KIRBY'S TYPES OF NORTH AMERICAN CARABIDAE (COLEOPTERA).

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One of the earliest works on North American entomology is Part IV of John Richardson's *Fauna Boreali Americana* (1837) written by William Kirby and dealing entirely with insects. The larger part of the species mentioned therein were described for the first time.

Most of the material dealt with was collected during the expedition of 1825–1826, under the command of Sir John Franklin, and with Richardson as chief naturalist. But most of the entomological work was done by the assistant naturalist, Mr. Drummond, " to whose unrivalled skill in collecting, and indefatigable zeal, we are indebted for most of the insects . . . " (Richardson, 1829 : XVI). No exact dates or localities are given by Kirby for the different species, but the latitude in which they were found is often indicated. A map of the expedition route in 1825–26 (fig. 1), compiled according to Richardson (1829 : XIV–XVIII), may help to translate these statements into more accurate geographical areas. Thus, " lat. 65°," which occurs frequently, apparently means the region of Great Bear Lake, and " lat. 54°," still oftener used, the stations along River North Sasketchewan, where Drummond collected intensively.

When Kirby's work appeared the North American Coleoptera were very imperfectly known, for the most part only from the papers of Say and Dejean, and then mainly from the more southern regions of the Continent. It was therefore safe to assume that most of Kirby's new species were in fact new and his names consequently valid. For this reason several of the leading coleopterists who followed, in the first place John L. Leconte and G. H. Horn, attempted an interpretation of Kirby's species. In the years 1870–1875 Bethune published a complete reprint of the coleopterous part of Kirby's treatise in *The Canadian Entomologist*, and added notes on the opinion of that time, i.e., of Leconte and Horn, as to the taxonomic position of every species. At the end of this serial reprint, in 1876, Horn summarised his opinion on the Kirby species, in many points different from that given by Bethune. Horn had an opportunity of studying the Kirby types in London, and so did Leconte on two occasions. Two papers by the last-named (1870, 1873) gave his interpretation of the more or less dubious species. Later coleopterists, particularly T. L. Casey, have also studied and revised the Kirby species. The catalogues of Leng (1920, with supplements) and Junk and Schenkling (Csiki, 1927–1933) summarise the present position.

In the Carabidae Kirby listed and described 92 species, no less than 62 as new. In spite of the revisions by later authors mentioned above, several of these have remained uninterpreted or at least doubtful. I therefore decided to re-examine the Kirby types of Carabidae and for that purpose spent ten days at the British Museum (Natural History), in August, 1952. Mr. E. B.

