

A revision of the Old World *Parapiagetia* KOHL
(Hymenoptera, Sphecidae)

Gatunki rodzaju *Parapiagetia* KOHL (Hymenoptera, Sphecidae) Starego
Świata *

by

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ABSTRACT. The Old World species of *Parapiagetia* are revised for the first time; a key for their identification is provided. Of the 23 species recognized, 9 are described as new: *P. bidens* (Upper Volta), *biskrensis* (Algeria), *flora* (Sri Lanka), *indica* (India, Pakistan), *krombeini* (Egypt), *maligna* (Mali), *nilotica* (Sudan), *subtilis* (Namibia), *zomba* (Malawi). The following names are newly placed in synonymy: *P. ferox* ARNOLD, 1922; *rhodesiana* ARNOLD, 1922; *wickwari* TURNER, 1914; and *capensis* BRAUNS, 1910 = *erythropoda* (CAMERON, 1889); *P. zorah* DE BEAUMONT, 1955 = *mongolica* (F. MORAWITZ, 1889).

CONTENTS

Introduction	602
Phylogeny	603
Key to the species	607
<i>Odontostoma</i> group	612
<i>Erythropoda</i> group	632
Bibliography	667
Index of names	669

* Praca finansowana przez PAN.

INTRODUCTION

The genus *Parapiagetia* was described later than most other *Larrinae* genera (KOHL, 1896). The reason of such a late discovery were mainly the rarity of its representatives and absence of any conspicuous diagnostic characters. KOHL (1896) characterized *Parapiagetia* mainly by the elongate gaster, but this feature actually occurs in a part of the species only. Consequently, the true diagnostic characters of *Parapiagetia* remained unknown for 80 years. During that period, 2 other names were proposed for the genus: *Lirosphex* BRÈTHES, 1913, and *Psammosphe* GUSSAKOVSKIJ, 1952; they were subsequently synonymized with *Parapiagetia*, the first by MENKE (in BOHART and MENKE, 1976), the second by DE BEAUMONT (1955b). Several Asian and North African species were described in *Tachytes* or *Tachysphex*; they were transferred to *Parapiagetia* by DE BEAUMONT (1947, 1955b, 1956) and PULAWSKI (1961, 1975). MENKE recently (in BOHART and MENKE, 1976) demonstrated that the main diagnostic feature of the genus is a pair of elongate sclerites between the metasternal apex and propodeum ("propodeal sternite" of MENKE); these sclerites separate the hindcoxae from the gaster. The genus is still poorly known, and it has never been revised. A species group classification was proposed by DE BEAUMONT (1955b, 1956, 1960); it was then refined by PULAWSKI (1961) and MENKE (in BOHART and MENKE, 1976). My studies show that two of DE BEAUMONT's groups, the *genicularis* and *odontostoma* groups, are connected by intermediate species with various combinations of characters. Consequently, of the four species groups in *Parapiagetia* recognized by MENKE I recognize 3 only: the *subpetiolata*, *odontostoma*, and *erythropoda* groups. I also found that several characters used by DE BEAUMONT and by MENKE have no diagnostic value at the species group level. They are: length of episternal sulcus and of marginal cell; presence or absence of setae on female pygidial plate; presence or absence of setal depressions on male gastral sterna; presence or absence of tooth on penis valve.

The present paper is an attempt to revise the Old World species, i.e., the *odontostoma* and *erythropoda* groups. Several new characters have been discovered, most types examined, all known species redescribed, 9 new species described, and keys for their identification are provided for the first time. The main difficulty was the scarcity of the available material: of the 23 species recognized here, 8 are known from single specimens; one species (*P. capitalis*) has not been collected for 79 years.

Specimens for this paper were lent by institutions and private collections. The cooperation of the people involved is acknowledged with thanks. They are referred to in the text by the following abbreviations:

BMNH: British Museum (Natural History), London, England (Mr. C. R. VARDY),
 ByS: Dr H. BYTINSKI-SALZ, Tel Aviv, Israel,
 FSAG: Faculté des Sciences Agronomiques de l'Etat, Gembloux, Belgium (Dr J. LECLERCQ),
 KMG: Mr K. M. GUICHARD, London, England (private collection),
 MNHN: Muséum National d'Histoire Naturelle, Paris, France (Dr S. KELNER-PILLAULT),
 MZL: Musée Zoologique, Lausanne, Switzerland (Dr J. AUBERT),
 NHMB: Naturhistorisches Museum, Basel, Switzerland (Dr C. BARONI URBANI),
 NMR: National Museum of Rhodesia, Bulawayo, Rhodesia (Mr F. C. DE MOOR),
 NHMV: Naturhistorisches Museum, Vienna, Austria (Dr M. FISCHER),
 OUM: Oxford University Museum, Oxford, England (Mr C. O'TOOLE),
 PMFV: Mr P. M. F. VERHOEFF, Utrecht, Netherlands (private collection),
 SMNS: Staatliches Museum für Naturkunde in Stuttgart, Ludwigsburg, Federal Republic of Germany (Dr K. W. HARDE),
 TMB: Természettudományi Múzeum, Budapest, Hungary (Dr J. PAPP),
 TMP: Transvaal Museum, Pretoria, South Africa (Mr J. A. VAN REENEN, Mr M. J. SCOBLE),
 USNM: United States National Museum, Washington, D. C., USA (Dr A. S. MENKE),
 VLK: Dr V. L. KAZENAS, Alma Ata, USSR,
 WJP: W. J. PULAWSKI, Wrocław, Poland,
 ZIL: Zoological Institute of the Academy of Sciences, Leningrad, USSR (Dr V. I. TOBIAS),
 ZMB: Zoologisches Museum der Humboldt Universität, Berlin, German Democratic Republic (Dr E. KÖNIGSMANN),
 ZMK: Zoologisk Museum, Copenhagen, Denmark (Dr O. LOMHOLDT),
 ZSBS: Zoologische Sammlung des Bayerischen Staates, Munich, Federal Republic of Germany (Dr E. DILLER).

I wish to express my gratitude to persons who helped me during this study. My friend Dr A. S. MENKE made many excellent suggestions, and helped with English. Mr C. R. VARDY arranged loans of material from sources unknown or unavailable to me, and critically reviewed the manuscript of this paper. Mr. B. KOZŁOWSKI made the drawings, and Miss G. ZDUNEK draw the maps.

The signs and terms used in the text are defined as follows:

! — in bibliographic quotations: type seen.
 DOA — diameter of the anterior (mid) ocellus,
 clypeus — the clypeus has a middle section and two lateral sections; the middle section is usually divided into basomedian area, bevel and lip. The prominent part of the middle section is often referred to as the lobe.

PHYLOGENY

Any phylogenetic considerations of *Parapiagetia* must be confined at present to the comparative morphology of adults and geographic

distribution, since other data (ecology, biology, larvae, fossils) are scarce or unavailable. My main conclusions on the evolution of the genus are summarized in fig. 1.

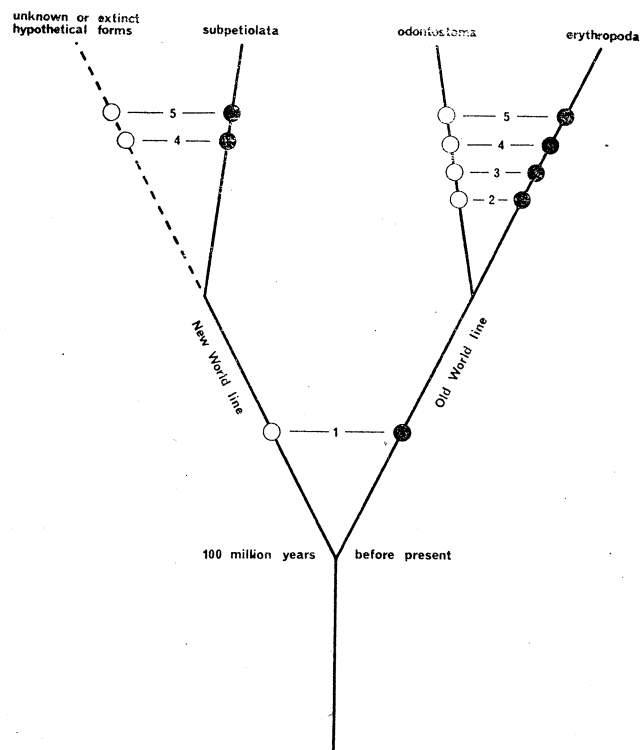


Fig. 1. Hypothetical phylogenetic tree of *Parapiagetia* species groups. Light circles: generalized character states; solid circles: specialized character states. Numbers refer to characters discussed in the text (p. 606)

The most striking morphological feature of the genus is a pair of elongate sclerites between the metasternal apex and propodeum. Similar sclerites appear also in some other *Sphecidae*, all of which are characterized by an elongate gaster (*Sphecinae*, some *Ampulicinae*, some *Trypoxylon*). Possibly these sclerites reinforce the gastro-propodeal articulation or play a role in gaster movements. It may be therefore assumed that *Parapiagetia* originated by elongation of gaster from its ancestor group; the elongation was probably the result of a peculiar way of life. If this reasoning is correct, the short gaster observed in many species of the genus must be secondary.

The geographic distribution of the genus is peculiar (fig. 2). *Parapiagetia* occurs in southern South America (*subpetiolata* group), Africa, south-west and central Asia, and south-east Europe (*odontostoma* and *erythropoda* groups).

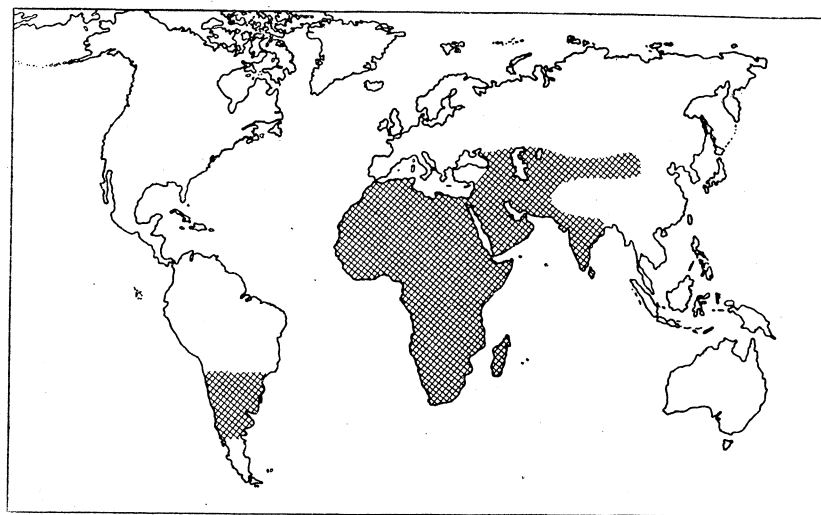


Fig. 2. Overall distribution of the genus *Parapiagetia*

This disjunct range suggests that the genus existed at the time when South America separated from Africa, i.e., some 100 million years ago. The fact that *Parapiagetia* species are unknown from Australia indicates either that this continent had separated from remaining Gondwana before the genus was evolved, or that *Parapiagetia* became extinct there (the third possibility is that *Parapiagetia* is so rare in Australia that it has never been collected there).

All the Old World *Parapiagetia* are characterized by the elongate paramandibular process of the hypostoma. This almost certainly is a specialization, and a short paramandibular process in the New World species (and in other *Larrini*) is primitive. Apparently elongation of the paramandibular process took place in the Old World stock after the separation of Africa and South America, but before the formation of the *odontostoma* and *erythropoda* groups.

The *erythropoda* group shares with the *subpetiolata* group asymmetrical male claws of mid and hindtarsi, and apically rounded male gastral sternum VIII. This may be convergence, as these specialized features

were probably not present in the ancestral stock common to both the *erythropoda* and *odontostoma* groups (they lack in the latter group).

Morphological characters believed to be primitive are listed below, and their corresponding specialized states are given in parantheses:

1. Paramandibular process broadly separated from back side of clypeus (paramandibular process touching back side of clypeus).
2. Median vein of forewing diverging far from *cu-a* (median vein of forewing diverging close to *cu-a*).
3. Femora and tibiae long, as in *P. odontostoma* (femora and tibiae short, as in *P. erythropoda*).
4. Gastral sternum VIII of male emarginate apically (gastral sternum VIII rounded or truncate apically).
5. Male claws symmetrical (male claws strongly asymmetrical).
6. Ventral margin of mandible stepped or notched (ventral mandibular margin entire).
7. Middle clypeal section weakly, evenly convex (middle clypeal section with crest or prominence).
8. Clypeal lobe of male broadly rounded (clypeal lobe of male sharply pointed).
9. Episternal sulcus reaching anteroventral margin of mesopleuron (episternal sulcus not reaching anteroventral margin of mesopleuron).
10. Propodeal socket (for gastro-propodeal tendon) oriented vertically (propodeal socket oriented obliquely).
11. Gaster elongate (gaster short).
12. Gastral sterna of male evenly pubescent throughout (gastral sterna of male with apical depressions which are either glabrous or covered with long hair).
13. Forecoxa weakly, evenly convex, not carinate anteriorly (forecoxa concave, with carinate foremargin).
14. All tarsomeres V short, weakly curved (mid and hindtarsomere V long, markedly curved).
15. Marginal cell of forewing long (marginal cell of forewing short).
16. Hair of propodeal dorsum pointing forwards (hair of propodeal dorsum pointing sideways).
17. Vestiture not obscuring underlying integument (vestiture obscuring underlying integument).

In most cases the origin and function of the above specializations cannot be explained at present. The peculiar structures of the female clypeus and the long apical tarsomere are probably adaptations for

catching and carrying prey. The dense vestiture apparently protects the body against solar radiation, and the shortening of the marginal cell is often observed in small *Hymenoptera* inhabiting desert areas.

To evaluate the level of specialization of the two species groups of *Parapiagetia* discussed here, the *odontostoma* and *erythropoda* groups, a numerical method adapted from BOHART and MENKE (1976) has been used. The figures from 0 to 4 are given for each specialized character according to the following scheme: 0 — character absent, 1 — character present in few representatives only, 2 — character present in about half of representatives, 3 — character present in almost all representatives, 4 — character present in all representatives. A value of 14 is obtained for the *odontostoma* group, and 44 for the *erythropoda* group. Thus the *odontostoma* group is by far the more primitive and indeed, some of its species (e.g. *P. vernalis*) are probably rather close to the archetype of the genus.

KEY TO THE SPECIES

♀♀

Unknown: *P. subtilis*.

1. Vein *M* of forewing diverging beyond *cu-a* by a distance as long as or longer than *cu-a* (fig. 3) (*odontostoma* group) 2.
- Vein *M* of forewing diverging beyond *cu-a* by a distance shorter than *cu-a* (fig. 5) (*erythropoda* group) 9.
2. Free margin of clypeal lobe straight, arcuate, or obtusely tridentate, thus without mesal notch 3.
- Free margin of clypeal lobe bi- or quadridentate, thus with mesal notch (figs 39, 44) 8.
3. Marginal cell longer: apical abscissa of radial sector much longer than apical truncation of marginal cell (fig. 10) 4.
- Marginal cell shorter: apical abscissa of radial sector about as long as apical truncation of marginal cell (fig. 31) 7.
4. Hair appressed (or nearly so) on scutum, scutellum and postscutellum 5.
- Hair erect, a little longer than DOA, on scutum, scutellum and postscutellum 6.
5. Vertex hair erect, about 1 DOA long; scutal punctures (except anteriorly) many diameters apart; clypeal lip with rounded lateral corner (fig. 8); gastral terga without silvery pubescence
. *P. genicularis* (F. MORAWITZ), p. 612.
- Vertex hair appressed; scutal punctures about 1 diameter apart; clypeal lip with prominent lateral corner (fig. 17); gastral terga silvery pubescent *P. substriatula* (TURNER), p. 614.

6. Clypeal lip arcuate (fig. 18); length of gastral tergum I 1.5–2.2 times apical width; s. Africa *P. vernalis* BRAUNS, p. 617.
- Clypeal lip obtusely pointed (fig. 24); length of gastral tergum I about 1.1 times apical width; North Africa, Kazakh SSR *P. piagetioides* (SAUNDERS), p. 618.
7. Mesopleuron with well defined, subcontiguous punctures, or punctatorugose (except sometimes dorsally); median tooth of clypeal lip much broader than lateral one (fig. 30) *P. tridentata* TSUNEKI, p. 621.
- Mesopleural punctures fine, more than 1 diameter apart; median tooth of clypeal lip usually as narrow as lateral one (fig. 36) *P. kaszabi* TSUNEKI, p. 624.
8. Clypeal free margin quadridentate (fig. 39); ventral mandibular margin without lobe at midlength; mesopleuron densely punctate, integument not obscured by vestiture; forecoxa concave anteriorly, with carinate foremargin; mid and hindtarsomere V short, weakly curved; marginal cell long; apical abscissa of radial sector longer than apical truncation of marginal cell *P. odontostoma* (KOHLE), p. 626.
- Clypeal free margin bidentate (fig. 44); ventral mandibular margin with lobe at midlength; mesopleuron with a few, conspicuous, vertical ridges, its integument hidden under vestiture; forecoxa weakly concave, foremargin not carinate; mid and hindtarsomere V long, markedly curved (fig. 46); marginal cell of forewing short; apical abscissa of radial sector as long as or shorter than apical truncation of marginal cell *P. mongolica* (F. MORAWITZ), p. 628.
9. Ventral mandibular margin entire; clypeal lobe with platform-like elevation, its free margin bidentate (fig. 123); Arabia, Transcaspia *P. rufescens* (GUSSAKOVSKIJ), p. 664.
- Ventral mandibular margin stepped or notched; clypeus not bidentate or, if bidentate (*P. bidens*, *maligna*), without platform-like elevation 10.
10. Clypeal lobe pointed (fig. 115); flagellomeres IV–IX about as long as wide; scutal vestiture almost totally obscuring underlying integument; Iran *P. richteri* DE BEAUMONT, p. 661.
- Clypeal lobe not pointed; flagellomeres longer than wide; scutal vestiture not obscuring underlying integument 11.
11. Clypeal lobe bidentate (figs 58, 59); West Africa 12.
- Clypeal lobe not bidentate 13.
12. Propodeal socket oriented almost vertically (cf. fig. 9); mesopleuron punctatorugose; forecoxa concave near inner margin *P. bidens* sp. n., p. 637.
- Propodeal socket oriented obliquely (cf. fig. 103); mesopleuron punctate; forecoxa flat *P. maligna* sp. n., p. 638.
13. Clypeal lobe with median, longitudinal process 14.

