

COLEOPTERA PALPICORNIA FROM THE KHEWRA GORGE, SALT RANGE, PUNJAB.

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Some time back I received from Dr. H. S. Pruthi some Coleoptera Palpicornia collected by him and Dr. S. L. Hora of the Zoological Survey of India during a survey of the Khewra Gorge, Salt Range, Punjab. According to Dr. Pruthi there is a small stream at the Khewra Gorge, the water of which is fresh three miles above the Khewra village, but gradually becomes saline nearer the village. It is a stream only during and just after the rainy season, and for the most part of the year it consists of only a chain of pools, more or less connected with one another, in some cases by under-ground water channels. As noted above, the salinity increases on approaching the Khewra village and near the village itself is more than twice that of the sea¹. Of course under such uncertain conditions the salinity must be very variable according to the period of the year at which investigations are carried out.

The stations from where Palpicornia were submitted to me are the following; the numbers of the stations follow the course of the stream upwards:

Sta. 2; 12.x.1930². Stream about a quarter mile beyond station 1. Salinity: 91.273. Species collected: *Ochthebius flumineus*, sp. nov., *O. explanatus*, sp. nov., *Enochrus (Lumetus) sinuatus*, sp. nov., *Berosus (s. str.) nigriceps* (F.), and *B. insolitus*, sp. nov.

Sta. 3; 13.x.1930. A couple of hundred yards beyond station 2 and near the first sharp turning of stream. Salinity: 42.357. Species collected: *Enochrus (Lumetus) sinuatus*, sp. nov., *Berosus nigriceps* (F.)

Sta. 4; 13.x.1930. A small highly saline streamlet flowing on the side of station 3. Salinity: 143.889³. Species collected: *Enochrus (Lumetus) sinuatus*, sp. nov., *Berosus nigriceps* (F.), *Berosus insolitus*, sp. nov.

Sta. 5; 9.iv.1931. A large deep pool in the course of the stream at the turning about 50 yards beyond stations 3 and 4. Salinity: not indicated (fresh water?). Species collected: *Laccobius gracilis* Mots., *Enochrus (Lumetus) sinuatus*, sp. nov., *Sternolophus rufipes* (F.), *Berosus (s. str.) nigriceps* (F.)

Sta. 7; 31.iii.1931. A large pool in the course of the stream between stations 6 and 8. Salinity: 6.366. Species collected: *Laccobius gracilis* Mots., *sinuatus* d'Orchymont, *Helochares (Agraphydrus) stagnalis*, sp. nov., *Sternolophus rufipes* (F.)

¹ H. S. Pruthi—"An Ecological Study of the Fauna of the Khewra Gorge and some other Salt Waters in the Salt Range, Punjab" *Rec. Ind. Mus.*, XXXV, pp. 87-119, with one text-figure (1933).

² Some of the labels bear the date 30.x.1930.

³ About 4½ times as much as the salinity of the Indian Ocean.

Sta. 9 ; 10.iv.1931. A series of small pools and rapids in the course of the stream, 50 yards beyond station 8. Salinity : 1.979. Species collected : *Coelostoma horni* (Régimbart).

Sta. 10 ; 2.iv.1931. A small pool in the course of the stream near the place where the water-pipe crosses the stream. Salinity : 0.608. Species collected : *Enochrus (Methydrus) tetraspilus* (Régimbart).

Of the eleven species represented in the collection, five are new to science. Some of them (*Ochthebius flumineus* and *O. explanatus*, *Enochrus sinuatus* and *Berosus insolitus*) appear as if they were at least halophilous, if not halobiont, although the third (*Enochrus sinuatus*) was also collected at station 5, where the salinity seems to have been so low, on the 9th of April 1931, as to be not worth recording. At stations 2 to 5 with these four species specimens of *Berosus nigriceps* (F.) were also collected ; this species is widely distributed throughout India. In spite of Knisch's statement in his catalogue, it is specifically distinct from the cafrarian *punctulatus* of Boheman. Most of the species studied are rather of a Palaearctic character, but *Coelostoma horni* and *Sternolophus rufipes* are certainly Indo-Malayan. The subgenus *Helochares (Agraphydrus)* has an extensive range of distribution, from tropical Asia over Sumatra, Java and Bali as far as Madagascar and even continental East Africa.

