

1–35–23, Nakazawa, Asahi-ku, Yokohama, 241–0814 Japan

and

Kôyô AKIYAMA[†]

15–10, Daido 2-chôme, Kanazawa-ku, Yokohama, 236–0035 Japan

Abstract *Dicerca corrugata* FAIRMAIRE, 1902 from Yunnan Province of Southwest China is reviewed, and its relative, *Dicerca kurosawai* sp. nov. is described from Taiwan. The latter resembles the former in general appearance, but is distinguished by having the male tibiae without spines at the inner sides, and the median carina of the pronotum not reaching the anterior margin.

MIWA and CHÛJÔ (1940) noted that “Dr. JAN OBENBERGER also introduced to us the Formosan species surely corresponds to *D. corrugata*.” Since then, *Dicerca corrugata* FAIRMAIRE, 1902 has been considered to occur in Taiwan (Formosa), other than Yunnan Province in Southwest China in which lies the type locality of the species.

We had an opportunity to examine several specimens of the so-called *D. corrugata* collected in Taiwan. As the result, it has become apparent that the Taiwanese specimens belong to a new species closely related to *D. corrugata*. In this paper, we are going to redescribe true *D. corrugata* and describe the new species under the name of *D. kurosawai* sp. nov.

Before going further, we wish to express our sincere thanks to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo for his kindness in critically reading the original manuscript and offering invaluable suggestions, and to Dr. Yoshihiko KUROSAWA, former director of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo, for his constant guidance throughout this study. Thanks are also due to Mr. Hyôji TORIGAI of Gifu Prefecture and Mr. Chinchi LUO of Nantou Hsien, Taiwan, and Dr. Zhong-Lian PENG of Jiangxi Province, China, for their kind offer of valuable materials, and to Dr. Sadahiro OHMOMO of Ibaraki Prefecture, for his kind loan of material used in this study. We are also grateful to Dr. Svatopluk BÍLÝ, National Museum, Praha, for his kind confirmation of the identity of the redescribed specimens.

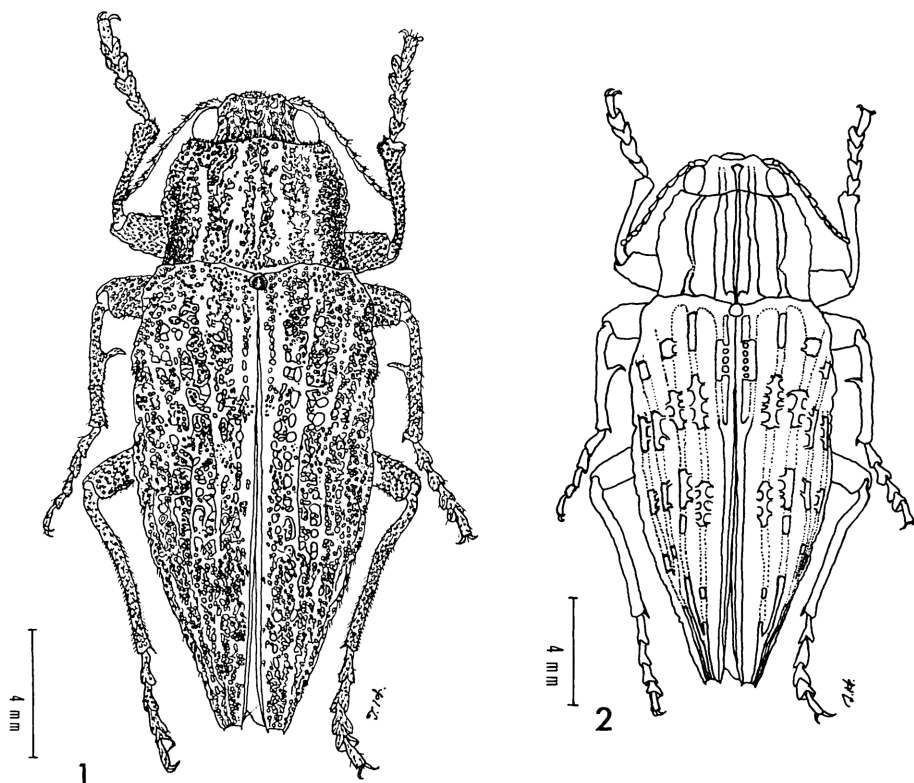
Dicerca corrugata FAIRMAIRE, 1902

(Figs. 1-9)

Dicerca corrugata FAIRMAIRE, 1902, Bull. Soc. ent. Fr., **1902**, p. 268. — RICHTER, 1952, Fauna SSSR, Nasekomye Zhestkokrylye, **13** (4), p. 132. — DESCARPENTRIES & VILLERS, 1963, Revue fr. Ent., **30**, p. 263. — Y. KUROSAWA, 1970, Coleopt. News, Tokyo, (8), p. 2. — TÔYAMA, 1986, Gekkan-Mushi, Tokyo, (189), p. 18, pl. 1, fig. 8.