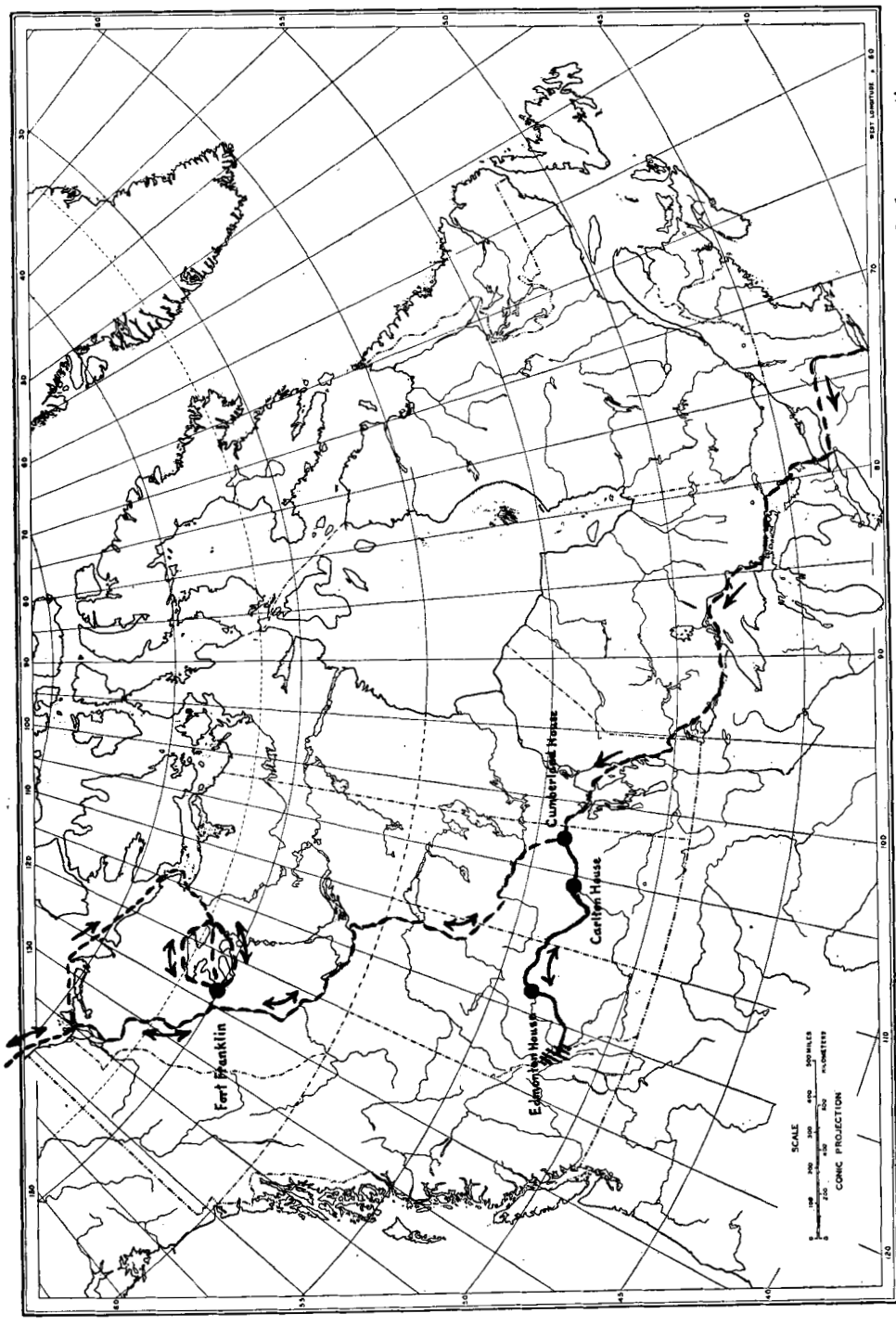

FIG. 1.—Map showing the route of the Franklin expedition in 1825-26. Drummond's separate journey marked as a continuous line. Main collecting stations indicated.

Britton, in charge of the Coleoptera, did everything in his power to help me and, in fact, original specimens of all the 62 Kirby species were found, some of them defective, but none to such a degree as to prevent a reliable identification.

Kirby, like his contemporaries, did not designate type specimens. This was done later by some member of the British Museum staff: most of the original specimens of Kirby species have been marked " types " or " cotypes." These designations, however, cannot be accepted without careful comparison with the orginal description, e.g., in the case of *Cymindis marginatus* and *Trechus similis* the wrong specimen of two has been selected as " type."

In the following account the species are listed in the same order and under the same name as in Kirby's treatise.

If not otherwise stated all Kirby specimens are labelled " North America " only.

Cicindela proteus. Type ♂ and 1 ex. " var. b," both = *duodecim-guttata* Dej., as generally accepted. The penis of the type shows the characteristic outer form and complicated inner armature of the species.

C. albilabris. Type ♂, " Nova Scotia," = *longilabris* Say, the black non-metallic main form, as generally accepted.

Cymindis marginatus. 2 ♂, the paler ex. (with uniformly brownish elytra) labelled " type," which is wrong according to the description. Both = *cribricollis* Dej. The asymmetric penis of the " type " is very characteristic, and also the inner armature. Leconte (1873) had already established the synonymy here given, but Leng (1920) listed *marginatus* Kirby as a separate species until, by a mistake, in Suppl. III (1933) it was made a synonym of *brevipennis* Zimm. (*marginata* Chd., *nec* Kby.).