The table on the opposite page shows the exact localities from which the various species were collected.

***Ochthebius (Hymenodes) flumineus*, sp. nov.**

Type : No. $\frac{3820}{H4}$. Indian Museum ; ♂ ; Station 2 ; 12.x.1930 ; 2 × 0.8 mm.

Paratypes : Nos. $\frac{3821-3826}{H4}$. ♂♂♀♀. Same locality and date (Station 2) ; few specimens.

This new species can be distinguished from the closely allied species (*difficilis* Mulsant, *schneideri* Kuwert, *aeneocupreus* J. Sahlberg) by its smaller prothorax as compared with the hind body, by the labrum being conspicuously notched in the middle of its anterior margin, by the elytra of the ♀ gradually and widely expanded behind the shoulders to nearly the sutural angle, the expanded margin having its greatest width just before the middle. The aedeagus differs from that of *aeneocupreus* by the extremity of the median lobe being much more smaller and less widely spatuliform.

Upper side black with a cupreous or purpuraceous hue and fine recumbent hairs. Palpi and legs testaceous brown, with the extremity of 5th joint of tarsi somewhat infusate. Forehead shining, sparsely and finely punctate, the clypeal suture transversely deepened in the middle. Space between the inter-ocular foveae and before the posterior one also shining, sparsely and finely punctate. Labrum notched in the middle but not very deeply.

Sclerified portion of prothorax irregularly hexagonal, much more narrowed towards the base than towards the apex, lateral angulation being on the first third ; behind this angulation the sides are not serrate and nearly straight or but little curved inwards to the posterior angles, and bordered with a pellucid narrow membrane. The fore side is also

Stations.	1 ¹		2		3		4		5		7		9	10	11
Date.	11.x.30.	27.iii.31.	12.x.30.	9.iv.31.	13.x.30.	9.iv.31.	13.x.30.	9.iv.31.	14.x.30.	9.iv.31.	14.x.30.	31.iii.31.	10.iv.31.	2.iv.31.	3.iv.31.
Salinity.	78.529	166.830	91.273	123.961 ²	42.357 ³	51.057 ⁴	143.889 ⁵	130.82 ⁵	38.856 ⁵	?	5.174 ⁵	6.366	1.979 ⁶	0.603 ⁶	0.192 ⁶
Hydraenidae.															
1. <i>Ochthebius (Hymenodes) flumineus</i> , sp. nov.			×												
2. <i>Ochthebius (Hymenodes) explanatus</i> , sp. nov.			×												
Hydrophilidae.															
3. <i>Coelostoma horni</i> (Régimbart)													×		
4. <i>Laccobius (s. str.) gracilis</i> Mots.										×		×			
5. <i>Laccobius (s. str.) simulans</i> d'Orchymont.												×			
6. <i>Helochaeres (Agraphydrus) stagnalis</i> , sp. nov.												×			
7. <i>Enochrus (Lumetus) sinuatus</i> , sp. nov.			×		×		×			×					
8. <i>Enochrus (Methydrus) tetraspilus</i> (Régimbart).														×	
9. <i>Sternolophus (s. str.) rufipes</i> (F.)										×		×			
10. <i>Berosus (s. str.) nigriceps</i> (F.)			×		×		×			×					
11. <i>Berosus (s. str.) insolitus</i> , sp. nov.			×				×								

¹ According to Dr. Pruthi's report *Ochthebius* sp., *Berosus nigriceps* and *Berosus* sp. (larvae) were present, but no specimens were submitted for identification.

² According to the same report *Ochthebius* sp., *Enochrus* sp., *Enoplurus* sp. and ? *Berosus* sp. (larvae) were present, but no specimens were submitted for identification.

³ According to the same report *Ochthebius* sp. present, but not submitted for identification.