Male. Body robust, convex and attenuate posteriorly; head, pronotum, elytra and ventral surface black with cupreous shimmer though punctate parts are cupreous with cuperous shimmer; antennae cupreous though the 4th to the last segments are black at each posterior lower corner; legs cupreous except for tarsi which are black with purplish shimmer.

Head narrower than the base of pronotum; vertex broad, declivous anteriorly, with a median carina reaching the middle of frons, the carina interiorly with a narrow groove, and with a pair of broad costae beside the carina; frons feebly convex in upper



Figs. 1-2. *Dicerca corrugata* FAIRMAIRE, ♂; 1, dorsal view; 2, costal parts in dorsal view. Notes for Fig. 2: Dotted lines represent costal parts; solid lines represent elevated parts of elytra, and costal parts of head and pronotum.

half and feebly concave in lower half; eyes moderately convergent above; clypeal suture almost carinate, feebly arcuate upwards; clypeus transverse, about 6.1 times as wide as long, with anterior margin arcuately emarginate though shallowly excavated at the middle; epistome visible; each antennal cavity large, surrounded by trapezoidal margin which is elevated except for the bottom; a small cavity with a tubercle present on upper lateral corner of the former trapezoidal margin; surface coarsely punctate, the punctures on frons and vertex reticulate and confluent, those on clypeus small, each with a short semirecumbent whitish seta.

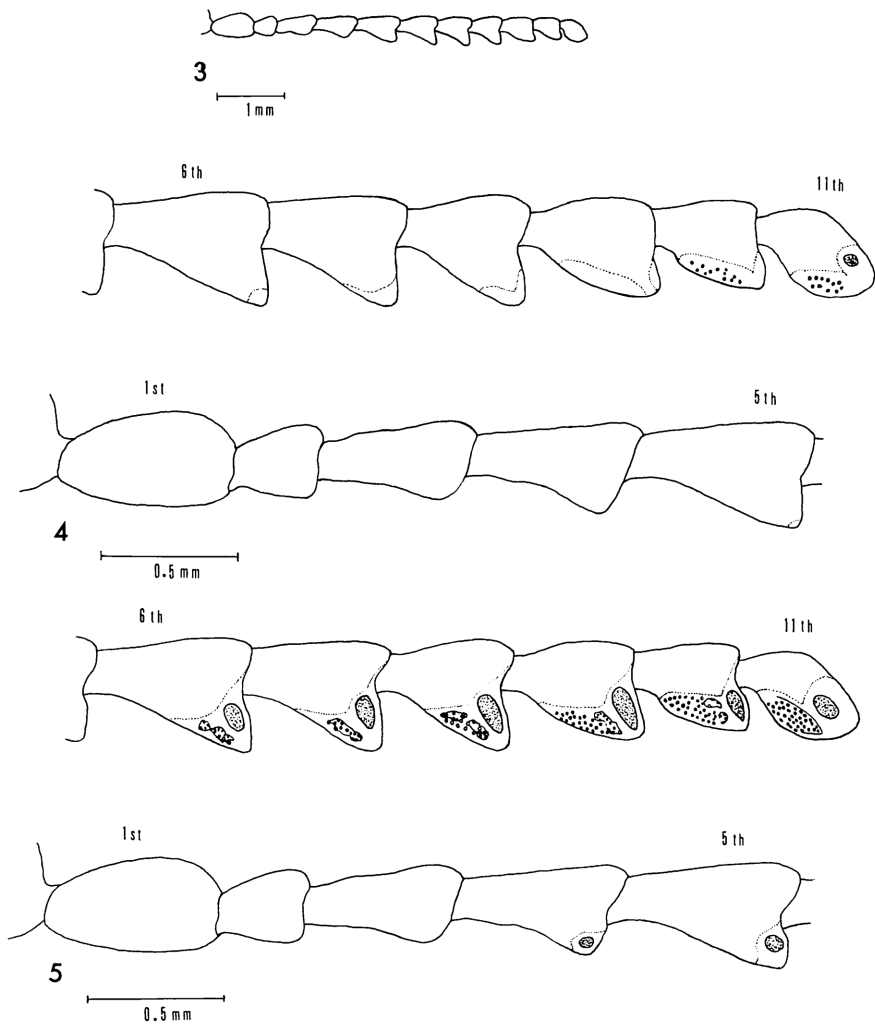
Antennae compact, reaching anterior 1/3 of pronotum, and serrate from 4th segment; 1st segment fusiform, 2nd short and globular, 3rd obconical, 4th subtriangular, 5th to 10th each triangular, 11th parallelogrammatic; length (width) of each segment as follows (the length is of the stem part of each segment and the width is the maximum width): 6.0 (3.3), 3.0 (2.3), 5.3 (2.3), 6.0 (3.0), 6.0 (3.2), 5.3 (3.3), 5.0 (3.3), 4.3 (3.3), 4.0 (2.7), 3.7 (2.3), 3.7 (2.3) (in 0.1 mm); sensory pores concentrated in each socket on apico-internal surface of each of the 4th to apical segment, and on apico-external surface of the apical one; different kind of pores scattered on inner surface under 6th to apical segments and on outer surface also under 10th and apical segments (they are probably sensory pores).