C. unicolor. Type ♀, immature, = *unicolor* auct. (*hudsonica* Lec.).

Sericoda bembidioides. Type ♀ = *Agonum* (*Agonodromius*) *bembidioides* auct. (*cicatricosum* Motsch.).

Calosoma frigidum. Type ♀ = *frigidum* auct.

Helobia castanipes. 1 immature ♀, very defective (antennae, except the first two segments, and abdomen lacking), is no doubt the type although not so marked. The prothorax shows that it is *Nebria moesta* Lec. 1850 (*labradorica* Csy. 1920), and Kirby's name is valid. This form is now regarded as a subspecies of the palaearctic *gyllenhali* Schh. (Bänninger 1925 : 261, 279; Holdhaus and Lindroth 1939 : 133–134) and has nothing to do with *sahlbergi* Fisch.

Chlaenius impunctifrons. Type ♂ = *pennsylvanicus* Say, as generally accepted.

C. quadricollis. Type ♀, " Canada," = *tricolor* Dej., as generally accepted. The prothorax is a little broader than normal and the blue colour of the elytra has almost disappeared, but the labrum is just visibly emarginate in front and it therefore cannot be *brevilabris* Lec., as originally assumed by Leconte (1870 : 397 ; cfr. 1873 : 325).

C. cordicollis. Type ♀; a ♂, labelled " Canada," is probably a cotype. Both belong to *leucoscelis* Chevr. subsp. *cordicollis* (*sensu* Darlington 1935). The profemur of the ♂ specimen is not angulated. Casey (1920 : 293) regarded *cordicollis* as specifically distinct, and, in fact, the penis of the two forms is so different that this must be so (fig. 2).

Agonum picipenne. Type ♀ = *thoreyi* Dej. (*gemellum* Lec.). "Var. b," 1 ex. without head and prothorax, is probably the same. "Var. d," ♀ = *gratiosum* Mnh. (*lene* auct. *nec.* Dej., *ruficorne* Lec. *nec* Gze.), according to the description, also "var. c," which was not represented in the collection. The interpretation of "var. c et d" is generally accepted (cf. Leconte 1873 : 323 ; Horn 1876 : 128), but the species known as "*Agonum* (*Europhilus*) *picipenne*" must become *dilutipenne* Motsch.

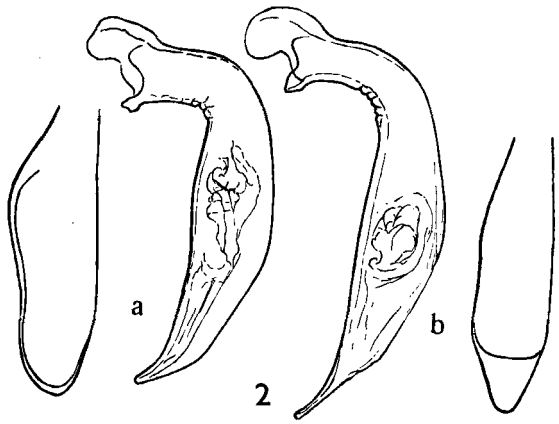

FIG. 2.—Side view and apex of penis : *a*, *Chlaenius leucoscelis* Chevr. (Pinal Mts., Ariz.) ; *b*, *C. cordicollis* Kby. (Isle Perrot, Que.).

A. sordens. Type ♀ = *sordens* auct. (*picicorne* Lec.). I was unable to find any description of "*fuscescens* Chd.," doubtfully referred to by Leconte (1873 : 323) and Horn (1876 : 128).

A. seminitidum. 1 ♂ ("type"), 2 ♀ (1 "var. b"), all = "*cupreum* Dej." (according to specimens named by Darlington and van Dyke). The penis of the macropterous "type" is very characteristic (fig. 3*a*), and agrees completely with that of a brachypterous male from Colorado (Little Willow Creek).