⁴ According to the same report *Ochthebius* sp. and *Enochrus* sp. present, but not submitted for identification.

⁵ According to the same report *Palpicornia* were captured, but not submitted for identification.

⁶ According to the same report ? *Berosus* sp. present, but not submitted for identification.

bordered with such a narrow membrane, and is only faintly emarginated behind the normally convex eyes; the anterior angles do not project forwards. Immediately behind these angles the lateral border has 3-4 very small tooth-like asperities. The disc is shining and sparsely punctured but more strongly than on the head. There is a deep and narrow median furrow, on each side of this furrow are the lateral foveæ, the anterior ones somewhat smaller and shorter than the posterior, and the lateral ear-like projections of the disc are very finely reticulate-granulate.

Elytra wider at the base than at the base of prothorax, widest a little beyond the middle, separately rounded at the extremity. They are provided with ten regular not striated rows of moderately impressed and not very large punctures. The interspaces of rows are wider than the punctures, and wider also than the space separating two succeeding punctures of the same row. Out of each puncture a recumbent hair arises, and as a result the pubescence of elytra appears to be arranged in regular distanced rows. The external, not serrate but entire border, seen from above is not expanded in the males, but is widely so in the females, as described above. One of the females has its elytra particularly widened.

The pygidium protrudes somewhat in both sexes, between the median emargination at the sutural angle of elytra.

Ochthebius (Hymenodes) explanatus, sp. nov.

Type: No. $\frac{3827}{H4}$ Indian Museum; ♂; Station 2; 12.x.1930; 1.47 × 0.6 mm.

Paratypes: Nos. $\frac{3828-3839}{H4}$. ♂♂♀♀; same locality and date (Station 2): numerous specimens.

The ♀ has its elytra expanded as in females of *flumineus*, but the latter species is larger, much more shining, without reticulation upon the elevated parts of the disc of the head and prothorax.

Also the aedeagus is different: in *explanatus* the terminal mobile piece is only gradually and not greatly, more or less triangularly widened at the extremity, while in *flumineus* it is abruptly widened at the end into a more or less rounded spatuliform flattened plate.

O. explanatus by its long legs and widened elytra, especially in the ♀, recalls somewhat the subgenus *Doryochthebius*, but the anterior angles of the prothorax do not protrude forwards like finger-like processes and the anterior border near those angles is not emarginate behind the eyes (deeply excised in *Doryochthebius*). *O. andraei* Breit (Mesopotamia: Hit) and *reflexus* Sahlberg (Transcaspia: Mulla Kara) differ by their size (2 mm.) and in other particulars, *vide* their descriptions.

Of a black colour with greenish metallic hue, the legs and palpi, with the exception of their last joint which is clear yellowish, of a brownish colour. Head and prothorax even on the elevated parts are microscopically reticulated. The labrum is somewhat deeper notched in the middle as in *flumineus*. The clypeal suture is transversely deepened in the middle and the posterior fovea of head is much smaller than the two interocular ones.

Prothorax narrower behind than in front, but with no conspicuous angulation on the sides. The sclerified disc is widest in the anterior third, wider here than the head with the eyes, with the anterior angles completely rounded and provided with some very small tooth-like asperities, gradually attenuated in the two last thirds with the lateral borders nearly straight or only feebly arcuated inwards, not serrate. A delicate and narrow membrane is to be observed along the anterior and posterior borders and along the hind lateral attenuation. Median longitudinal groove not very narrow, with the two foveae on each side of this groove—the anterior smaller than the posterior—rather shallow and still more reticulated. The same may be said of the lateral ear-like expansions.

Elytra much wider at the base than the base of the prothorax, having their greatest width beyond the middle. At the extremity they are separately rounded, leaving a small common emargination on the sutural angles. No serration at the sides. They are covered with ten not so conspicuously separated rows of punctures as in *flumineus*, the punctures are also nearer to one another, more shallow and not so well defined. Interspaces are also less wide. The superficial pubescence is less conspicuous than in the allied species. The females with their more depressed, shield-like elytra, and widened more or less brownish more expanded lateral margins look very peculiar.