Pronotum transverse, about 1.5 times as wide as long, widest just at the middle; anterior margin 0.72 times as wide as posterior margin, bisinuate with median lobe broadly and feebly produced; posterior margin bisinuate, obtusely produced at middle, shallowly and arcuately emarginate at lateral 2/3 from ante-scutellar part; posterior angles rather acute; sides sinuate, convergent from base to basal 1/4, then gradually, arcuately divergent to the widest part and arcuately convergent again to anterior angles; anterior angles acute in dorsal view and obtusely produced in lateral view; marginal costae elevated, sinuate, and feebly arcuate downwards at anterior 1/3 and arcuate upwards at basal 1/5 in lateral view; prehumeral costae above marginal costae arcuate from base to anterior 1/3, and not conjoint marginal costae; disc convex, obliquely impressed from posterior 1/3 to ante-lateral direction on lateral 1/2; median carina entire; two longitudinal costae on each side present at lateral 1/5 and 7/12 from ante-scutellar part, respectively; surface irregularly punctate except on costae and carina, the punctures reticulate and confluent, becoming coarser and more reticulate towards the lateral sides, each with a short semi-recumbent whitish seta; ante-scutellar part transversely with two foveoles.

Scutellum small, wider than long, trapezoidal with round corners, and depressed in the middle.

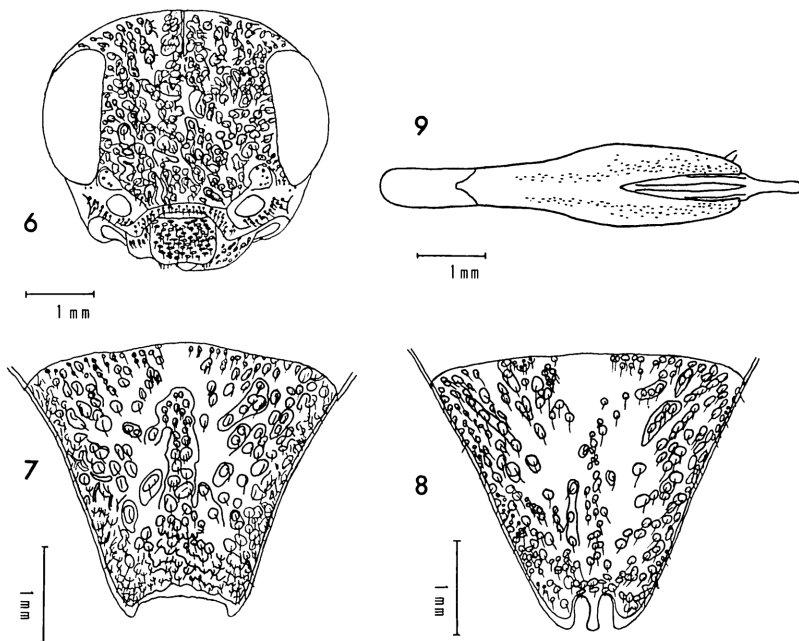
Elytra elongate, robust, 3.5 times as long as pronotum, 1.3 times as wide as pronotum, 1.9 times as long as the widest part across anterior 1/5 of elytral length¹⁾; humeri obtusely angulate; sides expanded by humeral prominences at basal 1/14, then linearly expanded to the widest part which is arcuate, then feebly sinuate and feebly

1) The length of the elytra is measured from the tip of the scutellum to the apices.