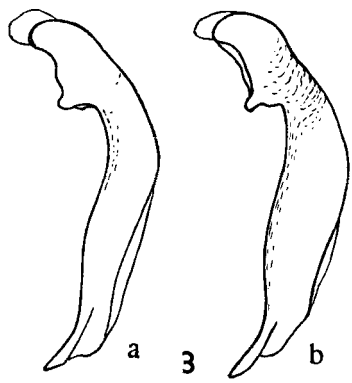

FIG. 3.—Penis of: *a*, *Agonum seminitidum* Kby. (Little Willow Creek, Col. ; penis comp. with type) ; *b*, *A. sp.* (Duluth, Minn.).

Dr. Darlington kindly examined for me the genitalia of the male type of *protractum* Lec., 1854, and of a male paratype of *chalceum* Lec., 1848, and after comparison with my drawing of *seminitidum* (fig. 3*a*) considered both of them to be synonyms, as generally accepted. Whether the *cupreum* of Dejean, 1831, is also conspecific at least remains doubtful (cf. Casey 1920 : 109) and can be stated on the type only. There is a second, closely related species from the same region which also must be taken into consideration. It lacks the raised basal margin of prothorax, characteristic for *seminitidum*, and has a clearly different penis (fig. 3*b*). It is possibly the same as *marquettense* Csy., 1920.

A. simile. 2 ♀, one marked as type. Both are identical and belong to a *Europhilus* unknown to me but closely related to *consimile* Gyll. (*invalidum* Csy.) and *exaratum* Mnh. (*aldanicum* Popp.). It is separated by the broad, convex prothorax, with obliterated hind angles.

A. affine. Type ♂ = *carbo* Lec. and thus valid. The penis is very characteristic. This synonymy is most unfortunate, because *affine* has hitherto generally been regarded as identical with *harrisi* Lec., which now becomes valid. I propose to keep the name *affine* suppressed until the new nomenclature has become established.

A. erythropum. The single type is in very bad condition and the sex could not be stated, but the identity with *errans* Say is certain. Compared with specimens from Alberta, Manitoba and N. Dakota.

Platyderus nitidus. 2 ♀, one labelled as type, both = *Pterostichus* (*Pseudargutor*) *leconteianus* Lutsh. (*erythropus* Dej. nec Mrsh.) as generally accepted.

Argutor bicolor. Only 1 ♂ type present, though Kirby states he has seen at least 3 ex. The type lacks head and adomen but, without any doubt, it is an immature *Pterostichus* (*Argutor*) *patruelis* Dej., as generally accepted.

A. femoralis. 2 ♂ (1 marked as type) and a third, quite defective ex., all = *Pterostichus* (*Argutor*) *femoralis* auct.

A. mandibularis. Type ♂, unfortunately without abdomen. This is quite different from what is generally known as "*Cryobius mandibularis*" in North America (cf. *brevicornis*, below). It is brilliantly brassy green above, especially the elytra, and has bright yellowish-red legs. The antennae are darkened, beginning at the second segment (the palpi uniformly bright). The first two segments of the hind tarsi are distinctly furrowed externally (in *brevicornis* at most a trace of furrows). The head is larger and the hind angles of the prothorax obtuse. I am unable to decide whether, and, if so, under what name, this species was known previously.

The type of Kirby's " var. b " is the female of a species different from both *mandibularis* and *brevicornis*, being quite unmetallic. It is separated from the former by the smaller head, almost rectangular hind angles of prothorax, pronounced shoulder-tooth of elytra and 3 pale basal segments of antennae, and from the latter *inter alia* by the more convex prothorax (especially in the area between the basal fovea and side margin) and by the strongly furrowed two basal segments of the hind tarsi.

Neither of Kirby's two *mandibularis* forms has more than a barely visible vestige of outer basal impressions of the prothorax, and therefore can hardly be identical with *hudsonicus* Lec. or *labradorensis* Chd. (cf. Poppius, 1906).