Seen from above the pygidium is somewhat protruding between the sutural angles of the elytra.

Coelostoma horni (Régimbart).

♂♀; Station 9; 10.iv.1931. The aedeagus of ♂ has been compared. Described from Ceylon but recorded also from continental India and even, but very sparingly, from tropical Africa.

Laccobius (s. str.) gracilis Motschulsky.

(Syn. *L. orientalis* Knisch).

A few specimens, ♂♂ and ♀♀, from Station 5 (9.iv.1931) and Station 7 (31.iii.1931). A typical Palaearctic species.

Laccobius (s. str.) simulans d'Orchymont.

A single ♀ from Station 7 (31.iii.1931). Described from Yunnan and North India.

Helochares (Agraphydrus) stagnalis, sp. nov.

Type: No. $\frac{3840}{H4}$. Indian Museum; Station 7; 31.iii.1931; 2.4×1.2 mm.

Paratypes: Nos. $\frac{3841-3842}{H4}$. Same locality and date (Station 7); both sexes.

This *Agraphydrus* has distinctly 9-jointed antennae. It differs from all the described species, except *kempi* d'Orchymont, by its more parallel-sided, narrower and more elongate shape; from *coomani* d'Orchymont by the preocular spots smaller, the almost entirely obscure

prothorax, narrowly bordered at the sides by a band of a testaceous colour, by the more slender median lobe of the aedeagus, by the more broadly truncate extremity of parameres (attenuate and more narrowed at the end in *coomani*); from *kempi* by the larger, less elongate shape, the less dense punctation of the head, the more rounded posterior angles of prothorax, the less strong, less dense, nearly obsolete punctation of wing cases; from *orientalis* d'Orchymont by the not reticulate forehead which is distinctly but finely punctured, of the same type as on the postfrons, by the prothorax more obscure, less broadly margined by testaceous colour at the sides, a trifle more strongly punctured, by the median lobe of aedeagus which is very slender, elongated, cylindrical (wide, flattened and nearly truncate at the end in *orientalis*); from *pauculus* Knisch by the less obscure elytra, the finer and more sparse punctation of head, prothorax and especially of the wing cases; from *punctatellus* Régimbart by the different colouration (eyes spots not so large, prothorax more obscure, etc.), and by the parameres of aedeagus more broadly truncate at the end, their outer margin nearly straight, not rounded; finally from *pygmaeus* Knisch by the much finer punctation of the upper side, especially of the wing cases, and by the much less obscure colouration.

Head, including labrum, and prothorax shining black, with small preocular testaceous spots and the prothorax at the lateral sides not widely bordered with the same colour. Wing cases more brown, narrowly bordered with testaceous at the sides and the suture very narrowly black. Entire palpi and tarsi yellow. Punctation very fine and of the same form on fore- and hind head, nearly of the same shape and density on the prothorax, very much more obsolete on the wing cases. On these the two coarse punctures on each side of the scutellum are easily observed; the inner series of coarser punctures are very sparsely furnished, the inner one not so widely separated from its basal puncture as the second; the third series has also only a few widely separated punctures; the outer one (4th) has more punctures and reaches nearly the base of wing cases.

Mentum with an anterior rounded emargination, with some coarse punctures and oblique ridges at the sides. Emargination of 5th ventral segment minute and not very distinct.

***Enochrus (Lumetus) sinuatus*, sp. nov.**

Type: No. $\frac{3843}{H4}$. Indian Museum. Station 5; 9.iv.1931; ♂; 4.6 × 2.2 mm.

Paratypes: Nos. $\frac{3844-3854}{H4}$. Same locality and date: a few ♂♀; Station 2: 12.x.1930: ♂♂♀; Stations 3 and 4: 13.x.1930: ♂♂, ♀♀.