Figs. 3–5. *Dicerca corrugata* FAIRMAIRE, ♂; 3, left antenna; 4, outer side of left antenna; 5, inner side of left antenna. Notes for Figs. 4–5: 1st, 5th, 6th and 11th denote the segment numbers.

convergent to the middle, and sinuously convergent to apices which are furcate; each apex obliquely truncated with a spine at each angle; sutural margins entirely costate and elevated from middle to apices; outer margins costate from bases to apices and serrate from basal 2/5 to apices by punctual depression; each basal lobe arcuately produced, feebly, obtusely angulate at basal emargination of pronotum, and transversely depressed in outer half just behind basal margin; each elytron with five costae as follows: all traceable, and elevated costal parts distributed on four transverse areas, obsolete on the remaining area by uniformly distributed punctures, 1st transverse area situ-



Figs. 6–9. *Dicerca corrugata* FAIRMAIRE (6, 7 & 9: ♂), (8: ♀); 6, head in frontal view; 7–8, last visible abdominal sternite; 9, male genital apparatus in dorsal view.

ated at basal 1/10 (1/10 of elytra in length) though disappearing in two specimens, 2nd situated at basal 1/4 (1/7 of elytra in length), 3rd present just behind the middle (1/10 of elytra in length), 4th emerged from apical 1/4 and continuing to apex; 1st costa conjoint with sutural margin at basal 2/7, 2nd running from base to apex, though obsolete by punctures at three or four parts, 3rd running from base to apical 1/20 (conjoint with 2nd there) though obsolete at three or four parts, 4th running from humeral prominence to apical 1/4 (almost conjoint with 5th there) though obsolete from the beginning to basal 1/6 by reticulated punctures and also obsolete at three or four parts behind there, 5th running from underside of humeral prominence to apex though obsolete from the beginning to basal 2/7 by reticulated punctures and also obsolete at three parts behind there, 3rd, 4th and 5th costae ridged in the transverse area; five intercostal intervals present as follows: inner two traceable though not costate, the remaining outer three inconspicuous by uniformly distributed punctures, 1st running from base to apex, 2nd running from base to the conjoint part of 2nd and 3rd costae, 3rd running from humeral prominence to apical 1/5, 4th running from underside humeral prominence to apical 1/3 though obsolete by reticulated punctures, 5th running from just the middle to apical 1/4 though obsolete by reticulated punctures and invisible from above by inclined side; surface scattered with round punctures all over, which become coarser, denser and more confluent towards sides, each with a semi-recumbent whitish

seta; punctures on striae conspicuous, without setae, deep, coarse, elliptical in the transverse area, and obsolete in the remainder.

Prosternum convex, gradually planate from sides to the middle, with linear anterior margin; prosternal process longitudinally and shallowly sulcate on median line; sides feebly narrowed by frontal coxae, smoothly produced behind them, then attenuate to apex which is rounded and arcuately emarginate at both sides; surface confluent and reticulately punctate, the punctures becoming coarser and more confluent towards sides, clothed with long recumbent whitish hairs.

Mesosternum divided, reticulately punctate.

Metasternum reticulately punctate; median sulcation entire and becoming narrower towards apex with median longitudinal carina, which is also provided with a median longitudinal groove behind transverse line.

Middle coxae a little more widely separated from each other than in anterior ones. Posterior coxae arcuately emarginate at posterior margins and produced posteriorly at the lateral sides.

Abdomen longitudinally sulcate in the middle of 1st segment; last visible abdominal sternite trapezoidally emarginate at apex and the bottom shallowly excavated; surface reticulately and confluent punctate, more reticulate and more confluent towards sides, each puncture with a rather long recumbent whitish hair.

Legs rather long, robust, densely clothed with whitish setae; all femora fusiform; protibia straight, dilated externally at apex; mesotibia straight with a thin plate at inner side of anterior 2/5, which looks like a spine in dorsal view, and small spines arranged behind the plate; metatibia arcuate interiorly; pro- and mesotarsal segments short, almost equal in length to one another; metatarsal segments rather long with the length order as 1st > 2nd > 3rd > 4th.

Male genital apparatus slender; parameres arcuately emarginate besides central prominence at base, then feebly and arcuately expanded on both sides, with each apex curved inwards and obtusely angulate at inner angle; aedeagus linearly produced towards apex which is rounded, sinuate at both sides.

Female. Pronotum with 3rd costa emerged at lateral 4/5 from ante-scutellar part on each side. Prosternum with prosternal process flattened though sulcate at apex, and sparsely punctate; each puncture with a rather long hair. Abdomen with last visible abdominal sternite rounded at apex with a pair of U-shaped emarginations, with the intermediate lobe rounded at the tip. Legs with mesotibia feebly sinuate on inner side, widest at anterior 3/7, and bearing small spines arranged behind the widest part.

Length: 17.2–19.7 mm (mean 18.4 mm) (♂); 20.6 mm (♀).

Width: 6.8–7.8 mm (mean 7.1 mm) (♂); 7.7 mm (♀).

Specimens examined. 1 ♂, Yunnan Prov., China: 1 ♂, Heilong-tan, Yunnan Prov., China; 1 ♂, China; 1 ♀, Simáo, Yunnan Prov., China, 4–VIII–1979.

Host plant. Unknown.