A. brevicornis. One pair, the ♂ labelled as type. Genital slide of the

♂ compared with that of the ♂ type of *fastidiosus* Mnh. (Kenai, Mus. Hfors). They are certainly conspecific. The only difference seems to exist in the prothorax, which in *brevicornis* is a little broader in the frontal half and therefore more markedly heart-shaped. Specimens from E. of Hudson Bay (Labr., Nfld., N.H.), generally known as "*mandibularis* Kby.," have slenderer palpi which are uniformly pale (also the tarsi are lighter), but according to the penis they are conspecific, though probably forming a distinct subspecies. The taxonomy of the subgenus *Cryobius*, as a whole, is very confused.

Omaseus picicornis. One pair, the ♀ being the type, though not marked as such, both = *Pterostichus* (*Dysidius*) *mutus* Say, as generally accepted.

Stereocerus similis. One pair, the ♂ marked as type, both = *Pterostichus* (*Stereocerus*) *haematopus* Dej., as generally accepted.

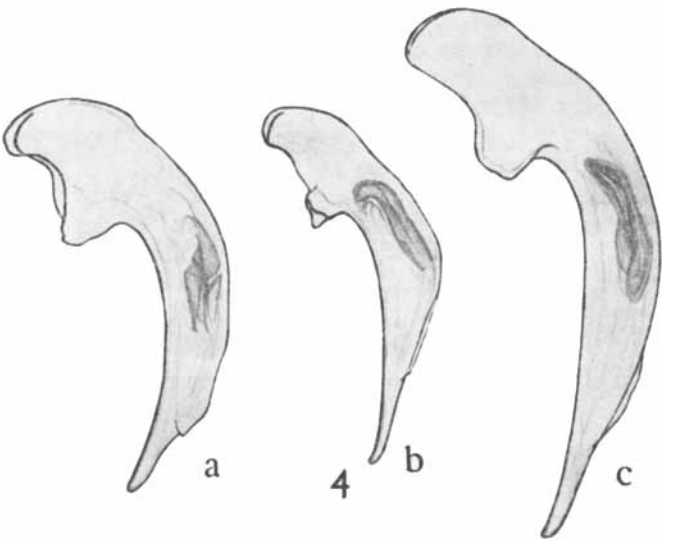

FIG. 4.—Penis of: *a*, *Amara erratica* Dft. (Red Rocks, Nfld.); *b*, *A. laevipennis* Kby. (type); *c*, *A. patruelis* Dej. (Grand Falls, Nfld.).

Curtonotus rufimanus. Type ♂ = *Amara* (*Cyrtonotus*) *torrida* Ill. (*reflexa* Putz., *cylindrica* Lec.), and has nothing to do with *lacustris* Lec. as usually proposed. The penis is quite different.

C. brevilabris. Type ♂. An additional ♀ probably belongs to *rufimanus*, as Kirby states he had seen 1 ex. of *brevilabris* only, but several of *rufimanus*. Both = *Amara* (*Cyrtonotus*) *torrida* Ill. (penis slide made).

C. latior. Type ♀ = *latior* auct.

Poecilus castanipes. Type ♀, one additional pair of which the ♀ is marked as cotype, which must be an error, as Kirby made his description after 1 ex. only. All = *Pterostichus* (*Poecilus*) *lucublandus* Say. The type, contrary to the author's statement, is not "entirely black," but has a pronounced blue lustre on the sides of prothorax. The reduced number of 3 dorsal punctures of elytra may occur also in *lucublandus* (against Schaupp, 1882), sometimes 3 on the one, 4 on the other elytron.

Amara inaequalis. Type ♀ = *patruelis* Dej.* *A. interstitialis* Dej. is a distinct species.

A. pallipes. Type ♂ = *pallipes* auct.

A. laevipennis. 2 ♂, one labelled as type, the other defective without abdomen. It is a member of the subgenus *Celia*, distinct from *erratica* Dft., with which it has hitherto been included. The penis is clearly different (fig. 4). External differences are: shorter, less "swollen" first antennal joint; flatter, less prominent eyes; more protruding front angles of the prothorax. The size is only 6·7 mm.

FIG. 5.—*Harpalus basilaris* Kby., penis (San Juan Valley, N.M.; comp. with type, apex slightly slenderer).