- Clypeal lobe without median, longitudinal process 15.
14. Clypeal process fingerlike, not emarginate anteriorly (fig. 60); length of apical depression of gastral sternum II about 0.4 of distance from hindmargin to basal platform; gaster black, femora and tibiae red. Madagascar *P. longicornis* ARNOLD, p. 639.
- Clypeal process not fingerlike, emarginate anteriorly (fig. 90); length of apical depression of gastral sternum II about 0.25 of distance from hindmargin to basal platform; gaster red basally, femora and tibiae black; Sri Lanka *P. flora* sp. n., p. 652.
15. Clypeus not produced into lobe, its free margin arcuate, with 7 pairs of teeth (fig. 52); Malawi *P. zomba* sp. n., p. 633.
- Clypeus with median lobe (which is short in *P. nilotica*), its free margin differently shaped 16.
16. Forecoxa weakly concave anteriorly, with carinate foremargin; clypeal lobe with arcuate crest which is low mesally, prominent laterally (figs 96–100); crest angulate in some Rhodesian specimens (fig. 101); Africa, Pakistan, India, Sri Lanka *P. erythropoda* (CAMERON), p. 655.
- Forecoxa not concave anteriorly, foremargin not carinate; clypeus different 17.
17. Clypeal lobe without platform-like elevation 18.
- Clypeal lobe with platform-like elevation 20.
18. Mesopleural punctures more than 1 diameter apart; mesopleural integument not obscured by vestiture; gaster black; Madagascar *P. pluridentata* ARNOLD, p. 635.
- Mesopleural punctures subcontiguous; mesopleural integument obscured by vestiture; gaster red; North Africa 19.
19. Scutum with fine punctures which are several diameters apart on disk, and also with large, scattered punctures; clypeal lobe with obtuse, transverse carina which is broadly interrupted mesally (fig. 75) *P. biskrensis* sp. n., p. 645.
- Scutum with fine punctures which are less than 1 diameter apart, without large punctures; clypeal lobe without transverse carina (fig. 64) *P. krombeini* sp. n., p. 641.
20. Clypeal lobe shorter (fig. 66); pygidial plate with subcontiguous punctures; its setae almost totally hiding underlying integument; mid and hindtarsomere V shorter, less curved (fig. 68); Sudan *P. nilotica* sp. n., p. 642.
- Clypeal lobe longer (figs 77, 84); pygidial plate sparsely punctate basally; its setae not obscuring underlying integument; mid and hindtarsomere V longer, more curved (cf. fig. 106) 21.
22. Clypeal platform-like elevation with entire foremargin; vertex raised above orbit level; gena swollen (fig. 78); inner mandibular margin expanded before apex (fig. 77); Algeria *P. capitalis* (SAUNDERS), p. 646.

- Clypeal platform-like elevation with emarginate foremargin (fig. 84); vertex not raised above orbit level (of the usual form); gena flat; inner mandibular margin not broadened before apex; Pakistan, India *P. indica* sp. n., p. 649.

♂♂

Unknown: *P. bidens*, *biskrensis*, *capitalis*, *krombeini*, *maligna*, *pluridentata*, *substriatula*, *zomba*.

1. Vein *M* of forewing diverging beyond *cu-a* by a distance as long as or longer than *cu-a* (fig. 3); gastral sternum VIII emarginate apically (fig. 4); claws equal in length (*odontostoma* group) 2.
- Vein *M* of forewing diverging beyond *cu-a* by a distance shorter than *cu-a* (fig. 5); apex of gastral sternum VIII straight or rounded (fig. 7), sometimes with inconspicuous notch (fig. 6); outer claw of mid and hindtarsus much longer than inner claw (*erythropoda* group) 8.
2. Scutal hair erect; clypeal lobe sharply pointed (fig. 19); apical abscissa of radial sector 2–4 times longer than apical truncation of marginal cell (cf. fig. 10) 3.
- Scutal hair appressed or nearly so; clypeal lobe arcuate or truncate, but pointed in *P. tridentata* in which apical abscissa of radial sector equals 0.8–1.2 of apical truncation of marginal cell (fig. 31) 4.
3. Length of gastral tergum I 1.6–2 times apical width (fig. 20); volsella: fig. 21; South Africa. *P. vernalis* BRAUNS, p. 617.
- Length of gastral tergum I about 1.3 times apical width (fig. 26); volsella: fig. 27; North Africa, Kazakh SSR *P. piagetioides* (SAUNDERS), p. 618.
4. Scutum anteriorly with irregular, transverse ridges; mesopleuron with few strong, vertical ridges which may be obscured by vestiture *P. mongolica* (F. MORAWITZ), p. 628.
- Scutum without transverse ridges (except sometimes in forecorners); mesopleuron without vertical ridges, not obscured by vestiture 5.
5. Length of gastral tergum I 1.1–1.2 times apical width; gastral segment VII reddish; pygidial plate with obtuse marginal carina, its punctures about 1 diameter apart (sometimes evanescent); clypeal lobe arcuate (fig. 12) *P. genicularis* (F. MORAWITZ), p. 612.
- Length of gastral tergum I 1.6–3 times apical width; gastral segment VII black or brownish; pygidial plate with sharp marginal carina, its punctures on average several diameters apart (except apically); clypeal lobe arcuate, truncate or pointed 6.
6. Apical abscissa of radial sector 1.5–2.2 times apical truncation of marginal cell; ventral length of flagellomere I equal to apical diameter; clypeal lobe obtusely truncate (fig. 40); ne. Africa, Israel, Arabian Peninsula *P. odontostoma* (KOHL), p. 626.

- Apical abscissa of radial sector 0.8–1.2 times apical truncation of marginal cell (fig. 31); ventral length of flagellomere I 1.2–1.7 times apical diameter; clypeal lobe arcuate or pointed (figs 32, 37); USSR, Pakistan, China, Mongolia 7.
- 7. Mesopleuron punctatorugose (hypoepimeral area finely punctate or longitudinally ridged); ventral length of flagellomere I 1.6–1.7 times apical diameter; clypeal lobe usually pointed (fig. 32) but sometimes arcuate *P. tridentata* TSUNEKI, p. 621.
- Mesopleuron finely punctate, punctures many diameters apart posteriorly; ventral length of flagellomere I 1.2–1.3 times apical diameter; clypeal lobe arcuate (fig. 37) *P. kaszabi* TSUNEKI, p. 624.
- 8. Clypeal lobe obtusely angulate or arcuate (figs 69, 117) 9.
- Clypeal lobe sharply pointed (figs 86, 107) 10.
- 9. Clypeus: fig. 117; scutal vestiture largely obscuring underlying integument; apical depressions of gastral sterna II–V largely glabrous; pygidial plate sparsely punctate (fig. 118) except densely punctate apically; Iran *P. richteri* DE BEAUMONT, p. 661.
- Clypeus: fig. 69; scutal vestiture not obscuring underlying integument; gastral sterna evenly pruinose throughout; pygidial plate densely punctate; Sudan *P. nilotica* sp. n., p. 642.
- 10. Propodeal dorsum slightly shorter than scutellum; length of gastral tergum I about equal to apical width; hindmargin of sternum VII triangularly produced (fig. 126); sternum VIII (except apically) with longitudinal carina on each side; Arabia, Transcaspiia *P. rufescens* (GUSSAKOVSKIJ), p. 664.
- Propodeal dorsum slightly longer than scutellum; length of gastral tergum I 1.2–1.8 times apical width; hindmargin of sternum VII straight or arcuate; sternum VIII not carinate laterally 11.
- 11. Gastral sterna II–IV with erect hair on apical depressions (fig. 61); hair length 2 DOA on sternum II; Madagascar *P. longicornis* ARNOLD, p. 639.
- Apical depressions of gastral sterna largely glabrous or with appressed hair (also with usual, sparse, suberect setae along foremargin) 12.
- 12. Clypeal lobe truncate or roundly truncate, truncation bearing a short, median projection (fig. 86); Pakistan, India *P. indica* sp. n., p. 649.
- Clypeal lobe gradually narrowing anterad (figs 92, 107) 13.
- 13. Flagellomere I longer than flagellomere II (fig. 81); Namibia *P. subtilis* sp. n., p. 648.
- Flagellomere I shorter than flagellomere II (at least ventrally) 14.
- 14. Ventral length of flagellomere I 0.75–0.8 of apical diameter; volsella and penis valve: figs 93, 94; Sri Lanka *P. flora* sp. n., p. 652.

— Ventral length of flagellomere I 1–1.2 times apical diameter; volsella and penis valve: figs 109–112; Africa, Pakistan, India, Sri Lanka *P. erythropoda* (CAMERON), p. 655.

ODONTOSTOMA GROUP

Vein *M* of forewing diverging beyond *cu-a* by a distance at least as long as *cu-a* (fig. 3). Femora and tibiae longer than in *erythropoda* group. Male: gastral sternum VIII emarginate apically (fig. 4); claws equal in length.

Other characters common to all species are the following: paramandibular process of hypostoma touching, or nearly touching, back side of clypeus; ventral mandibular margin stepped in basal third; mesosternum sparsely punctate; propodeal socket (for gastro-propodeal tendon) oriented almost vertically (fig. 9); episternal sulcus usually reaching anteroventral margin of pleuron but sometimes obsolescens anteriorly; gastral pruinosity (except *P. substriatula*) weak or absent, gastral terga nonfasciate or nearly so; female pygidial plate with a few, sparse punctures, except densely punctate apically; male gastral sterna finely, densely punctate and pubescent throughout, apical depressions unspecialized; gaster (except apical segment in some species) and femora black.

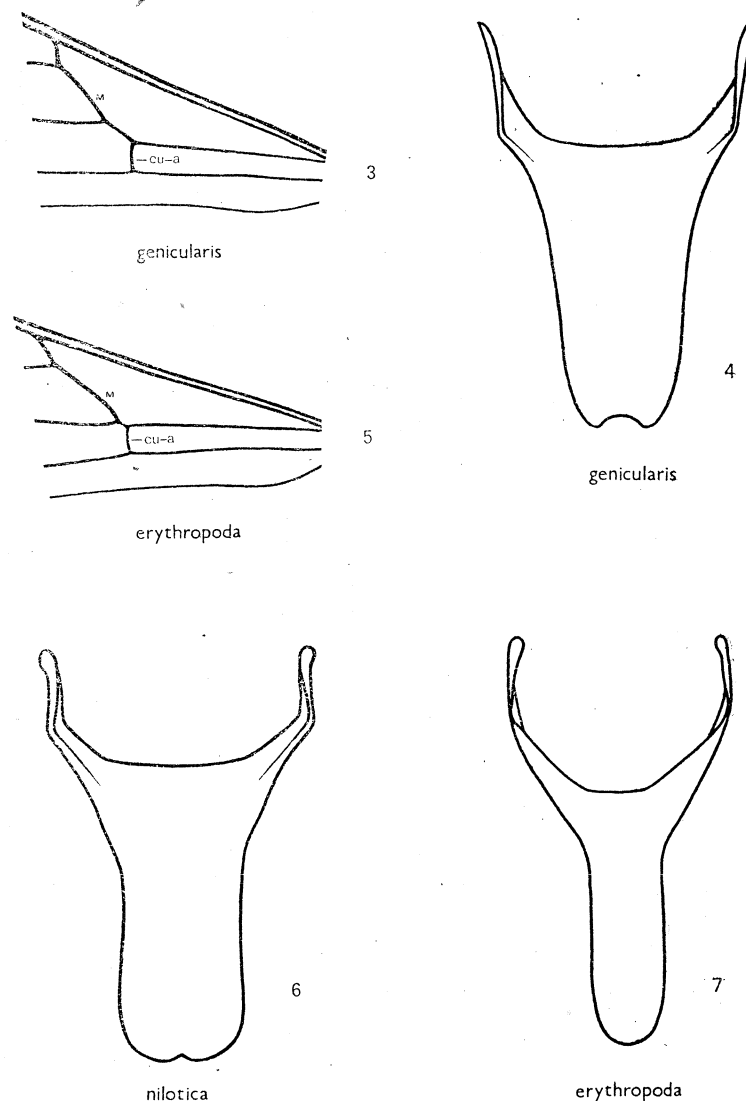
Parapiagetia genicularis (F. Morawitz)

Tachysphex genicularis F. MORAWITZ, 1890:592, ♀. ! Holotype ♀: Turkmen SSR: Pereval between Djebel and Kazanjik (ZIL, Leningrad). — F. MORAWITZ, 1894:342; DALLA TORRE, 1897:680. — As type of *Psammosphe*: GUSSAKOVSKIJ, 1952:247. — In *Parapiagetia*: DE BEAUMONT, 1955b:223, 1960:244; DE BEAUMONT, BYTINSKI-SALZ and PULAWSKI, 1973:14; BOHART and MENKE, 1976:281.

Tachysphex (?) *integer* KOHL, 1892:216, ♂. ! Holotype ♂: Armenia: Arax valley (NHMV, Vienna). Synonymized by PULAWSKI, 1975:314. — DALLA TORRE, 1897:680. — In *Parapiagetia*: DE BEAUMONT, 1947:677, 1955b:223, 1960:244.

DIAGNOSIS

P. genicularis ranges from Egypt to Pakistan, north to southern Caucasus and Uzbek SSR. Like *P. substriatula*, it is characterized by the marginal cell longer than the pterostigma (fig. 10); gastral tergum I about as long as wide apically; hair appressed on scutum, scutellum and postscutellum; and free margin of clypeal lobe truncate or subtruncate in female (fig. 8), arcuate in male (fig. 10). Unlike *P. substriatula*, *P. genicularis* has a very sparsely punctate scutum, erect vertex hair, and the clypeal bevel of the female does not have the corners prominent. The red male gastral segment VII, and the densely punctate male pygidial



Figs 3, 4. Characters of the *odontostoma* group exemplified by *P. genicularis*, 3 — base of female forewing (*M*: median vein, *cu-a*: *cu-a* vein), 4 — gastral sternum VIII of male
Figs 5–7. Characters of the *erythropoda* group exemplified by *P. erythropoda* (5, 7) and *nilotica* (6), 5 — base of female forewing (*M*: median vein, *cu-a*: *cu-a* vein), 6, 7 — gastral sternum VIII of male

plate, with an obtuse marginal carina, are subsidiary diagnostic characters.

DESCRIPTION

Mesopleural punctures less than I diameter apart, hypopleural area often ridged. Foremargin of marginal cell (fig. 10) longer than pterostigma (1.25 times in female, 1.35–1.6 times in male); apical abscissa of radial sector longer than apical truncation of marginal cell (2–3 times in female, 3–4.5 times in male).

Hair appressed on scutum, scutellum and postscutellum; erect, about 1 DOA long on vertex.

♀ — Free margin of clypeal lobe straight or slightly arcuate, its corners not prominent (fig. 8). Scutum not crenulate before hindmargin, its punctures many diameters apart (except anteriorly). Length of gastral tergum I about equal to apical width. Rake spines of forebasitarsus about 1.5 times longer than basitarsus width. Length 5–7 mm.

Tibiae brown or (one female from Israel) ferruginous, except pale yellow basally.

♂ — Free margin of clypeal lobe arcuate (fig. 12). Ventral length of flagellomere I 1.2–1.4 times apical diameter. Length of gastral tergum I 1.1–1.2 times apical width. Pygidial plate with very obtuse marginal carina; its punctures fine, less than to slightly more than 1 diameter apart, sometimes evanescent. Length 4.5–6 mm. Volsella and penis valve: figs 14, 15.

Gastral segment VII totally or largely ferruginous. Tibiae pale yellow, brownish ventrally.

MATERIAL EXAMINED (distribution: fig. 16)

Egypt: Wadi Hoff near Cairo (1 ♂, USNM).

Israel: Bir Rehme (= Kfar Yeroham), 30 km sse. Beersheba (1 ♀, ByS; 1 ♂, WJP), Jericho, Wadi Kelt (1 ♀, 1 ♂, KMG).

Georgian SSR: Lagodekhi (2 ♀, ZIL).