Notes. Dr. Svatopluk BÍLÝ kindly identified a pair of the specimens used for our redescription of *D. corrugata* with the following comment: “Years ago I studied the

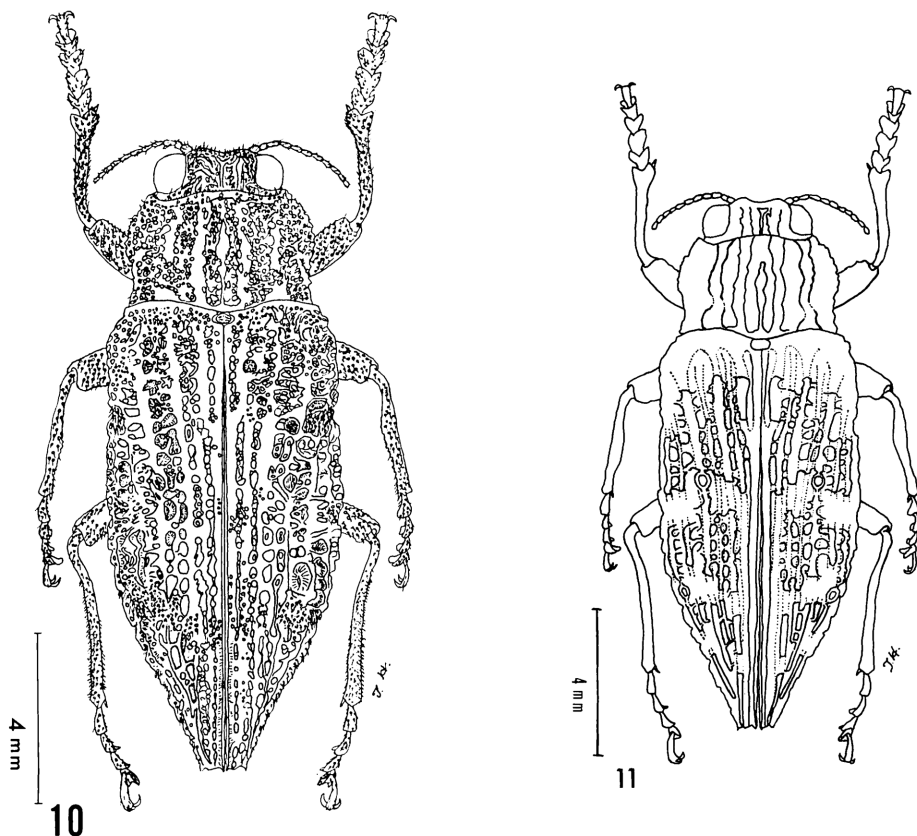
holotype of *Dicerca corrugata* in Paris and I had two specimens compared with the holotype. I can assure you, your specimens on photographs quite correspond with the holotype. So you can be sure they are well-determined.”

***Dicerca kurosawai* sp. nov.**

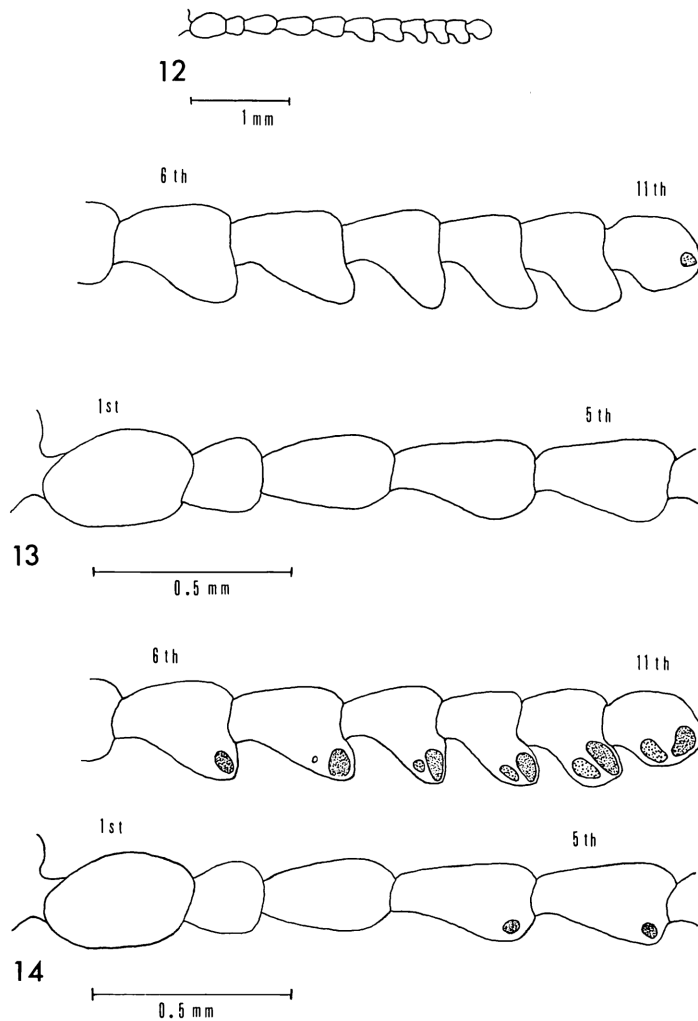
(Figs. 10–18)