FIG. 6.—*Harpalus ochropus* Kby., penis (type).

A. discors. Type ♀ = *gibba* Lec. as originally stated by Leconte (1870): 397), though subsequently regarded as a synonym of *chalcea* Dej. (Leconte 1873 : 324; Horn 1876 : 129) or *remotestriata* Dej. (Leng 1920; Csiki : 444). Kirby's name is valid.

Harpalus pleuriticus. Type ♂ and 2 additional ♀, all = *pleuriticus* auct. The armature of the internal sac of the penis is very characteristic.

H. basilaris. Type ♂ and additional ♀, both = *basilaris* auct. (*obesulus* Lec.). The penis is very characteristic, stout and straight (fig. 5). The identity with *obesulus* was stated by Leconte himself (1870 : 397; 1873 : 325) and there is no reason for the doubt expressed by Casey (1914 : 128).

H. ochropus. Type ♂. *desertus* Lec. has been regarded (e.g., by Leng 1920 : 71) as a doubtful synonym. I sent a description of the Kirby type to Dr. Darlington, who compared it with the single *desertus*-type, unfortunately a ♀. A second ♀ (from N. Mex.), closely agreeing with this type, was sent me by Dr. Darlington. The most important differences seem to be : *desertus* has the front angles of the prothorax less protruding and its base around the broader and shallower foveae more or less punctate. The shoulder angles of the elytra are more prominent ; the 7th interval has 2–3 accessory punctures at the tip. A ♂ from Color., deviating in minor details from the *desertus*-♀ but almost certainly belonging to the same species, has a penis essentially different from that of *ochropus* (fig. 6).

H. interpunctatus. Type ♂ and 2 additional ♀, all = *Anisodactylus nigrita* Dej. (cf. Horn, 1880 : 171). The clypeus has two pairs of setigerous punctures.[1] The "*interpunctatus*" auct. has a more arcuate penis (fig. 7) more strongly pigmented in the apical half and with rough longitudinal sculpture on the

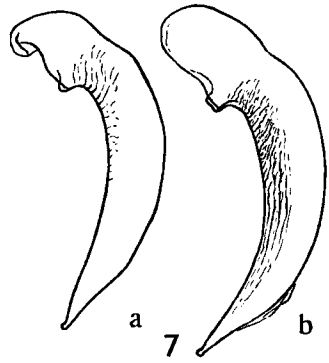

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FIG. 7.—Penis of : *a*, *Anisodactylus nigrita* Dej. (*interpunctatus* Kby. ; Bethel, Me.) ; *b*, *A. kirbyi* nom. nov. (*interpunctatus* auct. ; Cheticamp, N.S.).

surface. As no name seems available for this species I propose the name **kirbyi** nom. nov.

H. longior. 2 ♂, one labelled "type," the other "var. b," both = *Harpalus* (*Pseudophonus*) *pennsylvanicus* DeG. The penis has a characteristic form. Kirby's species has wrongly been regarded as identical with *longicollis* Lec. (Horn 1876 : 129 ; Hatch 1932 : 174).

H. laticollis. Type ♀ (labelled as ♂) = *Anisodactylus nigerrimus* Dej. as generally accepted.

H. rotundicollis. Type ♀ = *amputatus* Say, an unmetallic ex. with the characteristic sutural tooth at the tip of elytra. According to Casey (1924 : 96) the two names represent two different species. One additional ♀, not labelled as cotype, = *Xestonotus lugubris* Dej., but only the first ex. fits Kirby's description in respect of the colour of the antennae and legs, and also the truncation of the elytra at the tip.

[1] This character is not quite constant in *Anisodactylus*. I have seen 1 ♂ of *nigerrimus* Dej. from Halifax, N.S., with only one setigerous puncture on each side of clypeus.

H. stephensii. Type ♂ = *amputatus* Say, a brilliantly green ex., as generally accepted.

Stenolophus versicolor. Type ♂ and 2 additional ♀, all = *fuliginosus* Dej., as generally accepted. The internal sac of the penis contains immense, very characteristic teeth.