Armenian SSR: Arax valley (1 ♂, NHMV).

Turkey: Ararat (1 ♂, ZSBS).

Uzbek SSR: Kamashi, 38°51'N, 65°23'E (1 ♀, ZIL).

Turkmen SSR: Peveral between Djebel and Kazanjik (1 ♀, ZIL),

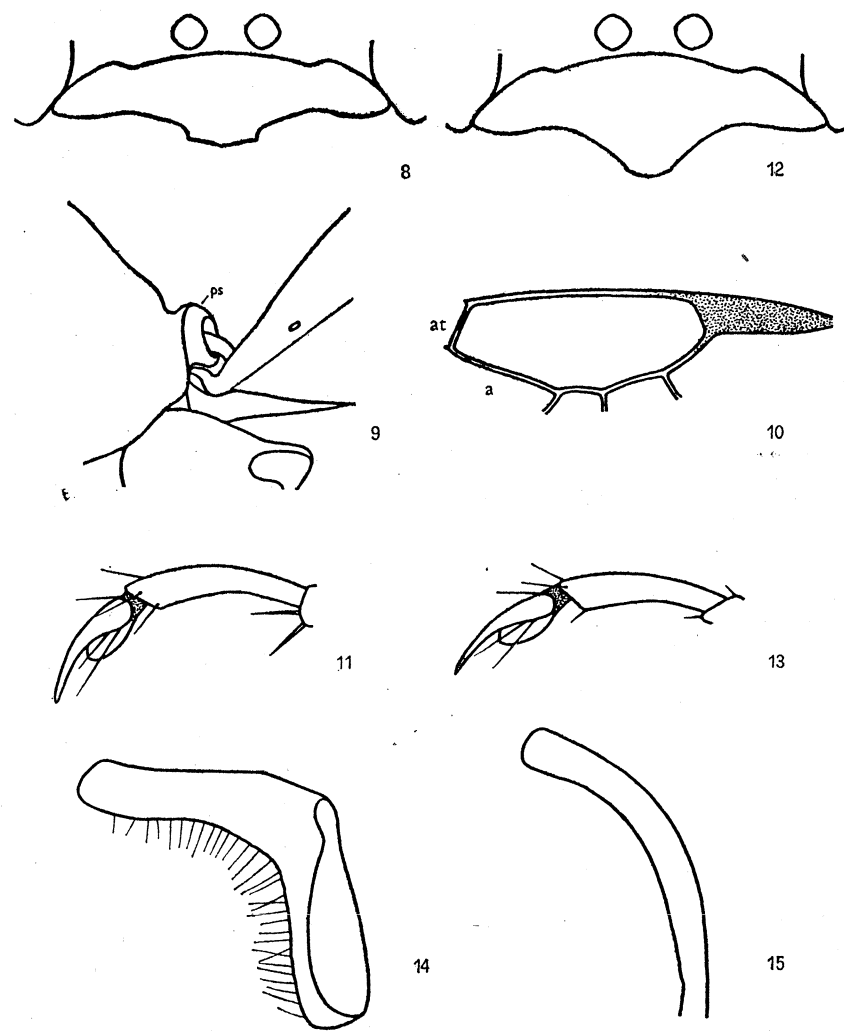
Kary Kul, 65 km n. Ashkhabad (2 ♀, WJP), Ashkhabad (1 ♂, WJP), Serakhs (1 ♀, ZIL).

Tadjik SSR: Zakh-Bursi gorge in Peter-the-Great Range (1 ♂, ZIL).

Pakistan: Lasbella. Prov.: 8 km s Bella (1 ♂, USNM).

Parapiagetia substriatula (Turner)

Tachysphex substriatulus TURNER, 1917:197, ♀. ! Holotype ♀: Pakistan: Punjab: Lahore (BMNH, London). — In *Parapiagetia*: PULAWSKI, 1975:314; BOHART and MENKE, 1976: 281.



Figs 8–15. *P. genicularis*, 8 — female clypeus, 9 — gastropropodeal articulation of female (ps: propodeal socket), 10 — marginal cell of female (a: apical abscissa of radial sector, at: apical truncation of marginal cell), 11 — apical hindtarsomere of female, 12 — male clypeus, 13 — apical hindtarsomere of male, 14 — volsella, 15 — penis valve

DIAGNOSIS

P. substriatula is known from Arabian Peninsula and Pakistan. Unlike all other species of the *odontostoma* group, it has conspicuously silvery fasciate gastral terga. It shares with *P. genicularis* the long marginal cell of the forewing; gastral tergum I about as long as wide apically;

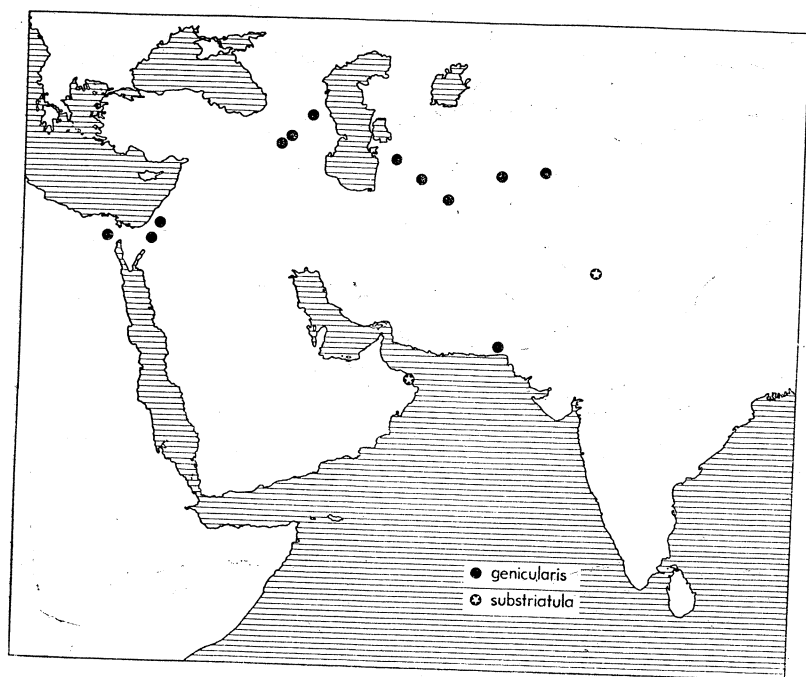


Fig. 16. Geographic distribution of *P. genicularis* and *substriatula*

scutal, scutellar and postscutellar hair appressed; and the almost truncate free margin of the clypeal lobe in the female. It differs from *P. genicularis* by the dense scutal punctation, appressed vertex hair, and the free margin of the clypeal lip in the female with prominent lateral corner.

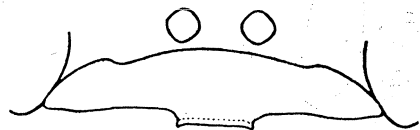


Fig. 17. *P. substriatula*, female clypeus

DESCRIPTION

♀ — Episternal sulcus not reaching anteroventral margin of mesopleuron. Hindtarsomere V slightly shorter than hindbasitarsus. Foremargin of marginal cell 1.5–1.7 times longer than pterostigma; apical abscissa of radial sector about 3 times longer than apical truncation of marginal cell.

Hair appressed on vertex, scutum, scutellum and postscutellum. Mesopleural vestiture appressed, partly obscuring underlying integument. Gastral terga with conspicuous, silvery pubescence (pubescence matted by moisture in the holotype).

Free margin of clypeal lobe almost straight, with sharp, prominent lateral corner (fig. 17). Scutum shining, not crenulate before hindmargin; its punctures fine, about 1 diameter apart. Mesopleuron minutely punctate (punctures subcontiguous), not ridged, scarcely rugose posteriorly. Gastral tergum I about as long as wide apically. Rake spines of forebasitarsus about as long as forebasitarsus width. Length 5.5–6 mm.

Tibiae and tarsi reddish (fore and midtibia yellow dorsally) in the holotype; yellow (tibiae reddish ventrally) in the specimen from Oman.

♂ — Unknown.

MATERIAL EXAMINED (distribution: fig. 16)

Oman: Wadi Quryat (1 ♀, KMG).

Pakistan: Punjab: Lahore (1 ♀, BMNH).

Parapiagetia vernalis Brauns

Parapiagetia vernalis BRAUNS, 1910:667, ♀, ♂. ! Lectotype ♀: South Africa: Cap Province: Willowmore (TMP, Pretoria); present designation. — ARNOLD, 1922:135; BOHART and MENKE, 1976:281.

DIAGNOSIS

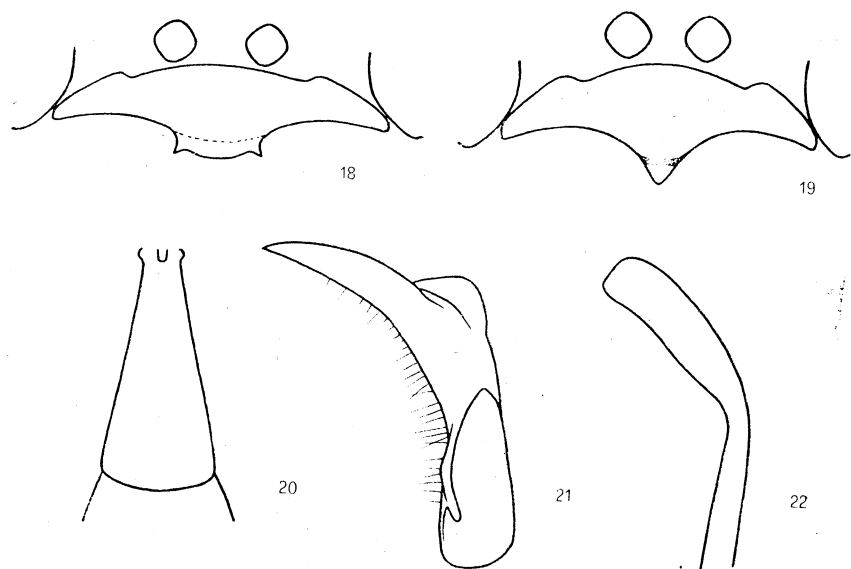
P. vernalis is a South African species. Like the Palearctic *P. piagetioides*, it has erect hair on the scutum, scutellum and postscutellum. It differs from *P. piagetioides* by the longer gastral tergum I, the mesally arcuate free margin of the female clypeal lobe (fig. 18), and a different volsella.

DESCRIPTION

Foremargin of marginal cell longer than pterostigma; apical abscissa of radial sector 3–4 times longer than apical truncation of marginal cell.

Hair erect, slightly longer than DOA, on vertex, scutum, scutellum and postscutellum.

♀ — Clypeal lobe arcuate, usually with prominent lateral corner (fig. 18). Scutum not crenulate before hindmargin. Mesopleural punctures slightly more than 1 diameter apart, several diameters apart posteriorly in lectotype. Length of gastral tergum I 1.5 (lectotype) to 2.2 times apical width. Rake spines of forebasitarsus about 1.2 times longer than forebasitarsus width. Length 6.5–7 mm.



Figs 18–22. *P. vernalis*, 18 — female clypeus, 19 — male clypeus, 20 — segment I of male gaster, 21 — volsella, 22 — penis valve

Tibiae brown (lectotype) or ferruginous.

♂ — Clypeal lobe sharply pointed (fig. 19). Ventral length of flagellomere I equal to apical diameter. Mesopleural punctures 1 diameter or more apart, several diameters apart in a male from Willowmore. Length of gastral tergum I 1.6–2.0 times apical width (fig. 20). Pygidial plate with very obtuse marginal carina, its punctures at most 1 diameter apart. Length 5.5–6 mm. Volsella and penis valve: figs 21, 22.

Tibiae pale ferruginous. Gastral tergum VII black or brown ferruginous.

BIOLOGY

P. vernalis nests in hard soil of cliffs according to BRAUNS (1910).

MATERIAL EXAMINED (distribution: fig. 23)

South Africa: Cap Province: Willowmore (1 ♀, 1 ♂, TMP), Aliwal North (2 ♂, BMNH).
Namibia (= S. W. Africa): Orange River banks near Onseepkans (3 ♀, 1 ♂, BMNH).

Parapiagetia piagetioides (Saunders)

Tachysphex piagetioides SAUNDERS, 1910:524, ♀. ! Holotype ♀: Algeria: Biskra (OUM, Oxford). — MORICE, 1911:105. — In *Parapiagetia*: DE BEAUMONT, 1947:677, 1955b: 223, 1960:243, 244 (♂); BOHART and MENKE, 1967:281.

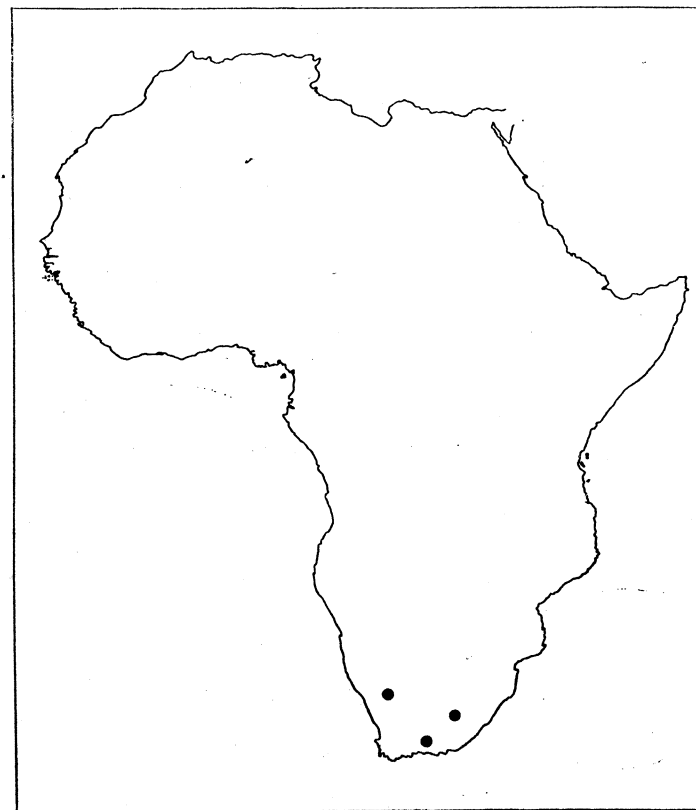


Fig. 23. Geographic distribution of *P. vernalis*

DIAGNOSIS

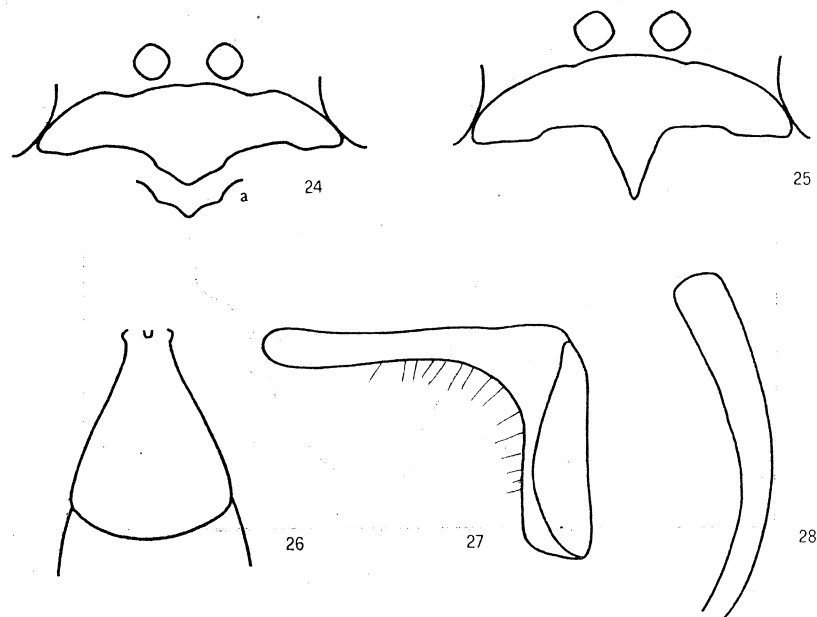
P. piagetioides occurs in North Africa and Kazakh SSR. It shares with the South African *P. vernalis* the erect hair on scutum, scutellum and postscutellum. It differs from the latter species by the shorter gastral tergum I, the pointed clypeal lobe of the female, and a different volsella.

DESCRIPTION

Episternal sulcus not reaching anteroventral mesopleural margin. Foremargin of marginal cell 1.3–1.5 times the length of pterostigma; apical abscissa of radial sector 2–2.5 times longer than apical truncation of marginal cell.

Hair erect, 1.5 DOA long on vertex, 1.5–2 DOA long on scutum, scutellum and postscutellum.

♀ — Clypeal lobe pointed mesally, with weakly prominent lateral corner (fig. 24). Scutum shining, not crenulate before hindmargin; its punctures more than 1 diameter apart (except anteriorly). Mesopleuron rugose (especially posteriorly), hypopimeral area ridged. Length of gastral tergum I about 1.1 times apical width. Rake spines of forebasitarsus almost twice as long as forebasitarsus width. Length 7 mm.



Figs 24–28. *P. piagetoides*, 24 — female clypeus (a: Kazakh female), 25 — male clypeus, 26 — segment I of male gaster, 27 — volsella, 28 — penis valve

Tibiae and tarsi reddish, inner face of fore and midtibiae darkened. A female from Kazakh SSR differs from the North African specimens only by its slightly more convex middle clypeal section, with slightly more prominent corners, and by the almost black tibiae (except red basally and apically).