A halophilous *Enochrus* representing in the Salt Range our common also halophilous *bicolor* Fabricius. It is at once distinguished from that species by the very obsolete sculpture of the upper surface, by the (in both sexes) deep black labrum and by the bordered lateral margin of elytra which is not regularly rounded in its second half, but distinctly curved in and then again curved out on its third fourth, more so in several females than in males. The portion of elytra just near the lateral margin is distinctly turned up. Both sexes are of the same colour;

yellow testaceous with the exception of the black labrum, a variable transverse anterior blackish spot on the forehead, joined to the equally obscured Y-suture by a longitudinal obscure band, four black punctures on the disc of prothorax and an obscure humeral spot. The elytra are ordinarily more or less tinged with clear brown. Palpi, including the last and pseudo-basal joints, entirely yellow; antennae of the same colour, the club (joints 7-9) more obscure; legs testaceous, only the base of femora and the claws obscured.

From *fragilis* Sharp and *fretus* d'Orchymont it is distinguished at a glance by the much larger claws, the different and more testaceous colouration, the reduced sculpture of the upper surface, reduction of femoral hydrofugal pubescence, the aedeagus otherwise built, etc.

Upper side oily shining, head not very densely and finely punctulate, with some larger punctures behind labrum and along the transversal suture. Palpi not very long, nevertheless longer than the head and with the last joint much shorter than the foregoing. Eyes of moderate size, not very convex.

Prothorax on the disc still more finely punctulate than the head, with antero-external and postero-lateral systematic punctures of same form as on the head.

Scutellum and front side of elytra finely bordered with black. Elytra highly polished, with very obsolete punctation, so that the two inner irregular rows of larger systematic punctures, though not much larger than on the prothorax, are more conspicuous; along the lateral margin there are also such punctures but irregularly placed. On the disc one can count 9 series and the beginning of a juxta-scutellar supplementary short series of black, not closely placed punctures, which are only seen by transparency.

Under side black; mentum shining, in the ground with some punctures of medium strength. Prosternum not carinate, not toothed on the middle of its anterior margin. Mesothorax with a roof-like carinate protuberance anteriorly very minutely toothed. Fifth (last) ventral segment without ciliated emargination. Basal half of anterior and median femora infuscate and pubescent; only basal third of posterior femora pubescent and more or less infuscate. Claws very large; inner and outer claws of ♂ identical, all tarsi hooked and minutely lobbed at base. Claws of ♀ not hooked, somewhat longer than in ♂, obscurely toothed at base. Onychium in both sexes much shorter than the claws.

Median lobe of aedeagus parallel-sided, band-like as in *fragilis*, but less short with more protruding terminal dorsal strut. Parameres longer than the median lobe.

***Enochrus (Methydrus) tetraspilus* (Régimbart).**

One specimen; Station 10; 2.iv.1931; salinity only 0.608. Not halophilous.

***Sternolophus (s. str.) rufipes* (Fabricius).**

One specimen: Station 5; 9.iv.1931; another: Station 7; 31.iii.1931, Not halophilous.

Berosus (s. str.) nigriceps (Fabricius, 1801).*Berosus aeneiceps* Motschulsky, 1861 (Ceylon).? *Paraberosus melanocephalus* Kuwert, 1890 (Arabia).? *Paraberosus nigriceps* Kuwert, 1890 (Persia, Mesopotamia).*Berosus immaculicollis* Fairmaire, 1892 (Obock).