Trechus tibialis. Type ♂ = *Tachycellus nigrinus* Dej., as generally accepted.

T. ruficrus. Type (? ♀) = *Trichocellus cognatus* Gyll. There is no reason to retain *ruficrus* even as var. or ab. (cf. Casey 1914 : 227 ; Leng, 1920, and Csiki : 1223).

T. flavipes. One pair, the ♀ marked as type, both = *Bradycellus* (*Stenocellus*) *rupestris* Say, with characteristic outer form and inner armature of penis. This synonymy is generally accepted, but Kirby's name was at the same time listed as a synonym of *Trechus hydropicus* Horn by Leng.

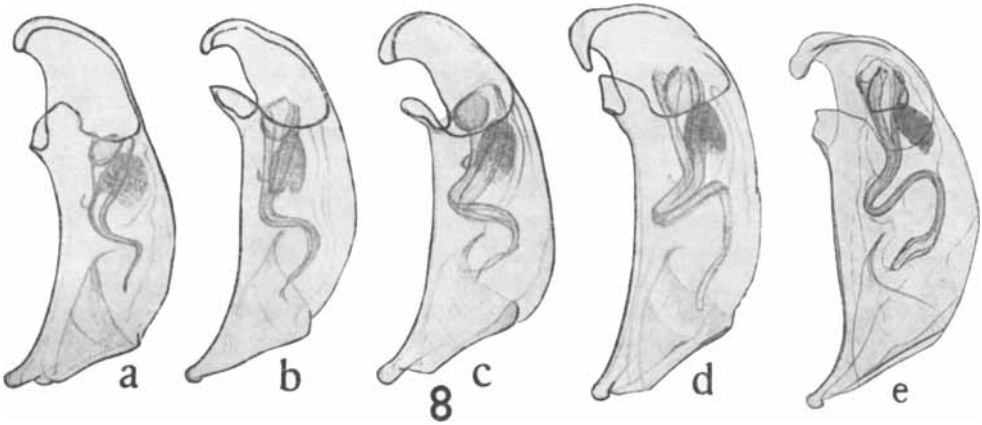

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FIG. 8.—Penis of: *a*, *Bembidion lunatum* Dft. (Göteborg, Sweden); *b*, *B. bimaculatum* Kby. (type); *c*, *B. sordidum* Kby. (Red River, Man.; comp. with type ♀); *d*, *B. postremum* Say (Rumney, N.H.); *e*, *B. macropterum* J. Sahlb. (Dudinka, W. Siberia). The penes of these species, to a certain degree, represent a morphological series.

T. immunis. Type ♂ and 2 additional ♀, all = *Stenolophus conjunctus* Say., as assumed by Leconte (1873 : 325) and Horn (1876 : 130). Later regarded as a doubtful synonym of *Acupalpus carus* Lec.(Casey, 1914 : 268).

T. similis. 2 ex. : ♂, with red prothorax, labelled as type ; ♀, with dark spot on the disc. In fact, the latter ex. should be regarded as the real type, and the ♂ as Kirby's " var. b." Both = *Agonoderus comma* Fbr., auct. The armature of the internal sac of the penis is extremely characteristic. Casey (1914 : 240) made *similis* a synonym of *Tachycellus* (*Triliarthrus*) *atrimedius* Say.

Isopleurus nitidus. Type ♂ = *Amara* (*Celia*) *subaenescens* Cki. (*subaenea* Lec. *nec* Sturm, *nec* Steph.), as stated by Leconte (1873 : 324) and Horn (1876 : 130) ; Kirby's name is not found in Leng, nor in Csiki (1927–33). It is preoccupied by *Amara* (s.str.) *nitida* Sturm, 1825.

Peryphus bimaculatus. 2 ♂, one marked as type. The type has an unusually broad prothorax with rough basal sculpture, but the penis proves that both ex. belong to *Bembidion* (*Peryphus*) *bimaculatum* auct. (fig. 8). In the

closely related *postremum* Say the " hose " of the internal sac is longer and more bent.