♂ — Clypeal lobe sharply pointed (fig. 25). Ventral length of flagellomere I 1.3 times apical diameter. Mesopleural punctures 1 diameter or less apart, hypopimeral area weakly ridged. Length of gastral tergum I about 1.3 times apical width (fig. 26). Pygidial plate with very obtuse

marginal carina; its punctures subcontiguous apically, about 1 diameter apart basally. Length 5.5 mm. Volsella and penis valve: figs 27, 28. Tibiae brown reddish.

MATERIAL EXAMINED (distribution: fig. 29)

Algeria: Biskra (1 ♀, OUM), (1 ♀, CU).

Libya: Cyrenaica: Bregà (1 ♀, 1 ♂, BMNH), Wadi Derna (1 ♂, BMNH).

Kazakh SSR: vicinity of lake Inder, 150 km n. Guriev (1 ♀, 27. VI. 1961, V. I. Tobias, ZIL).

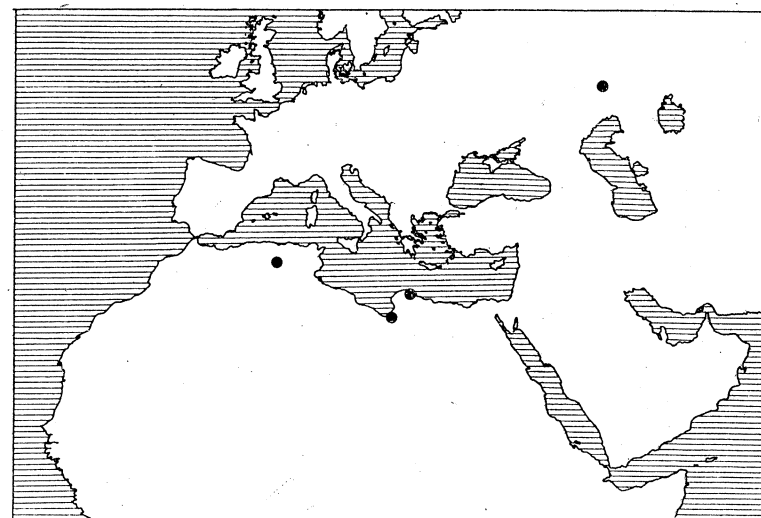


Fig. 29. Geographic distribution of *P. piagetoides*

Parapiagetia tridentata Tsuneki

Parapiagetia tridentata TSUNEKI, 1972:396, ♀. ! Holotype ♀: Mongolia: Baianhongor aymag: Ehingol oasis (TMB, Budapest). — BOHART and MENKE, 1976:281.

Parapiagetia sp.: TSUNEKI, 1972:397 (!).

DIAGNOSIS

P. tridentata ranges between se. Europe and Mongolia, south to Pakistan. As in *P. kaszabi*, the marginal cell is short (fig. 31). Unlike that species, the mesopleuron of *P. tridentata* is densely punctate or punctatorugose, the mesal tooth of the female clypeus is broad (it is usually narrow in *P. kaszabi*), the clypeal lobe of the male is usually pointed, and the ventral length of male flagellomere I equals 1.6–1.7 its apical

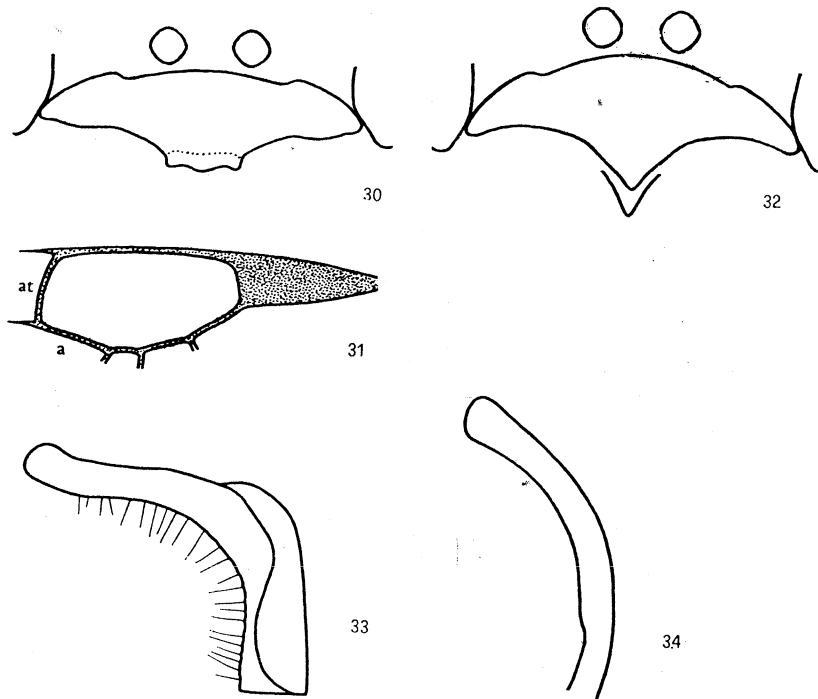
diameter. The marginal cell is also short in *P. mongolica* which can be recognized by features given under that species.

DESCRIPTION

Foremargin of marginal cell as long as or slightly longer (1.0–1.2) than pterostigma (fig. 31); apical abscissa of radial sector 0.8–1.2 times apical truncation of marginal cell.

Hair erect, about 1 DOA long on vertex; appressed on scutum, scutellum and postscutellum.

♀ — Clypeal lobe tridentate, median tooth broader than lateral (fig. 30). Scutum crenulate before hindmargin. Mesopleuron punctatorugose or



Figs 30–34. *P. tridentata*, 30 — female clypeus, 31 — marginal cell of female (*a*: apical abscissa of radial sector, *at*: apical truncation of marginal cell), 32 — male clypeus, 33 — volsella, 34 — penis valve

densely punctate (punctures subcontiguous); hypoepimeral area finely punctate or ridged. Length of gastral tergum I 1.3–1.5 times apical width. Rake spines of forebasitarsus 1.5 times longer than forebasitarsus width. Length 6.5–7.5 mm.

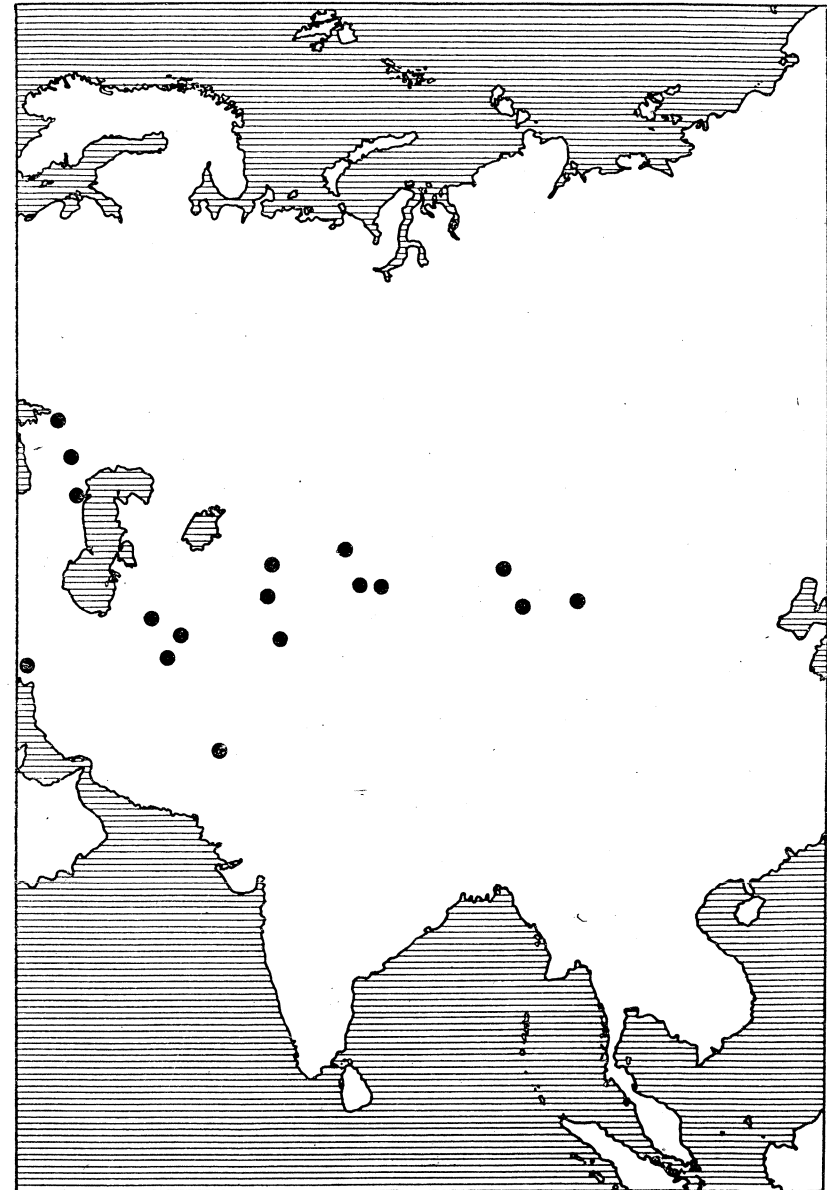


Fig. 35. Geographic distribution of *P. tridentata*

Tibiae pale yellow, brown or black ventrally.

♂ — Clypeal lobe pointed, usually sharply (fig. 32). Ventral length of flagellomere I 1.6–1.7 times apical diameter. Mesopleuron punctatorugose, hypoeimeral area finely punctate or ridged. Length of gastral sternum I usually 2.3–2.6 times its apical width, but only 1.6 times in the Mongolian specimen. Pygidial plate with sharp marginal carina, its punctures one to several diameters apart. Length 4.5–6 mm. Volsella and penis valve: figs 33, 34.

Gastral tergum VII black or brownish. Tibiae pale yellow, black or brown ventrally.

MATERIAL EXAMINED (distribution: fig. 35)

Europaean USSR: Kista on Vostochniy Manych, ca 200 km nee. Stavropol (1 ♀, ZIL), Budionnovskaya, ca 120 km e. Rostov, n. Vesolovskoe Vdkhr. (1 ♂, ZIL); Daghestan: "Tuprozk" (correct spelling?), G. A. Mavromoustakis coll. (1 ♀, FSAG).

Kazakh SSR: Djulek (= Chiili) (1 ♂, ZIL), Ili (4 ♀, 4 ♂, VLK), Balkhash (4 ♀, 5 ♂, VLK), Panfilov (5 ♀, 11 ♂, VLK).

Uzbek SSR: Djiniz-Ketyk — Karakul, 50–80 km nw. Tashkent (1 ♀, ZIL).

Turkmen SSR: Ashkhabad (1 ♀, 3 ♂, ZIL), Tedjen (1 ♀, WJP), Mary (2 ♀, 3 ♂, ZIL), Farab (2 ♀, ZIL).

Tadjik SSR: Dushanbe (6 ♀, 6 ♂, ZIL).

Iran: Khuzestan: Meshregeh, 30°50'N, 49°29'E (1 ♂, USNM).

Pakistan: Baluchistan: Peshin (1 ♂, BMNH).

Mongolia: Baianhongor aymag: Ehingol oasis (2 ♀, TMB); Hovd aymag: 10 km ssw. Somon Bulgan (1 ♂, TMB).

China: Sinkiang: Bugas near Hami (1 ♀, NHMV).

***Parapiagetia kaszabi* Tsuneki**

Parapiagetia kaszabi TSUNEKI, 1972:394, ♀. ! Holotype ♀: Mongolia: Baianhongor aymag: Ehingol oasis (TMB, Budapest). — BOHART and MENKE, 1976:281.

DIAGNOSIS

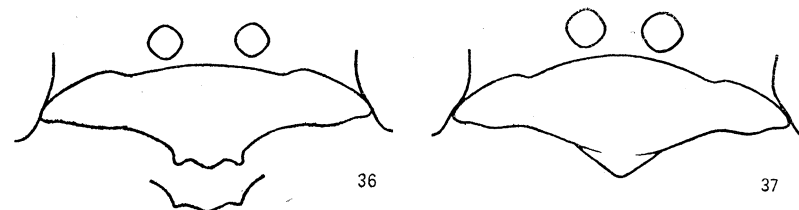
P. kaszabi occurs in Kazakh SSR, Transcaspia, w. China and Mongolia. It shares with *P. tridentata* the short marginal cell, but differs from the latter by the sparse mesopleural punctation, and by the male flagellomere I whose ventral length is 1.2–1.3 times its apical diameter. The shape of the clypeal lobe is a subsidiary diagnostic character. The marginal cell is short also in *P. mongolica* which can be distinguished by the characters given under that species.

DESCRIPTION

Foremargin of marginal cell as long as or slightly shorter than pterostigma; apical abscissa of radial sector slightly longer to slightly shorter than apical truncation of marginal cell.

Vertex hair erect, about 1 DOA long; appressed on scutum, scutellum and postscutellum.

♀ — Clypeal lobe tridentate (fig. 36), median tooth narrow, sharp in specimens from Ashkhabad and Panfilov, but broad, arcuate in individuals from Ehingol and Bugas. Scutum at most weakly crenulate



Figs 36, 37. *P. kaszabi*, 36 — female clypeus, 37 — male clypeus



Fig. 38. Geographic distribution of *P. kaszabi*

before hindmargin. Mesopleural punctures fine, more than 1 diameter apart, evanescent in the specimens from Panfilov. Length of gastral tergum I 1.1–1.2 apical width. Length 5–6 mm.

Tibiae pale yellow, darkened ventrally.

♂ — Clypeal lobe arcuate (fig. 37). Ventral length of flagellomere I 1.2–1.3 times apical diameter. Mesopleural punctures fine, more than 1 diameter apart. Length of gastral tergum I 1.6–2 times its apical width. Pygidial plate with sharp marginal carina, its punctures sparse or evanescent. Length 4–4.5 mm. Volsella and penis valve as in *P. tridentata*.

Tibiae pale yellow, slightly darkened ventrally.

MATERIAL EXAMINED (distribution: fig. 38)

Kazakh SSR: vicinity of Panfilov (2 ♀, 2 ♂, VLK).

Turkmen SSR: Ashgabat (3 ♀, 1 ♂, ZIL).

Mongolia: Baianhongor aymag: Ehingol oasis (1 ♀, TMB).

China: Sinkiang: Bugas near Hami (1 ♀, ZIL).

Parapiagetia odontostoma (Kohl)

Piagetia odontostoma KOHL, 1884:359, ♀. ! Lectotype ♀: southern Sinai: Tor (NHMV, Vienna); present designation. — KOHL, 1885:264, 1894:305 (as *P. saussurei* KOHL, a lapsus for *P. odontostoma*); DALLA TORRE, 1897:676. — In *Parapiagetia*: KOHL, 1896:261 (here as *P. saussurei* KOHL), 361, 373; GINER MARL, 1945:362; DE BEAUMONT, 1955a:196, 1956:201, 1960:243 (syst.), 244; PUŁAWSKI, 1961:86; DE BEAUMONT, BYTINSKI-SALZ and PUŁAWSKI, 1973:14; BOHART and MENKE, 1976:281.

DIAGNOSIS

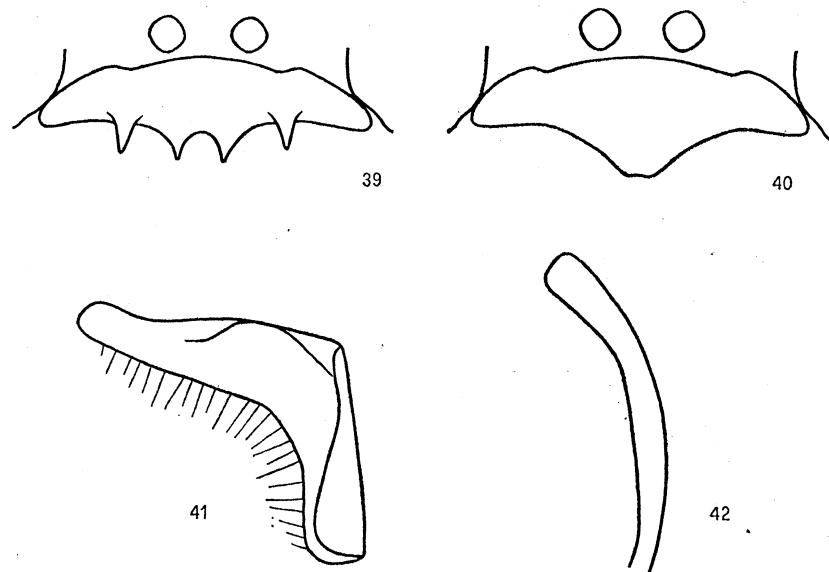
P. odontostoma occurs in ne. Africa, Israel and the Arabian Peninsula. The female can be recognized by the quadridentate clypeal free margin (fig. 39); the absence of a lobe on the ventral mandibular margin at midlength; and the anteriorly concave forecoxa, with carinate foremargin. The male is less distinctive, but differs from other species by its obtusely truncate clypeal lobe (fig. 40). Besides, scutal hair is appressed in *P. odontostoma* (erect in *P. vernalis* and *piagetoides*), and the apical abscissa of the radial sector, as compared with apical truncation of the marginal cell, is longer than in *P. tridentata*, *kaszabi* and *mongolica*, but shorter than in *P. genicularis* and *vernalis*. Gaster tergum I is much longer than in *P. genicularis* males.