Dicerca corrugata: MIWA & CHÛJÔ, 1938, Ent. Wld., Tokyo, 6, pl. 276, in No. 58; 1940, Nippon no Kôchû, Tokyo, 3, p. 63, pl. 7, fig. 9. — TÔYAMA, 1986, Gekkan-Mushi, Tokyo, (189), p.18, pl.1, fig. 9. [Nec FAIRMAIRE, 1902.]

Holotype (male). Coloration of body as in *D. corrugata*; head, pronotum and elytral surface as in *D. corrugata* though punctate parts of them, venter and antennae are cupreous with aeneous shimmer; legs with black tarsi which are provided with bluish shimmer.



Figs. 10–11. *Dicerca kurosawai* sp. nov., ♂, holotype; 10, dorsal view; 11, costal parts in dorsal view. Notes for Fig. 11: Dotted lines represent costal parts; solid lines represent elevated parts of elytra, and costal parts of head and pronotum.



Figs. 12–14. *Dicerca kurosawai* sp. nov., ♂, holotype; 12, left antenna; 13, outer side of left antenna; 14, inner side of left antenna. Notes for Figs. 13–14: 1st, 5th, 6th and 11th denote the segment numbers.

Head as in *D. corrugata*; clypeal suture rather carinate, obsolete, feebly arcuate upwards; clypeus transverse, about 5.5 times as wide as long, with anterior margin shallowly and arcuately emarginate; epistome invisible.

Antennae as in *D. corrugata*; 1st segment stout, 2nd short and globular, 3rd obconical, 4th subtriangular, 5th to 9th each triangular, 10th parallelogrammatic, 11th semicircular; length (width) of each segment as follows (the length is of the stem part of each segment and the width is the maximum width): 3.5 (2.3), 1.9 (1.8), 3.3 (1.5), 3.5 (1.9), 3.5 (1.9), 3.0 (2.1), 2.8 (2.0), 2.5 (2.3), 2.1 (2.3), 2.0 (2.1), 2.4 (1.9) (in 0.1 mm); different kind of sockets visible on inner surface of the 7th to apical segments

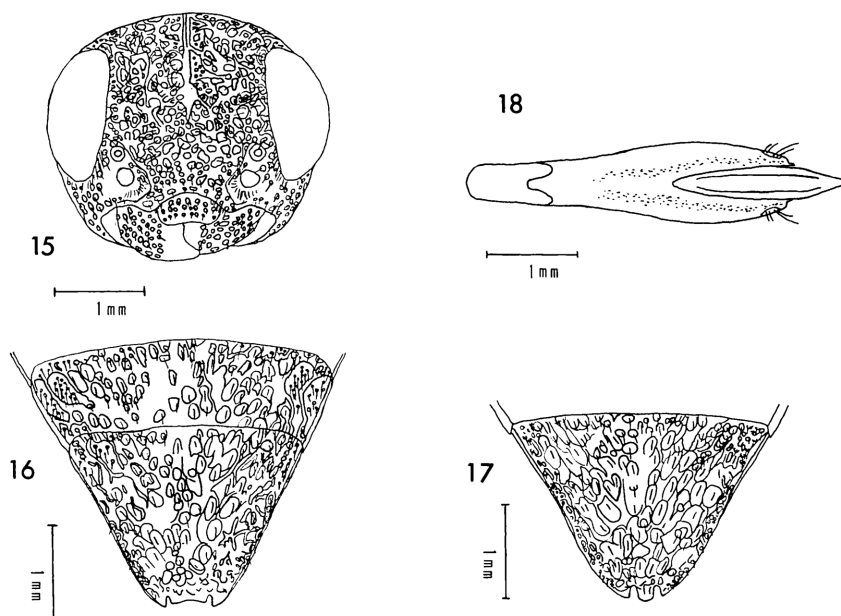
(probably formed by the sensory pores).