P. sordidus. Single type ♀, immature. The name has always been treated as a synonym of the foregoing species, but this is not correct. In fact it is a separate species, well characterised even in Kirby's original description. The penis of a ♂ from Red River, Man., externally agreeing with the type, shows clear differences in the internal armature (fig. 8). *Bembidion* (*Peryphus*) *sordidum* Kby is a valid name and I know of no synonym.

P. scopulinus. 2 ♀, one marked as type, both = *Bembidion* (*Peryphus*) *scopulinum* auct.

P. rupicola. One pair, the ♂ labelled as type. Both belong to the species generally passing as " *lucidum* Lec.," as already stated by Fall (1926 : 133). The ♀ above bears a label in Fall's characteristic hand-writing : " *Bembidium rupicola* Kirby, co-type." Kirby's name is valid and, in fact, has no synonym because *lucidum* Lec. = *petrosum* Gebl. (*substrictum* Lec.). Formerly *rupicola* was regarded as a synonym or variety of *tetracolum* Say (e.g., Bethune, 1870 : 171) and this interpretation has recently been revived by Fassati (1950) on the basis of a reputed cotype, identified by Netolitzky. As far as known, *ustulatum* L. (*tetracolum* Say) does not occur in the regions from which Kirby's material emanated, at least not in 65° latitude (from where *rupicola* was reported), and I strongly doubt the locality of the " cotype " in question.

P. picipes. One pair, the ♀ (without abdomen) marked as type, both = *Bembidion* (*Pheryphus*) *grapei* Gyll. (*nitens* Lec.) as already suggested by Fall (1926 : 133). The ♂ has a penis completely agreeing with that of European specimens (Lindroth, 1939–40, fig. 18). Kirby's name has usually been used for a quite different species which must now be called *lacunarium* Zimm. (*plagiatum* Zimm., regarded as a synonym, is different).

P. concolor. Single type ♀ = *Bembidion* (*Hirmoplataphus*) *longulum* Lec. This is very unfortunate and, as in the case of *Agonum affine*, I propose to suppress Kirby's name until *salebratum* Lec. has time to establish itself in place of " *concolor* " in its old sense.

P. nitidus. Type ♀ = *Bembidion* (*Pogonidium*) *nitidum* auct. (*vide* Netolitzky, 1912–43 : 26).

Tachyta picipes. One pair, on the same pin, = *inornata* Say *sensu* Csy., 1918 (*nana* auct. amer. *nec* Gyll.) as generally accepted. The penis agrees with that of *nana* Gyll., of which *inornata* may be regarded as a subspecies.

Notaphus nigripes. One pair, the ♂ marked as type, = *Bembidion* (*Notaphus*) *nigripes* auct. Mannerheim (1852 : 300) cited the name in error (for *incrematum* Lec.), according to original specimens.

N. intermedius. Type ♀ = *Bembidion* (*Notaphus*) *patruele* Dej. Fall (1926 : 133) was therefore right in opposing the usual synonymisation with *rapidum* Lec., which consequently becomes valid.

N. variegatus. One pair, the ♂ (defective) marked as type, a second ♂ labelled " S. of L. Winnipeg," all = *Bembidion* (*Notaphus*) *decipiens* Dej. (*versicolor* Lec. *nec* Csy.), as usually supposed. The male from Winnipeg shows the characteristic inner structure of the penis.

Opisthius richardsoni. Type ♂.

Elaphrus clairvillii. Type ♀ = *clairvillei* auct. (*politus* Lec.).

E. intermedius. 3 ♀, one labelled as type and moreover : " Gr. Bear L.," all = *riparius* L., as generally accepted.

E. obscurior. Type ♀ (without abdomen). It is a quite typical *lapponicus* Gyll. (*obliteratus* Mnh.) of the small, slender form occurring in Labrador.

Omophron saii. 1 ♀ from the Kirby collection is probably the type. A genital slide was made from 1 ♂, labelled " Lake Huron, Dr. Bigsby," and possibly also belonging to the original series. The agreement with *americanum* Dej. is complete, as generally accepted.

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