DESCRIPTION

Foremargin of marginal cell as long as or slightly longer (1.0–1.2 times) than pterostigma; apical abscissa of radial sector 1.5–2.2 times longer than apical truncation of marginal cell.

Hair suberect, about 1 DOA long on vertex; appressed on scutum, scutellum and postscutellum.

♀ — Ventral mandibular margin practically without lobe at midlength (small lobe present in all other species of the *odontostoma* group). Clypeal free margin quadridentate (fig. 39). Scutum posteriorly with subcon-



Figs 39–42. *P. odontostoma*, 39 — female clypeus, 40 — male clypeus, 41 — volsella, 42 — penis valve

tiguous punctures, indistinctly crenulate. Mesopleural punctures subcontiguous. Length of gastral tergum I 1.6–1.8 times apical width. Unlike other species of the *genicularis* group, the forecoxa is concave in the anterior half; its foremargin carinate. Rake spines of forebasitarsus about 1.5 times longer than forebasitarsus width. Length 7.0–7.5 mm.

Tibiae pale yellow dorsally, black ventrally.

♂ — Clypeal lobe narrow, obtusely truncate (fig. 40). Ventral length of flagellomere I equal to apical diameter. Mesopleuron densely punctate, almost rugose. Length of gastral tergum I 2.3–3 times apical width. Pygidial plate with sharp marginal carina (at least posteriorly), impunctate

or sparsely punctate. Length 5.5–6 mm. Volsella and penis valve: figs 41, 42.

Gastral segment VII black. Tibiae black, pale yellow dorsally (at least at base).

MATERIAL EXAMINED AND RECORDS (distribution: fig. 43)

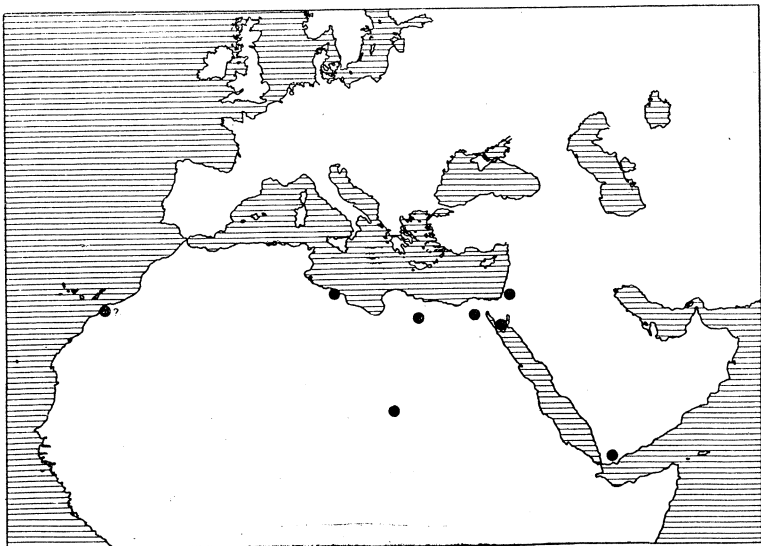


Fig. 43. Geographic distribution of *P. odontostoma*

Spanish Sahara: El Aiun (GINER MARI, 1945); possibly misidentified specimen of *P. mongolica*; this individual could not be located either in Madrid or in Barcelona museums.

Libya: Cyrenaica: Giarabub (DE BEAUMONT, 1955a); Tripolitania: 2 km e. Wadi Caam (DE BEAUMONT, 1960).

Chad: Tibesti: Enneri Kudi (DE BEAUMONT, 1956).

Egypt: Kom Oshim on Ghiza–Fayum road (1 ♂, USNM; 3 ♀, 1 ♂, WJP); Sinai: Tor (2 ♀, NHMV).

Israel: En Gedi on Dead Sea (1 ♀, ByS), Eyn Boqeq (1 ♂, ByS).

Southern Yemen: Al Huseini near Lahej (1 ♂, BMNH).

Parapiagetia mongolica (F. Morawitz)

Piagetia mongolica F. MORAWITZ, 1889:130, ♀, ♂. ! Lectotype ♀: China: Inner Mongolia: Zagan Buryuk on Edsin-gol River (ZIL, Leningrad); present designation. — DALLA TORRE, 1897:676. — In *Parapiagetia*: KOHL, 1896:361, 374; DE BEAUMONT, 1960:243; BOHART and MENKE, 1976:281.

Parapiagetia zorah DE BEAUMONT, 1955a:195, ♀, ♂. Holotype ♀: Egypt: Fayum (MZL, Lausanne). New synonymy. — DE BEAUMONT, 1956:201, 1960:243, 244; PUŁAWSKI, 1961:86; BOHART and MENKE, 1976:281.

Parapiagetia sp.: DE BEAUMONT, 1952:308 (biol.).

Parapiagetia odontostoma: HONORÉ, 1942:54 (misidentification).

DIAGNOSIS

P. mongolica occurs in North Africa, Kazakh SSR, Transcaspia and n. China. It differs from other species of the *odontostoma* group by the following characters: mesopleuron rugose, with few strong, vertical ridges; and/or mesopleural vestiture obscuring underlying integument; scutum obliquely ridged anteriorly (at most scutal forecorner ridged in other species); hair of propodeal dorsum pointing backwards and sideways; mid and hindtarsomere V longer, more curved (figs. 46, 48).

DESCRIPTION

Scutum obliquely ridged anteriorly, ridges rarely inconspicuous. Mid and hindtarsomere V longer, more curved (figs 46, 48) than in the other species of the *odontostoma* group. Foremargin of marginal cell (fig. 45) shorter than pterostigma; apical abscissa of radial sector as long as or shorter than apical truncation of marginal cell.

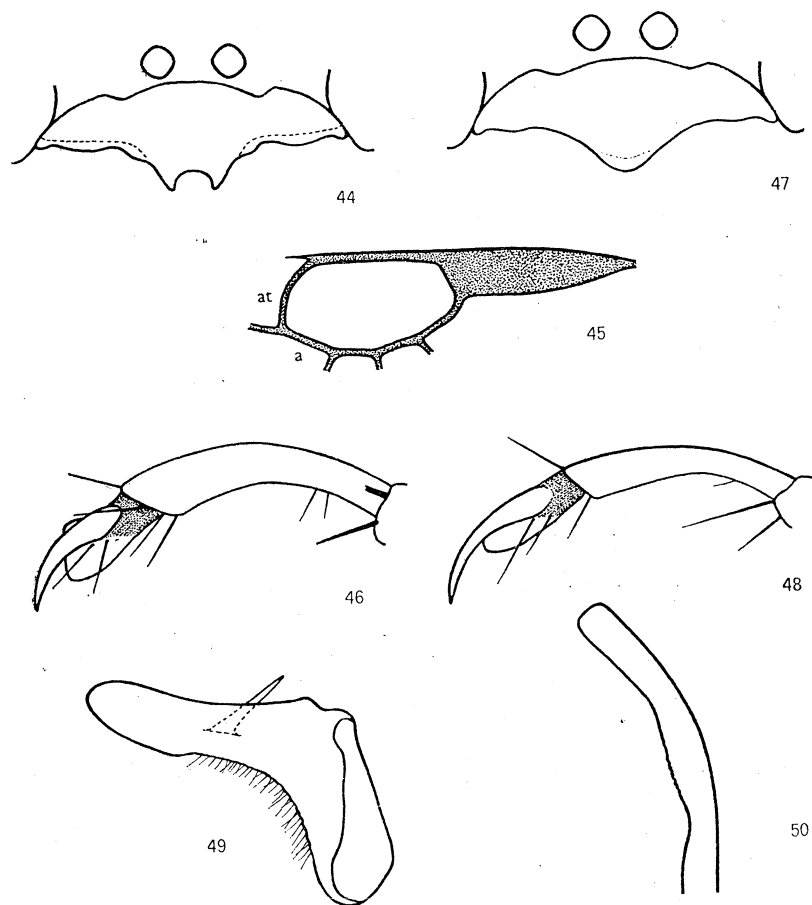
Hair erect, about 1 DOA long, on vertex; appressed on scutum, scutellum and postscutellum; pointing backwards and sideways on propodeal dorsum (pointing forwards, except laterally, in other species of the *odontostoma* group).

♀ — Clypeal lobe bidentate (fig. 44); each tooth flanked by minute, angular process. Scutum not crenulate before hindmargin. Mesopleuron (except finely sculptured hypoepimeral area) dull, rugose, with a few strong, vertical ridges. Length of gastral tergum I 1.6–1.9 times its apical width. Rake spines of forebasitarsus almost 2.5 times as long as forebasitarsus width. Length 8–8.5 mm.

Vestiture denser than in other species of the *odontostoma* group, completely obscuring underlying integument between antennal socket and orbit and on mesopleuron.

Tibiae pale yellow, brown or reddish ventrally.

♂ — Clypeal lobe arcuate or narrowly truncate (fig. 47). Ventral length of flagellomere I 1.25 times its apical diameter. Mesopleuron (except finely sculptured hypoepimeral area) usually rugose, with a few, vertical ridges, but rather finely sculptured in some of the individuals from Soviet Asia (Panfilov, Djilikul). Length of gastral tergum I 2.9–3 times its apical width. Pygidial plate sparsely to densely punctate, its



Figs 44–50. *P. mongolica*, 44 – female clypeus, 45 – marginal cell of female (a: apical abscissa of radial sector, at: apical truncation of marginal cell), 46 – apical hindtarsomere of female, 47 – male clypeus, 48 – apical hindtarsomere of male, 49 – volsella, 50 – penis valve

marginal carina well defined, but not very sharp. Length 5.5–6.5 mm. Volsella and penis valve: figs 49, 50.

Mesopleural vestiture totally obscuring underlying integument in North African specimens and in finely sculptured Asian specimens; mesopleural integument easily visible in remaining Asian individuals.

Gastral tergum VII black or brownish apically. Tibiae pale yellow, brown or black ventrally.

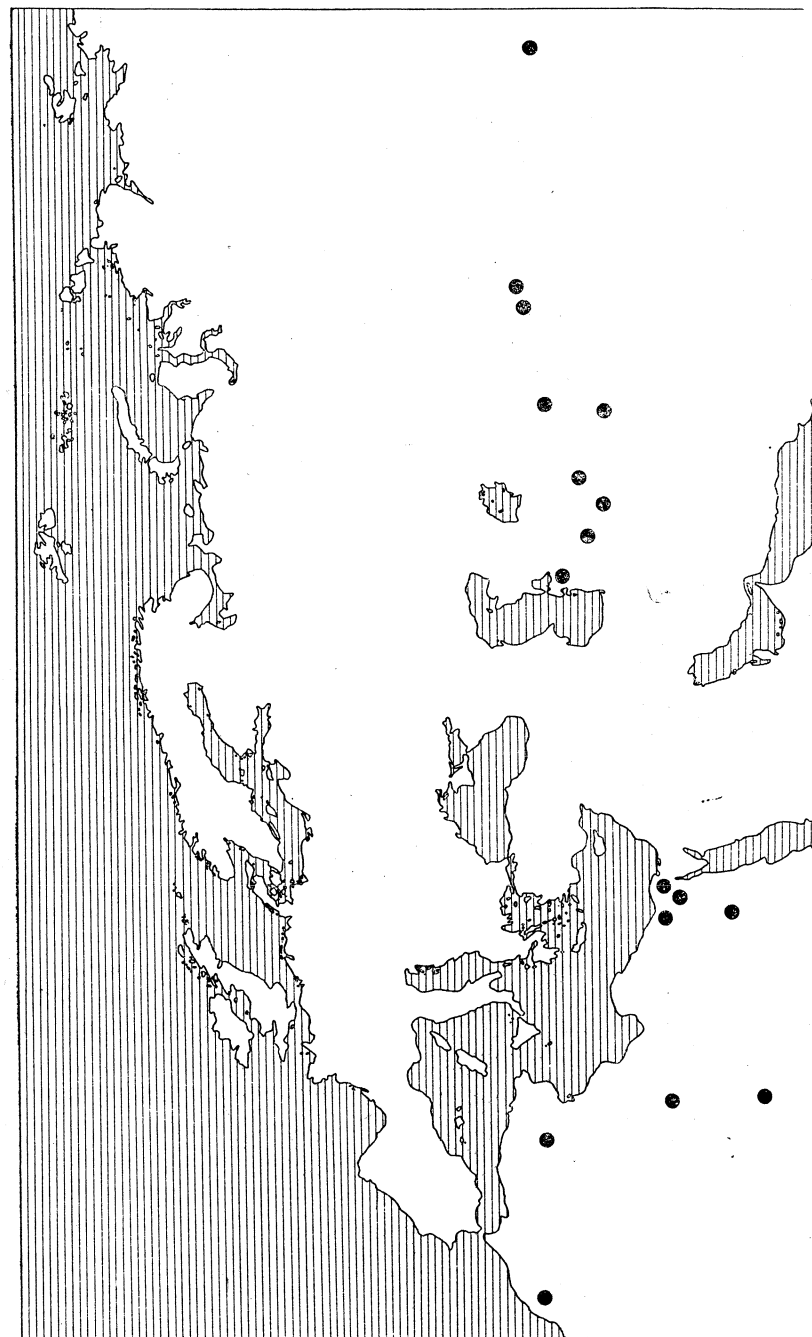


Fig. 51. Geographic distribution of *P. mongolica*

GEOGRAPHIC VARIATION

North Africa: Notaulus inconspicuous. Clypeal bevel of female with transverse tubercle. This form could be called *P. mongolica zorah*.

Soviet Asia, China: Notaulus usually well defined. Clypeal bevel of female with a pair of minute tubercles. The name of *P. mongolica mongolica* can be applied to this form.

BIOLOGY

DE BEAUMONT (1952) mentioned a *Parapiagetia* captured with her prey, a caterpillar, by a member of the Swiss expedition to Morocco. As the only *Parapiagetia* collected by this expedition is *P. mongolica* (see DE BEAUMONT, 1955a, as *P. zorah*), I can establish that this record refers to this species.

MATERIAL EXAMINED AND RECORDS (distribution: fig. 51)

- Morocco: Marrakech (DE BEAUMONT, 1955a).
 Algeria: Biskra (DE BEAUMONT, 1955a).
 Libya: Fezzan: Brak (DE BEAUMONT, 1955a).
 Chad: Tibesti: Bardai (DE BEAUMONT, 1955a, 1956).
 Egypt: Abu Zabal (DE BEAUMONT, 1955a), Dahshur (1 ♂, WJP), Fayum (2 ♀, USNM), Kom Oshim on Ghiza — Fayum road (16 ♀, 9 ♂, USNM; 7 ♀, 6 ♂, WJP), Bir Hooker in Wadi Natrun (1 ♀, 1 ♂, USNM), El Kharga in Kharga oasis (1 ♀, USNM).
 Kazakh SSR: Ili (2 ♀, VLK), Panfilov (2 ♂, VLK), Chimkent area between Arys and Djar-Tube (1 ♂, ZIL).
 Turkmen SSR: Djebel in Bolshiye Balkany range (1 ♂, ZIL), Ashkhabad (1 ♀, ZIL), Tedjen (1 ♀, WJP), Farab (1 ♀, ZIL).
 Tadzhik SSR: Djilikul (1 ♂, VLK; 1 ♂, ZIL).
 China: Inner Mongolia: Zagan Buryuk, lower course of Edsin-gol (1 ♀, 1 ♂, ZIL).

ERYTHROPODA GROUP

Vein *M* of forewing diverging beyond *cu-a* by a distance shorter than *cu-a*. Femora and tibiae shorter than in *odontostoma* group. Male: gastral sternum VIII truncate or rounded apically (fig. 7), at most with inconspicuous notch (fig. 6); outer claw of mid and hindtarsus much longer than its mate.

Other features common to all species are the following: paramandibular process touching back side of clypeus; episternal sulcus not reaching anteroventral margin of pleuron; propodeal dorsum transversely ridged (but ridges evanescent in occasional males, very rarely in females), its hair pointing sideways; propodeal socket (except *P. bidens*) obliquely oriented (fig. 103); length of female gastral tergum I slightly less than

apical width; gastral pruinosity well developed, gastral terga fasciate; pygidial plate of female with broad, flattened setae apically; marginal cell long (its foremargin longer than pterostigma); apical abscissa of radial sector much longer than apical truncation of marginal cell.

Parapiagetia zomba sp. n.

ETYMOLOGY

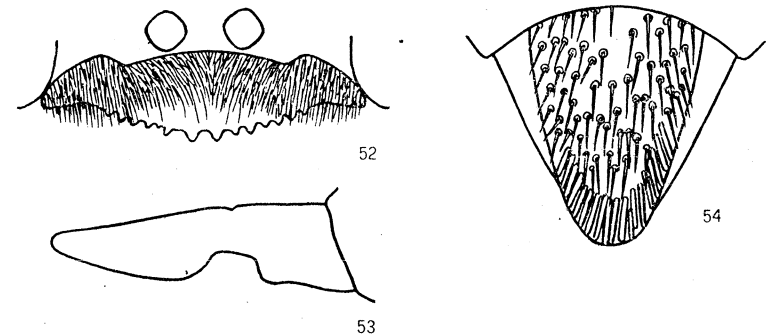
Zomba, the capital of Malawi.