Pronotum as in *D. corrugata*, about 1.6 times as wide as long, widest at $2/3$ from base and at the base; anterior margin 0.67 times as wide as posterior margin, bisinuate with median lobe broadly produced and truncated at middle; posterior margin bisinuate, arcuately produced at middle; sides as in *D. corrugata* though feebly convergent from base to basal $1/4$; anterior angles as in *D. corrugata* though arcuately produced in lateral view; marginal costae obviously elevated, sinuate, and arcuate downwards at anterior $1/3$ though straight in basal $1/5$ in lateral view; prehumeral costae above marginal costae arcuate upwards, though visible from above only from basal $1/6$ to $1/3$ and obsolete before and behind there; median carina running from base to anterior $1/4$; two longitudinal costae on each side present at lateral $1/4$ and $3/5$ from ante-scutellar part, respectively.

Scutellum as in *D. corrugata* though transversely depressed in the middle.

Elytra as in *D. corrugata*, 3.6 times as long as pronotum, widest just at the middle of elytral length²⁾; sides feebly expanded by humeral prominences at basal $1/12$, then linearly expanded to the widest part which is arcuate, and sinuously convergent to apices which are furcate; each apex truncated with blunt spines at both angles; outer margins as in *D. corrugata* though serrate from middle to apices; each elytron with five costae as follows: inner three traceable though the outer two are interrupted and disappear in some places, and elevated costal parts distributed on three transverse areas, obsolete or disappearing on the remaining area, 1st transverse area situated at basal $1/4$ ($2/7$ of elytra in length), 2nd situated just behind the middle ($1/5$ of elytra in length), 3rd from apical $2/7$ to apex; 1st costa conjoint with sutural margin at basal $1/4$, 2nd running from base to apex though obsolete by punctures at two or three parts, 3rd running from base to apical $1/7$ though obsolete at two parts, and the anterior obsolete part decorated with roundly impressed spot at basal $1/3$, the spot provided with short whitish brush-like setae, 4th running from humeral prominence to apical $1/4$ though obsolete from the beginning to basal $2/7$ by reticulated punctures and disappearing at two parts behind there by confluent sculptures, 5th running from underside humeral prominence to apical $1/12$ though obsolete from the beginning to basal $1/4$ by reticulated punctures and disappearing at three parts behind there by confluent sculptures, and the middle disappearing part decorated with roundly impressed spot at apical $1/3$, the spot provided with short whitish brush-like setae, 3rd, 4th and 5th costae ridged in the transverse area; five intercostal intervals present as follows: inner two traceable and costate, outer three obsolete by confluent sculptures and disappearing in some places though faintly traceable in the obsolete places, 1st running from base to apex, 2nd running from base to apical $2/9$, 3rd and 4th running from humeral prominence to apical $1/4$, 5th running from underside humeral prominence to apex though invisible from above by inclined side, and a spot with short whitish brush-like setae at basal $2/9$ on lateral margin; surface scattered with round punctures mainly in basal and sutural

2) From the tip of scutellum to the apices.



Figs. 15–18. *Dicerca kurosawai* sp. nov. (15, 16 & 18: ♂ holotype), (17: ♀ allotype); 15, head in frontal view; 16–17, last visible abdominal sternite, with 4th sternite in Fig. 16; 18, male genital apparatus in dorsal view.

parts, the punctures becoming obsolete and more confluent towards lateral sides, each puncture with a semi-recumbent whitish seta; punctures on striae as in *D. corrugata* though conspicuous in 1st and 2nd transverse area, and longitudinally confluent towards sides.

Prosternum as in *D. corrugata*. Mesosternum as in *D. corrugata* except for punctuation which becomes coarser and more reticulate towards the sides. Metasternum as in *D. corrugata* though coarsely and reticulately punctate towards the sides.

Middle and posterior coxae as in *D. corrugata*.

Abdomen as in *D. corrugata*; last visible sternite rectangularly emarginate at apex with a pair of lateral notches at the bottom, which is shallowly excavated; 2nd, 3rd and 4th segments each with a pair of roundly impressed spots at anterior 3/10 of lateral sides, the spots being provided with brush-like whitish recumbent hairs.

Legs as in *D. corrugata*; mesotibia straight though bisinuate with the widest part at anterior 2/5 of inner side, and bearing small spines arranged behind the widest part.

Male genital apparatus as in *D. corrugata*; parameres with each apex acutely produced apicad at inner angle; aedeagus triangularly produced towards apex.

Female. Prosternum with prosternal process feebly depressed on median line. Abdomen longitudinally depressed in the middle of 1st segment; apex of last visible sternite as in *D. corrugata*. Legs as in *D. corrugata* except for mesotibia feebly bisinu-

ate with the widest part at anterior 2/5 in inner side.

Length: 12.5–15.0 mm (mean 14.0 mm) (♂), 15.6–16.6 mm (mean 16.0 mm) (♀).

Width: 4.8–6.0 mm (mean 5.5 mm) (♂), 6.3–6.6 mm (mean 6.4 mm) (♀).