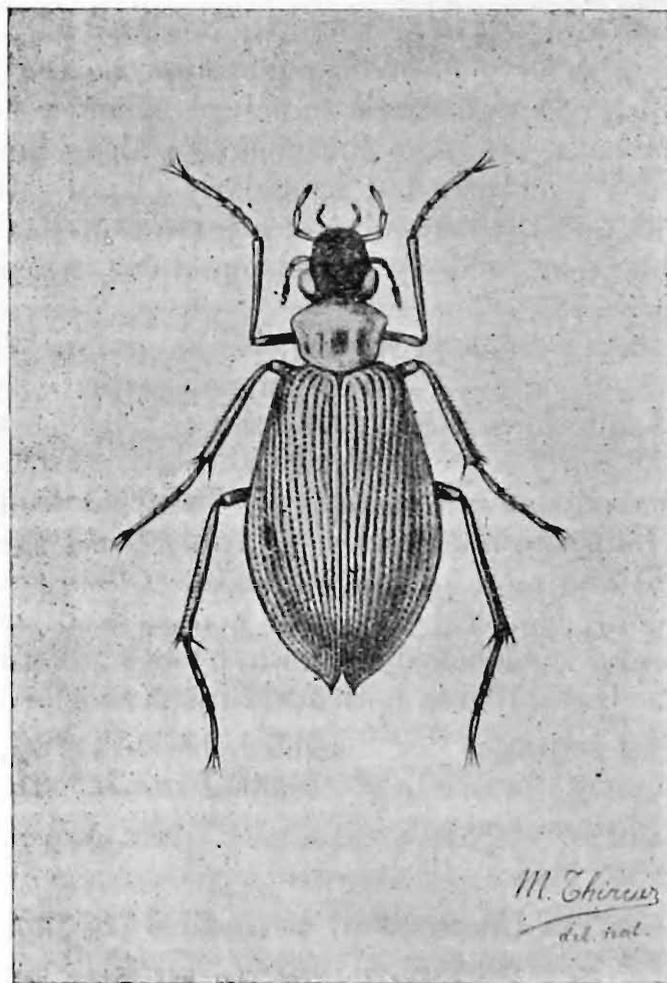
Stations : 2 (12.x.1930), 3 (13.x.1930), 4 (13.x.1930) and 5 (14.x.1930) ; several ♂♂ and ♀♀. Species described from "India orientalis". Not halophilous.

Berosus (s. str.) insolitus, sp. nov.

Type : No. $\frac{3855}{H4}$. Indian Museum. Station 4 ; 13.x.1930 ; ♂ ; 4 × 1.9 mm.

Paratypes : Nos. $\frac{3856-3863}{H4}$. Same locality and date ; Station 2 ; 12.x.1930 ; a few ♂♂ and ♀♀.

This species stands unique among the European and Asiatic species of *Berosus* and can readily be distinguished by the elytra which in both sexes are unispinose at the sutural angle. In both sexes the elytra are also much widened beyond the middle.



Berosus (s. str.) insolitus, sp. nov. × 10.

Upper side including palpi, antennae and legs of a general yellow colour, only head with labrum and base of mandibles black and metallic, of a green and purple hue ; the apex of mandibles more or less reddish,

the prothorax and elytra here and there only very faintly infuscated, the punctures of elytral series each surrounded by infuscation.

Head with Y-suture very conspicuous, placed in a depression, the disc (fore- and hind head) covered with not very closely placed and rather coarse and deep punctures. Eyes globose and prominent. Vertex (after the postfronto-vertical suture) obscure, shining and without punctation. Last joint of maxillary palpi very faintly obscured round the apex.

Prothorax distinctly wider than long, fringed with long hairs on the lateral sides which in the middle are gently curved in, distinctly narrowed behind; the anterior angles much rounded, the posterior also but less and more obtuse; anterior and posterior margin curved out, the former towards the head, the latter towards the scutellum; disc with rather fine punctures in the middle, coarser and denser at the sides where they are not all of one size.

Scutellum more or less obscure. Elytra, in both sexes, very conspicuously inflated at the sides, the inflation having its maximum in the middle; they are divaricate at the apex and each sutural angle is prolonged into a triangular and acute expansion or tooth. The ten normal and the eleventh shortened (juxta-scutellar) series are composed of punctures of moderate strength, nearly three times smaller as the intervals are wide. These interspaces are flat, more shining in the ♂, obscurely alutaceous in the ♀. The rather long juxta-scutellar series of punctures is often individually irregular.

Claws in both sexes long. In the ♂ the second joint of anterior tarsi is much inflated.

Mesosternum with a very obscure raised longitudinal line in the middle. Metasternum in the middle before the hind coxae with a small and ovate excavation. First ventral segment with a longitudinal median and basal carina. Fifth segment in both sexes without emargination.