DIAGNOSIS

P. zomba is an ^{Ethiopian} eastern African species. The female has a distinctive not mandible (ventral margin notched) and clypeus (middle section almost flat, free margin without lobe, but with numerous teeth).

DESCRIPTION

♀ — Ventral mandibular margin (fig. 53) notched (stepped in other species of the group, entire in *P. rufescens*). Middle clypeal section almost flat, weakly constricted between lip and bevel; lobe not differentiated; clypeal free margin with 7 pairs of teeth which become smaller toward



Figs 52-54. *P. zomba*, female, 52 — clypeus, 53 — mandible, outer side, 54 — pygidial plate

orbit (fig. 52). Vertex and scutum with fine punctures which are 1-2 diameters apart, and also with large, sparse punctures. Scutellum weakly convex. Mesopleural punctures well defined, about 1 diameter apart. Mesosternal punctures dense, of 2 sizes: fine and large. Propodeal dorsum longer than scutellum. Pygidial plate alutaceous, with setigerous punctures which are contiguous apically, but more than 1 diameter apart mediobasally (fig. 54). Forecoxa weakly, evenly convex, its foremargin

not carinate. Rake spines of forebasitarsus as long as forebasitarsus width. Mid and hindtarsomere V long, markedly curved (as in *P. erythropoda*). Length 8.5 mm.

Hair erect, 1.7 DOA long on vertex, 0.8 DOA long on scutum; mesopleural vestiture not obscuring underlying integument.

Head, thorax and gaster black. Femora, tibiae and tarsi black, forefemur black in basal half.

♂ — Unknown.

MATERIAL EXAMINED (fig. 55)

Holotype ♀: Malawi, Matumbas near Domira Bay, 1. XII. 1914, W. A. Lamborn (BMNH).

Also seen: Namibia: Otavi (1♀, BMNH)

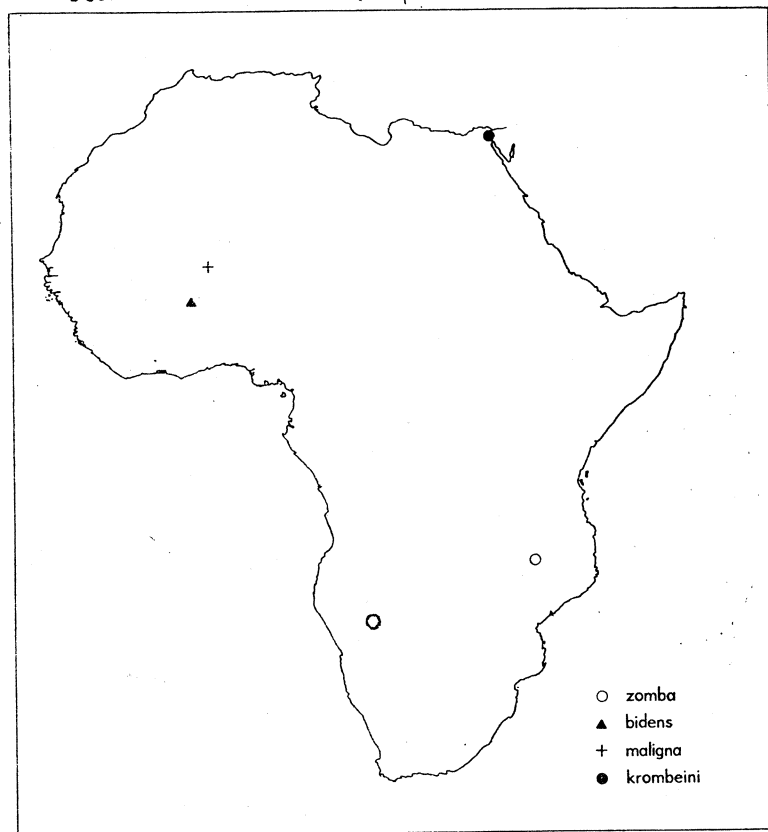


Fig. 55. Geographic distribution of *P. zomba*, *bidens*, *maligna*, and *krombeini*

Parapiagetia pluridentata Arnold

Parapiagetia pluridentata ARNOLD, 1945:94, ♀. ! Holotype ♀: Madagascar: Bekily (MNHN, Paris). — BOHART and MENKE, 1976:281.

DIAGNOSIS

P. pluridentata is one of the two Madagascan species. The female clypeus is distinctive.

DESCRIPTION

♀ — Middle clypeal section weakly convex, densely punctate, without crest or elevation; its free margin quadridentate (lateral teeth small); 3 small teeth on free margin midway between lobe and orbit (fig. 56).

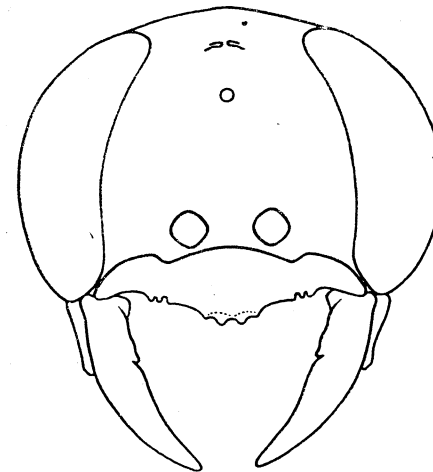


Fig. 56. *P. pluridentata*, frontal view of female head

Vertex, scutum and scutellum with fine punctures which are about 1 diameter apart, and also with large, scattered punctures. Scutellum convex. Punctures fine, more than 1 diameter apart on mesopleuron, about 1 diameter apart on mesosternum. Propodeal dorsum slightly longer than scutellum. Pygidial plate alutaceous, with setigerous punctures which are about 1 diameter apart basally, less than that apically. Gastral sterna II and III with apical depression deeper than in other species. Forecoxa evenly convex, foremargin not carinate. Rake spines of forebasitarsus about 1.5 times longer than forebasitarsus width. Mid and hindtarsomere V long, markedly curved (as in *P. erythropoda*). Length 8.5 mm.

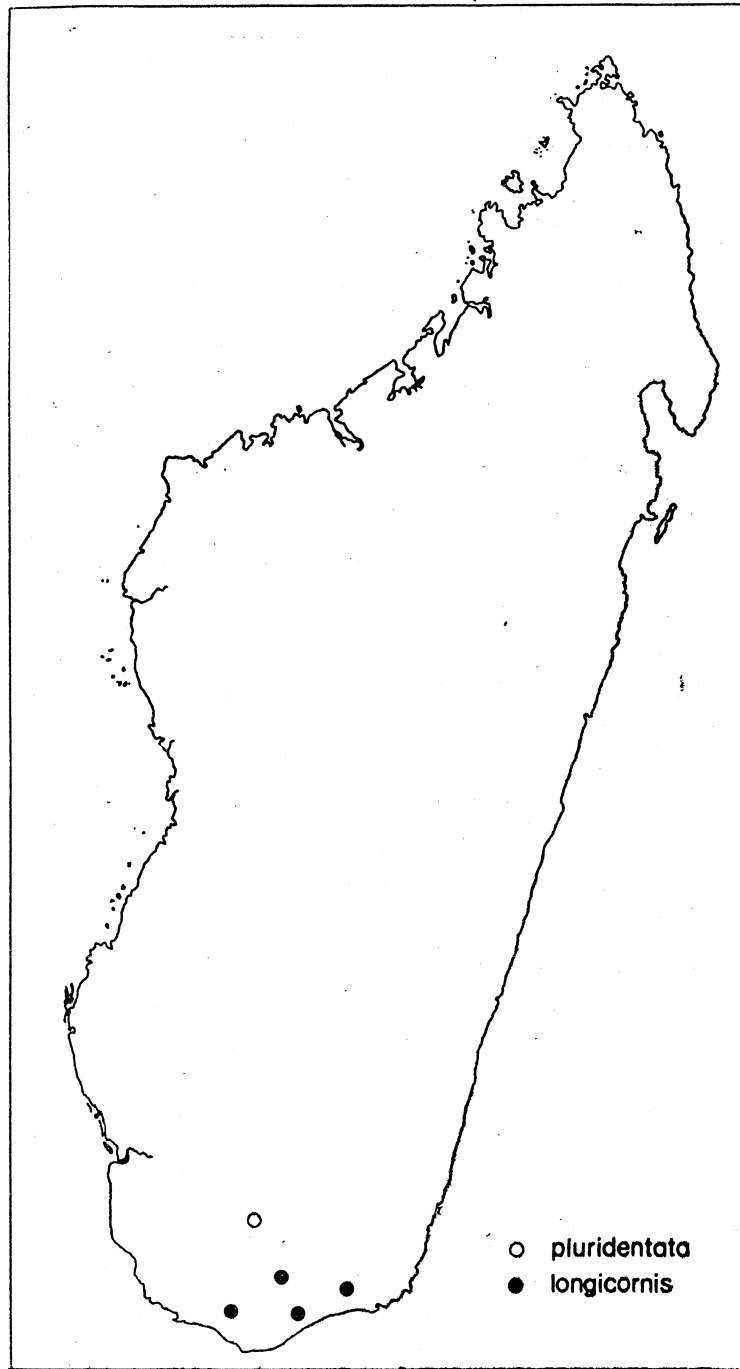


Fig. 57. Geographic distribution of *P. pluridentata* and *longicornis*

Hair erect, 1 DOA long on vertex; appressed on mesothorax; not obscuring underlying integument on mesopleuron.

Head, thorax and gaster black. Femora, tibiae and tarsi red.

♂ — Unknown.

MATERIAL EXAMINED (distribution: fig. 57)

Madagascar: Bekily (1 ♀, MNHN).

Parapiagetia bidens sp. n.

ETYMOLOGY

Bidens, Latin adjective meaning „with two teeth”, with reference to the female clypeus.

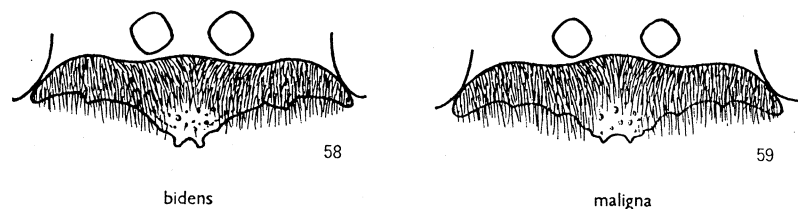
DIAGNOSIS

P. bidens is a West African species. It is primarily characterized by the orientation of the propodeal socket which is in an almost vertical plane (cf. fig. 9). The socket is obliquely oriented in all other members of the *erythropoda* group (fig. 103). As in *P. maligna* and *rufescens*, the female has a bidentate clypeus, but unlike these two species the mesopleuron is punctatorugose and the forecoxa is concave near inner margin in *P. bidens*. Unlike *P. rufescens*, the female of *P. bidens* has a stepped ventral mandibular margin, and no elevation on the clypeal lobe.

DESCRIPTION

Middle clypeal section convex, without crest or elevation, finely punctate and also with large punctures; lobe bidentate, with somewhat prominent lateral corner (fig. 58). Vertex punctures large, about 1 diameter apart. Scutal and scutellar punctures of 2 kinds: fine and large; most punctures more than 1 diameter apart. Scutellum weakly convex. Mesopleuron punctatorugose (finely dorsally, coarsely ventrally). Mesosternal punctures dense, of 2 kinds: fine and large. Propodeal dorsum as long as scutellum. Propodeal socket (for gastro-propodeal tendon) almost vertically oriented. Pygidial plate alutaceous, with setigerous punctures, many of which are over 1 diameter apart basally (less than that apically). Forecoxa shallowly concave near inner margin, foremargin not carinate. Rake spines of forebasitarsus 1.4 times longer than forebasitarsus width. Mid and hindtarsomere V long, markedly curved (as in *P. erythropoda*). Length 11 mm.

Hair erect, 2 DOA long on vertex, 1.5 DOA long on scutum; mesopleural vestiture not obscuring underlying integument.



Figs 58, 59. Female clypeus of *P. bidens* and *maligna*

Head and thorax black. Gastral segments I and II red, the remainder black. Femora, tibiae and tarsi red.

♂ — Unknown.

MATERIAL EXAMINED (distribution: fig. 55)

Holotype ♀: Upper Volta, Ouagadougou, 7. X-XI. 1926, Olsufiev (ZIL).

Also: Burkina Faso: Bobo Dioulasso: Boumouso (2♀, MNHN).

Parapiagetia maligna sp. n.

ETYMOLOGY

Maligna, Latin feminine adjective meaning unkind, illnatedured.

DIAGNOSIS

P. maligna is a West African species. It shares with *P. bidens* and *rufescens* a bidentate female clypeus. It differs from *P. bidens* by the punctate mesopleuron, the flat female forecoxa, and the obliquely oriented propodeal socket; and from *P. rufescens* by the stepped ventral mandibular margin of female, and the absence of an elevation on the female clypeal lobe.

DESCRIPTION

♀ — Middle clypeal section weakly convex, without crest or elevation, finely punctate; lobe bidentate (fig. 59). Vertex punctures uneven (large and small), many diameters apart near orbits. Scutum and scutellum with fine punctures which are 2-3 diameters apart, and also with large, scattered punctures. Scutellum weakly convex. Mesopleural punctures subcontiguous. Mesosternum with fine, dense punctures, and also with somewhat larger, scattered punctures. Propodeal dorsum longer than scutellum. Pygidial plate alutaceous, its punctures 1-2 diameters apart, subcontiguous apically. Forecoxa almost flat, foremargin not carinate. Rake spines of forebasitarsus 1.4 times longer than forebasitarsus width.

Mid and hindtarsomere V long, markedly curved (as in *P. erythropoda*). Length 10 mm.

Hair erect, 1.3-1.5 DOA long on postocellar impression; appressed on scutum. Mesopleural integument obscuring underlying integument.

Head and thorax black; gaster red, tergum IV and segment V largely black. Femora, tibiae and tarsi red.

♂ — Unknown.

MATERIAL EXAMINED (distribution: fig. 55)

Holotype ♀: Mali, Gao, September 1976, K. M. Guichard (BMNH).

Parapiagetia longicornis Arnold

Parapiagetia longicornis ARNOLD, 1945:93, ♀, ♂. ! Lectotype ♀: Madagascar: Behara (MNHN, Paris); present designation. — LECLERCQ, 1961:108; BOHART and MENKE, 1967:281.

DIAGNOSIS

P. longicornis is one of the two Madagascan *Parapiagetia*. The female can be recognized by a fingerlike process on the clypeal lobe, the male by the long, erect hair on the apical depressions on gastral sterna II-IV.

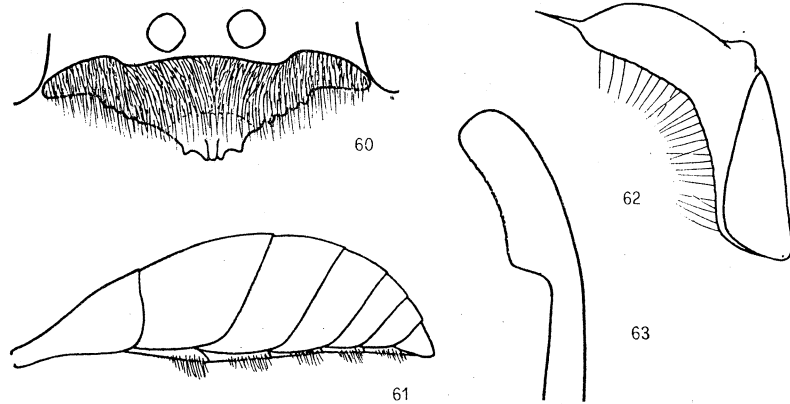
DESCRIPTION

Propodeal dorsum slightly longer than scutellum. Mid and hindtarsomere V long, markedly curved (as in *P. erythropoda*).

Hair erect on vertex and scutum; mesopleural vestiture not obscuring underlying integument.

Head, thorax and gaster black (except reddish brown pygidial plate of female). Legs red, except black coxae, or male femora and hindtibia black.

♀ — Clypeal lobe narrow (its corners 3 times further from orbit than from each other), with fingerlike process anteriorly (fig. 60); free margin with 3 teeth midway between lobe and orbit, with 4 teeth (which are occasionally indistinct) on lobe. Vertex with punctures which are 1-3 diameters apart, and also with very sparse micropunctures. Scutum with fine punctures which are more than 1 diameter apart on disk, and also with few large, scattered punctures. Scutellum convex. Punctures 1 diameter or more apart on mesopleuron, more than 1 diameter apart on mesosternum (several diameters apart laterally). Pygidial plate alutaceous, with setigerous punctures which are about 1 diameter apart. Apical depression of gastral sternum II about 0.4 of distance between



Figs 60-63. *P. longicornis*, 60 - female clypeus, 61 - male gaster, lateral view, 62 - volsella, 63 - penis valve

hindmargin and basal platform. Forecoxa weakly concave along inner margin, foremargin not carinate. Rake spines of forebasitarsus slightly longer than forebasitarsus width. Length 7.5-11 mm.