Type series. Holotype: ♂, Shishanchi (1,400 m in alt.) near Kukuang, Taichung Hsien, Taiwan, 2–VII–1993. Allotype: ♀, same locality as the holotype, 23–VII–1994. Paratypes: 1 ♀, Yokohama harbor in Japan (collected from a log of Hinoki cypress by fumigation in Yokohama Plant Protection Station, which was imported from Keelung, Taipei Hsien, Taiwan), 22–IV~26–VII–1976; 1 ♀, Lalashan, Taoyuan Hsien, 20–VI–1986, Chinchí LUO leg.; 1 ♀, Nanshanchi, Nantou Hsien, 16–III–1990; 1 ♀, Tapan (1,800 m in alt.), Taichung Hsien, 21–VII–1990, Chinchí LUO leg.; same locality as the holotype: 1 ♀, 23–VII–1993, Hyôji TORIGAI leg.; 1 ♂, 2–VIII–1993; 2 ♂♂, 1 ♀, 22–VII–1996, Chinchí LUO leg.

The holotype and the allotype are deposited in the National Science Museum (Nat. Hist.), Tokyo. The paratypes are separately preserved in the collections of the authors.

Host plant. All the specimens from Shishanchi were captured on a stout trunk of a felled pine tree about 70 cm in diameter and 20 m in length. It is probable that the host plant belongs to the family Pinaceae.

Etymology. The specific name is given after Dr. Y. KUROSAWA who made many excellent contributions to the taxonomy of the Japanese and Taiwanese buprestid beetles.

Remarks. This new species is similar to *D. corrugata*, but can be distinguished from it by the following diagnostic features: 1) anterior margin of clypeus shallowly and arcuately emarginate, while in *D. corrugata*, it is arcuately emarginate though shallowly excavated at the middle, 2) antennae with different kinds of sockets on the inner surface of the 7th to the apical segments, while in *D. corrugata*, different kinds of pores are scattered on the inner surface of the 6th to the apical segments and also on outer surface of the 10th and the apical segments, 3) median carina of pronotum running from the base to anterior 1/4, though entire in *D. corrugata*, 4) each elytron with three traceable inner costae, with two roundly impressed spots provided with short whitish brush-like setae on basal 1/3 of 3rd costa and apical 1/3 of 5th costa, and with a spot with similar setae on basal 2/9 of lateral margin, while in *D. corrugata*, all costae are traceable without any roundly impressed spots provided with setae, 5) 2nd, 3rd and 4th abdominal segments each with a pair of roundly impressed spots with brush-like whitish recumbent hairs on anterior 3/10 of lateral sides, though roundly impressed spots are lacking in *D. corrugata*, 6) apex of last visible abdominal sternite rectangularly emarginate with a pair of lateral notches at the shallowly excavated bottom, while in *D. corrugata*, the apex is trapezoidally emarginate at the bottom, which is shallowly excavated without any notches (male), 7) mesotibia without thin plate as in *D. corrugata* (male), 8) parameres of male genitalia acutely produced at the apical inner angles, while in *D. corrugata*, they are rounded at apices and obtusely angulate at the inner angles.

Notes. The two species herein dealt with have unique characters as compared

with *D. aenea* (LINNÉ, 1761), the type species of the genus *Dicerca*, because scattered pores or additional sockets are visible on the antennae other than the ordinary sockets of sensory pores. These two species may be classified in a species-group different from that represented by the type species which possesses only the ordinary sockets of sensory pores on the antennae.

From the same antennal characters, the members of the genus *Dicerca* occurring in Japan and the adjacent countries are distinguished as follows: 1) *D. tibialis* LEWIS, 1893 from western Japan and China has additional sockets on the antennae, though they are weaker than in *D. kurosawai* sp. nov., 2) *D. nishidai* TÔYAMA, 1986 from the Tokara Group of the Ryukyu Islands also has scattered pores on the antennae, which are much more distinct than in *D. corrugata*, and 3) both *D. furcata* (THUNBERG, 1787) from Hokkaido of northern Japan, northern China, eastern Siberia and northern Europe and *D. unokichii* HATTORI, 1991 from central Taiwan have only the ordinary sockets on the antennae like *D. aenea* (LINNÉ, 1761).

要 約

服部宇春・秋山黄洋†：アジアのタマムシの研究。3) *Dicerca corrugata* とそれに近縁な台湾からの1新種。——中国云南地方から記載された *Dicerca corrugata* FAIRMAIRE, 1902 を再記載するとともに、台湾からそれに近縁な *Dicerca kurosawai* sp. nov. を記載した。この新種は、中国産の種とは、前胸背板の中央縦隆線が前縁に達しないこと、雄の中肢脛節の内縁に棘突起がないこと、上翅の第3と第5縦隆脈上に白毛を伴った紋があることなどによって区別される。

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