♂ - Clypeal lobe sharply pointed. Ventral length of flagellomere I 1.1 times its apical diameter, shorter than flagellomere II; middle flagellomeres about 1.8 times longer than wide. Punctures more than 1 diameter apart on vertex, scutum and mesopleuron (vertex and scutal punctures slightly uneven). Length of gastral tergum I 1.25 times apical width. Pygidial plate densely punctate, its marginal carina interrupted apically. Sterna II-V with well defined apical depressions, depressions of sterna II-IV with long, erect hair (fig. 61). Sternum VIII rounded apically. Inner claw of hindtarsus as long as arolium. Length 7.5-8.5 mm. Volsella and penis valve: figs 62, 63.

Hair erect, 2 DOA long on vertex, 1.5 DOA long on scutum.

BIOLOGY

P. longicornis preys upon immature *Acrididae* according to ARNOLD (1945).

MATERIAL EXAMINED (distribution: fig. 57)

Madagascar: Tuléar Distr.: Ambovombe (1 ♀, NHMB), Antanimora (1 ♀, 1 ♂, NHMB), Behara (9 ♀, 7 ♂, MNHN; 2 ♀, 2 ♂, NMR; 1 ♀, 1 ♂, WJP), Beloha (1 ♂, BMNH), Tuléar (2 ♀, NHMB).

Parapiagetia krombeini sp. n.

ETYMOLOGY

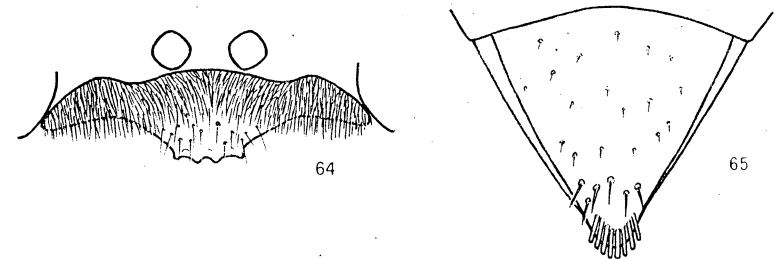
Named after Dr K. V. KROMBEIN of the Smithsonian Institution, who collected the holotype.

DIAGNOSIS

P. krombeini is known only from ne. Egypt. The female can be recognized by the fine, uniform scutal punctation (large punctures absent). The shape of the clypeus is also distinctive (fig. 64). The largely glabrous pygidial plate (fig. 65) is a subsidiary diagnostic character.

DESCRIPTION

♀ - Middle clypeal section almost flat, without crest or elevation; lobe quadridentate (fig. 64); free margin simple between lobe and orbit. Vertex and mesothorax shagreened, finely punctate, without large punctures; punctures slightly more than 1 diameter apart on vertex and mesosternum, less than 1 diameter apart on scutum, subcontiguous on mesopleuron. Propodeal dorsum slightly longer than scutellum. Pygidial plate



Figs 64, 65. *P. krombeini*, female, 64 - clypeus, 65 - pygidial plate

shining, almost glabrous, only apically with appressed setae; its punctures uneven, on average many diameters apart (fig. 65). Forecoxa weakly convex, foremargin not carinate. Rake spines of forebasitarsus about 1.5 times longer than forebasitarsus width. Mid and hindtarsomere V long, markedly curved (as in *P. erythropoda*). Length 10.5 mm.

Head suberect, shorter than DOA on vertex; appressed on scutum; obscuring underlying integument on mesopleuron.

Head and thorax black, gaster and legs red (excluding black fore and midcoxa).

♂ - Unknown.

MATERIAL EXAMINED (distribution: fig. 55)

Holotype ♀: Egypt, 15 km s. Ismailia, 22. IV. 1965, K. V. Krombein (USNM).

Parapiagetia nilotica sp. n.

ETYMOLOGY

Nilotica, a feminine adjective derived from Nile river, with reference to the origin of the holotype: near the confluence of the Blue Nile and White Nile.

DIAGNOSIS

P. nilotica is known from Sudan. Like *P. capitalis* and *indica*, the female has a platform-like elevation on the clypeal lobe. Females can be separated from those of the last two species by the short clypeal lobe and weakly curved apical tarsomere. Unlike *P. indica*, the clypeal elevation is not emarginate anteriorly; unlike *P. capitalis*, the gena is flat in dorsal view, and the inner mandibular margin is not broadened before apex.

The male of *P. nilotica* can be recognized by the finely, evenly pubescent gastral sterna. The obtusely triangular clypeal lobe is similar to that in *P. richteri*. Unlike *P. richteri*, the pygidial plate is densely punctate in *P. nilotica*, and the scutal vestiture does not obscure underlying integument.

DESCRIPTION

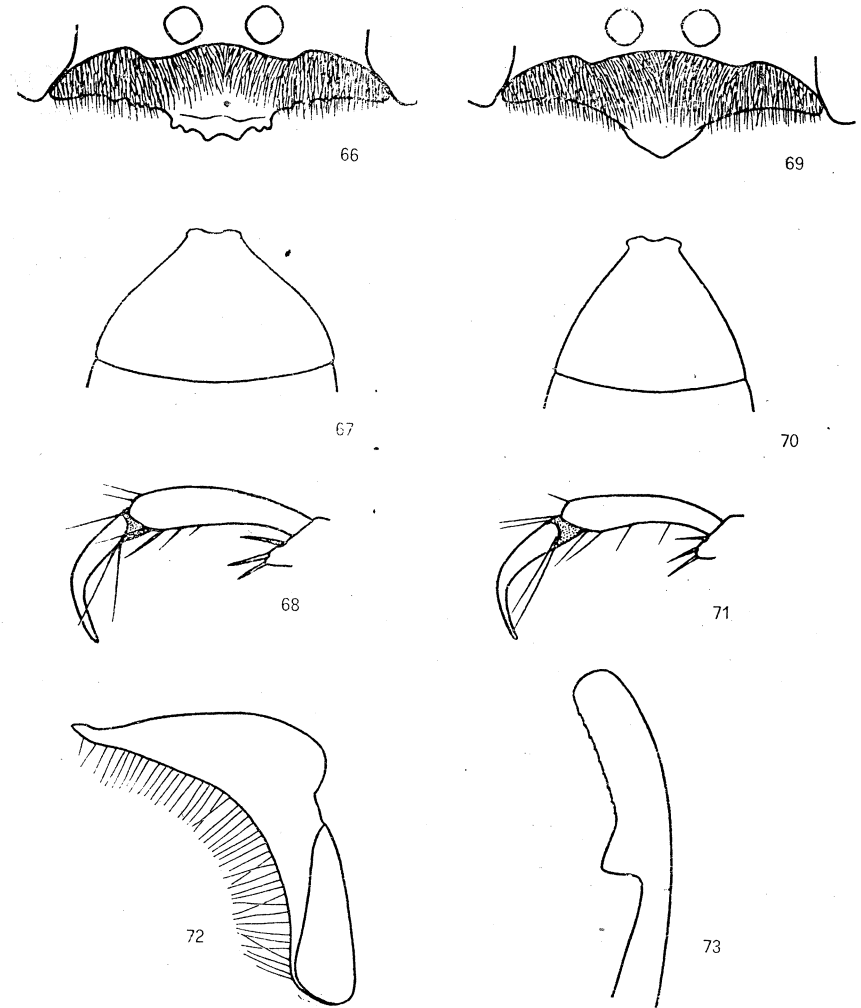
Punctures fine and dense on vertex, scutum, mesopleuron and mesosternum, female vertex and scutum also with scattered, large punctures. Propodeal dorsum slightly longer than scutellum. Tarsomere V shorter, less curved than in *P. erythropoda* (figs 68, 71).

Hair subappressed on vertex, appressed on mesothorax.

♀ — Middle clypeal section with platform-like elevation whose foremargin slightly overhangs clypeal anterior part; lobe short, with 3 pairs of teeth (fig. 66); free margin with 1 or 2 tiny teeth midway between lobe and orbit (the specimen studied is asymmetrical). Pygidial plate with setigerous punctures, almost all of which are less than 1 diameter apart; setae obscuring underlying integument. Forecoxa weakly convex, foremargin not carinate. Rake spines of forebasitarsus about as long as forebasitarsus width. Length 10.5 mm.

Mesopleural vestiture almost totally obscuring underlying integument.

Head black, thorax reddish (except black scutum and mesopleuron), gaster and legs red.



Figs 66–73. *P. nilotica*, 66 — female clypeus, 67 — tergum I of female gaster, 68 — apical hindtarsomere of female, 69 — male clypeus, 70 — tergum I of male gaster, 71 — apical hindtarsomere of male, 72 — volsella, 73 — penis valve

♂ — Clypeal lobe obtusely pointed (fig. 69). Ventral length of flagellomere I 1.2 times apical diameter, equalling flagellomere II. Gastral tergum I about as long as wide apically (fig. 70). Pygidial plate densely punctate, its marginal carina interrupted apically. Sterna finely, evenly pubescent throughout, unlike all other species of the *erythropoda* group,

without specialized apical depression. Apex of sternum VIII rounded, with inconspicuous notch (fig. 6). Inner claw of hindtarsus slightly longer than arolium. Length 7.5–9 mm. Volsella and penis valve: figs 72, 73.

Head and thorax black. Gastral segments I–III red, the remainder black. Forefemur black (except apically); midfemur red, largely black; hindfemur, tibiae and tarsi red.

MATERIAL EXAMINED (distribution: fig. 74)

Holotype ♀: Sudan, Khartoum, 5. X. 1964, L. Razoux Schulz (WJP).
Paratypes: 2 ♂, 5 and 29. IX. 1964, other data as holotype.

Kenya: Archer's Post on * Uaso Nyiro River, 2300' (2 ♀, 1 ♂, CAS)

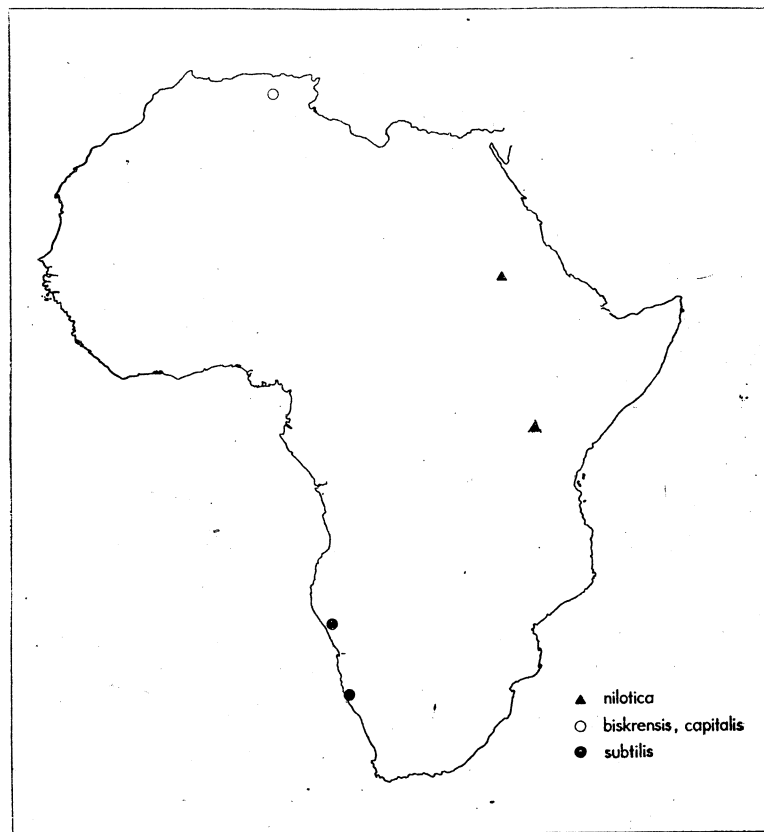


Fig. 74. Geographical distribution of *P. nilotica*, *biskrensis*, *capitalis*, and *subtilis*

Parapiagetia biskrensis sp. n.

ETYMOLOGY -

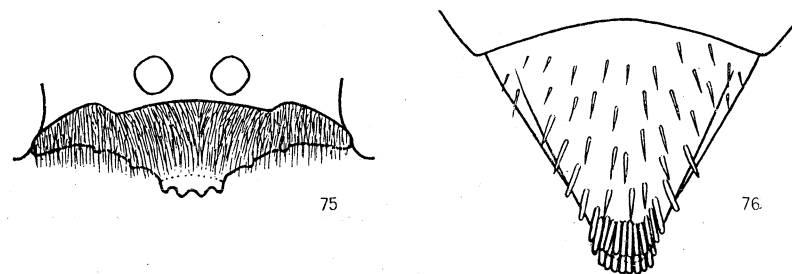
Biskrensis is an adjective derived from the Algerian oasis Biskra, the type locality of the species.

DIAGNOSIS

P. biskrensis is a North African species. The female can be distinguished by the shape of the clypeus (lobe with obtuse, interrupted mesally carina, with quadridentate free margin). Unlike *P. capitalis*, *krombeini* and *nilotica*, the scutum is sparsely punctate in *P. biskrensis*; the punctures are uneven (fine and large), unlike *P. krombeini*.

DESCRIPTION

♀ — Clypeal lobe anteriorly with transverse, obtuse carina which is interrupted mesally, slightly prominent laterally; lobe quadridentate (fig. 75); clypeal free margin with projection midway between lobe and orbit. Vertex, scutum and scutellum with few large, sparse punctures, and also with numerous, fine punctures, most of which are slightly more than 1 diameter apart on vertex, several diameters apart on scutal and scutellar disk. Scutellum convex. Punctures subcontiguous on mesopleuron, slightly more than 1 diameter apart on mesosternum. Propodeal



Figs 75, 76. *P. biskrensis*, female, 75 — clypeus, 76 — pygidial plate

dorsum slightly longer than scutellum. Pygidial plate smooth, except alutaceous laterally and apically; with setigerous punctures which are on average 2–3 diameters apart, but less than 1 diameter apart apically (fig. 76). Forecoxa weakly convex, foremargin not carinate. Rake spines of forebasitarsus almost 1.5 times longer than forebasitarsus width. Midtarsomere V long, markedly curved, as in *P. erythropoda* (hindtarsomere V missing in the specimen examined). Length 11 mm.

Hair suberect on vertex, slightly longer than 1.5 DOA on postocellar impression, appressed on mesothorax (except suberect anteriorly on scutum), obscuring underlying mesopleural integument.

Head and thorax black, gaster and legs red.

♂ — Unknown.

MATERIAL EXAMINED (distribution: fig. 74)

Holotype ♀: Algeria, Biskra, 28. V. 1948, J. de Beaumont (MZL).

Parapiagetia capitalis (Saunders)

Tachysphex capitalis SAUNDERS, 1910:526, ♀. ! Holotype ♀: Algeria: Biskra (OUM, Oxford). — MORICE, 1911:105; DE BEAUMONT, 1947:677. — In *Parapiagetia*: DE BEAUMONT, 1960:243; BOHART and MENKE, 1976:281.

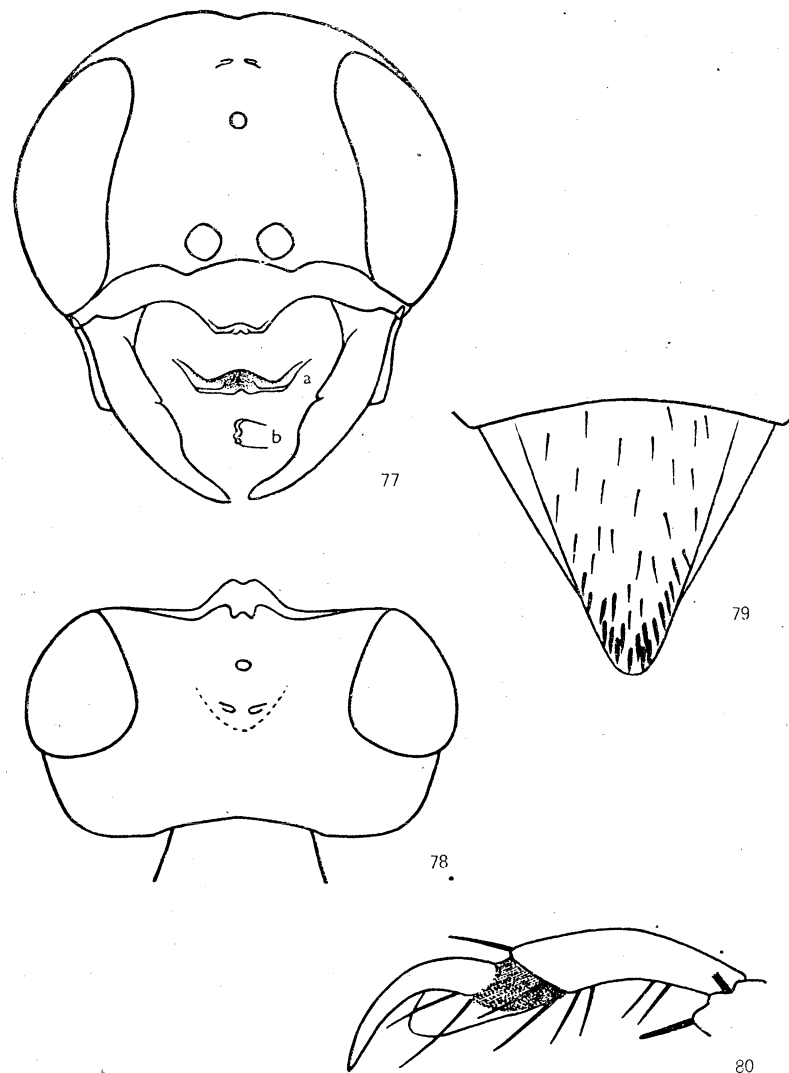
DIAGNOSIS

P. capitalis is known from Algeria. The female can be distinguished by a platform-like elevation on the clypeal lobe, the strongly swollen gena, and the inner mandibular margin broadened before apex (gradually narrowing toward apex in other species of the group). *P. nilotica*, whose clypeus also has an elevation, differs from *P. capitalis* by a densely punctate pygidial plate, shorter clypeal lobe, and less curved mid and hindtarsomere V. Unlike *P. indica*, the foremargin of the clypeal elevation is not emarginate in *P. capitalis*.

DESCRIPTION

♀ — Inner mandibular margin broadened (fig. 77) before apex (gradually narrowing toward apex in other species of the group). Clypeal lobe with platform-like elevation whose foremargin is emarginate and which slopes steeply toward clypeal free margin (fig. 77). Vertex convex, raised above orbit level; postocellar impression correspondingly deep. Gena strongly swollen (fig. 78). Vertex, scutum and mesosternum with fine, dense punctures, and also with large, sparse punctures. Scutellum convex. Mesopleural punctures subcontiguous. Propodeal dorsum slightly longer than scutellum. Pygidial plate shining, its punctures sparse, except dense in apical quarter (fig. 79). Forecoxa weakly convex, foremargin not carinate. Rake spines of forebasitarsus as long as forebasitarsus width. Mid and hindtarsomere V long (fig. 80), markedly curved (as in *P. erythropoda*). Length 13 mm.

Hair appressed on vertex and mesothorax, 1 DOA long on postocellar impression, almost totally obscuring underlying mesopleural integument.



Figs 77-80. *P. capitalis*, female, 77 — head, frontal view, (a: clypeal lobe seen obliquely from below, b: clypeal lobe, lateral view), 78 — head, dorsal view, 79 — pygidial plate, 80 — apical hindtarsomere

Head and thorax black, gaster and legs red.

♂ — Unknown.

MATERIAL EXAMINED (distribution: fig. 74)

Algeria: Biskra (1 ♀, OUM)

Parapiagetia subtilis sp. n.

ETYMOLOGY

Subtilis, Latin adjective for slender, fine: referring to the build of this species.

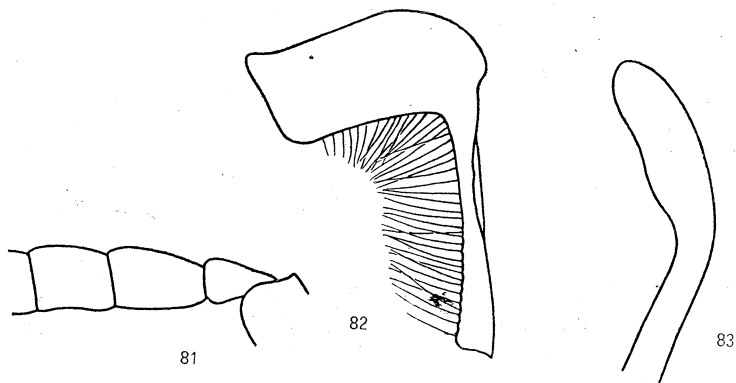
DIAGNOSIS

P. subtilis is known from sw. Africa. The male is unique in the genus in having the flagellomere I longer than flagellomere II.

DESCRIPTION

♀ — Unknown.

♂ — Clypeal lobe sharply pointed. Flagellomere I slightly longer than flagellomere II, its ventral length 1.4 times apical diameter. Punctures 1–3 diameters apart on vertex and scutum, about 1 diameter on mesopleuron anteriorly, 2–3 diameters posteriorly (punctures minute), 2–3 diameters on average on mesosternum. Propodeal dorsum slightly longer than scutellum. Length of gastral tergum I 1.4–1.8 apical diameter. Pygidial plate densely punctate, marginal carina interrupted apically. Apical depressions of sterna II–V with short pruinosity (as on the remaining surface) or largely glabrous. Sternum VIII with trun-



Figs 81–83. *P. subtilis*, male, 81 — basal flagellomeres, 82 — volsella, 83 — penis valve

cate hindmargin. Mid and hindtarsomere V long, markedly curved (as in *P. erythropoda*). Inner claw of hindtarsus as long as arolium. Length 6.5–8 mm. Volsella and penis valve: figs 82, 83.

Hair erect, 1.5 DOA long on vertex; suberect, 1 DOA long on scutum; mesopleural hair obscuring underlying integument from certain angles.

Head and thorax black; gastral segments I and II or I–III red (sternum I largely black), segments III–VII black. Femora black (except apically), tibiae and tarsi reddish brown.

MATERIAL EXAMINED (distribution: fig. 74)

Holotype ♂: Namibia (= S. W. Africa), Outjo Prov., Bethanis, collector unknown (ZMK).

Paratypes: 1 ♂, same data (WJP); 1 ♂, Namibia, Lüderitz Prov.: Goeraxis, collector unknown (ZMK).

Parapiagetia indica sp. n.

ETYMOLOGY

Indica, Latin adjective derived from India, where the holotype was collected.

DIAGNOSIS

P. indica occurs in Pakistan and India. The female can be recognized by the clypeal lobe which has a platform-like elevation anteriorly and whose free margin is quadridentate. *P. capitalis* and *nilotica* also have an elevation on the clypeal lobe; unlike *P. capitalis*, the gena is flat and the inner mandibular margin is not broadened in *P. indica*; unlike *P. nilotica*, the pygidial plate of *P. indica* is sparsely punctate basally, and mid and hindtarsomeres V are markedly curved.

The male of *P. indica* is characterized by a truncate or subtruncate clypeal lobe, which bears a short, median projection.

DESCRIPTION

Propodeal dorsum slightly longer than scutellum. Mid and hindtarsomere V long, markedly curved (as in *P. erythropoda*).

Hair erect on vertex, suberect on scutum.

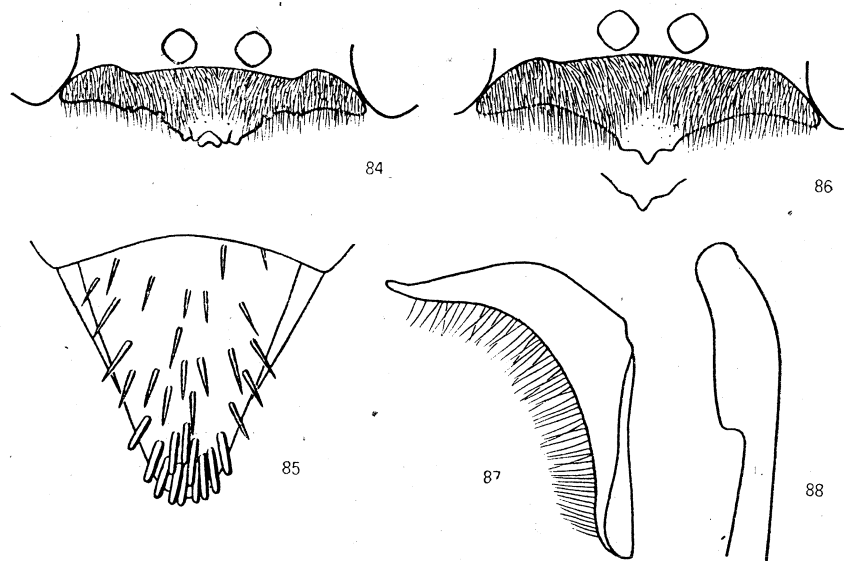
Head and thorax black.

♀ — Clypeal lobe anteriorly with emarginate, platform-like elevation (whose corners are prominent), with quadridentate free margin; free margin of lateral clypeal section with projection midway between lobe and orbit (fig. 84). Vertex, scutum and mesosternum finely, densely

punctate; scutum with also a few large, scattered punctures. Scutellum convex. Pygidial plate polished, with setigerous punctures which are on average 2-3 diameters apart basally, but subcontiguous apically (fig. 85). Forecoxa weakly convex, foremargin not carinate. Rake spines of forebasitarsus about as long as forebasitarsus width. Length 8 mm.

Hair length about 1 DOA on vertex, about 0.6 DOA on scutum; mesopleural vestiture obscuring underlying integument.

Gastral terga I-III red, with black, median spots; terga IV-VI black; sterna reddish, with large, black spots. Forefemur black, except apical third red; mid and hindfemur, tibiae and tarsi red.



Figs 84-88. *P. indica*, 84 - female clypeus, 85 - pygidial plate of female, 86 - male clypeus, 87 - volsella, 88 - penis valve

♂ - Clypeal lobe truncate or roundly truncate, truncation bearing a short, median projection (fig. 86). Ventral length of flagellomere I equal to apical diameter, shorter than flagellomere II. Vertex and mesothorax with fine, shallow punctures, most of which are 2-3 diameters apart (about 1 diameter apart on mesopleuron dorsally). Length of gastral tergum I 1.1-1.3 apical width. Pygidial plate densely punctate, its marginal carina interrupted apically. Sterna II-V with well defined, partly hairy apical depressions. Sternum VIII rounded apically. Inner claw

of hindtarsus as long as arolium. Length 7.5-8 mm. Volsella and penis valve: figs 87, 88.

Hair length 0.7 DOA on vertex, 1-1.2 DOA on scutum; mesopleural vestiture not obscuring underlying integument.

Gaster black, segments I and II with brownish zones in specimens from Deesa, India. Tibiae black or largely brown. Tarsi brown.

MATERIAL EXAMINED (distribution: fig. 89)

Holotype ♂: India, Bombay State, Deesa, 4. [19]01, C. G. Nurse (BMNH).

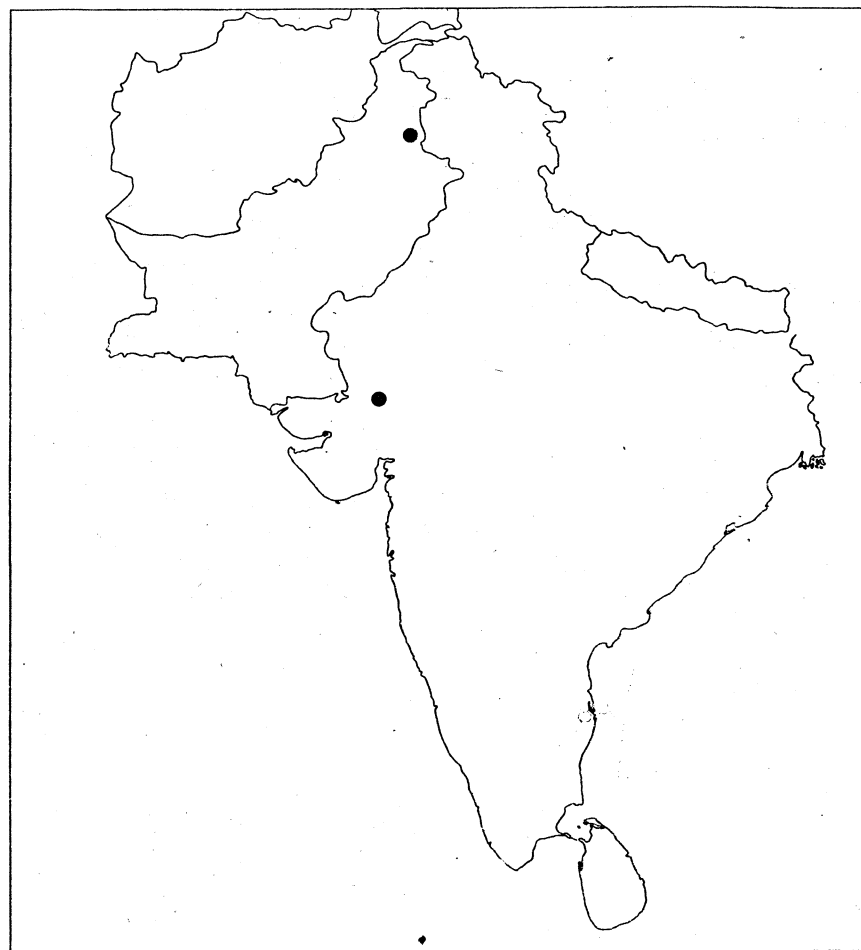


Fig. 89. Geographic distribution of *P. indica*

Paratypes: Pakistan: 5 ♂, Rawalpindi, 21. VI-5. VII, collector unknown (FSAG, WJP).

India: Bombay State, Deesa, C. G. Nurse: 4 ♂, 4. [19]01 (BMNH, WJP); 1 ♀, 8 [19]01 (BMNH).

15 Jul 84: Also: Iran: Khuzestan: Haft Tapeh (300 km N Abadan, on Daz river), in coll. Giordani Sotgiu (1 ♀)

Parapiagetia flora sp. n.

ETYMOLOGY

Flora, the Roman goddess of flowers.

DIAGNOSIS

P. flora is known only from Sri Lanka. The female can be recognized by a peculiar clypeus whose lobe has a median, longitudinal process. The Madagascan *P. longicornis* has a similar clypeus, but unlike that species the clypeal process is emarginate mesally (not fingerlike) in *P. flora*, the apical depression of gastral sternum II is narrow (about 0.25 of distance between hindmargin and basal platform), the gaster is red basally, and the femora and tibiae are black.

The male of *P. flora* is very similar to *P. erythropoda*. Both have a sharply pointed clypeal lobe, flagellomere I is shorter than flagellomere II, and the gastral sterna are covered with appressed pubescence. They differ in the shape of flagellomere I (whose ventral length is 0.75-0.8 apical diameter in *P. flora*, 1-1.2 in *P. erythropoda*), and the volsella and penis valve. Besides, *P. flora* is not known from India and Africa where *P. erythropoda* occurs.

DESCRIPTION

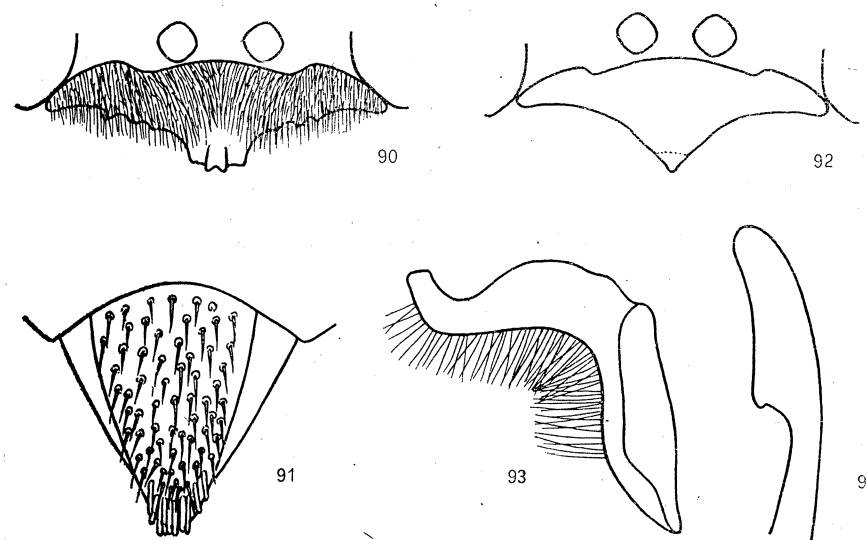
Mesopleural punctures 1-2 diameters apart. Propodeal dorsum slightly longer than scutellum (female) or as long as scutellum (male). Mid and hindtarsomere V long, markedly curved (as in *P. erythropoda*).

Hair erect, slightly longer than DOA on vertex; not obscuring underlying mesopleural integument.

Head, thorax and femora black.

♀ — Clypeal lobe narrow (its corners 3 times closer to each other than to orbit), with median, longitudinal process which is emarginate anteriorly (fig. 90); the foremargin of the process coincides with the clypeal free margin; the latter with a group of 3 teeth midway between lobe and orbit. Vertex punctures of various size (small, medium, large), many of them 1 diameter apart or less. Scutum with fine punctures which are 1-2 diameters apart, and also with large, scattered punctures. Scutellum convex. Mesosternal punctures 2-3 diameters apart. Pygidial plate alutaceous, with setigerous punctures which are contiguous apically, but most anterolateral punctures 1-2 diameters apart (fig. 91). Length

of apical depression of gastral sternum II about a quarter of the distance from sternal hindmargin to basal platform. Forecoxa weakly concave anteriorly, foremargin carinate. Rake spines of forebasitarsus about as long as forebasitarsus width. Length 8.5 mm.



Figs 90-94. *P. flora*, 90 — female clypeus, 91 — pygidial plate of female, 92 — male clypeus, 93 — volsella, 94 — penis valve

Scutal hair suberect, about 0.6 DOA long.

Gastral terga I and II entirely, and sternum II largely red, the remainder black. Tibiae and tarsi (except tarsal apex) black.

♂ — Clypeal lobe sharply pointed (fig. 92), almost as in *P. erythropoda*. Ventral length of flagellomere I 0.75-0.8 apical diameter, shorter than flagellomere II. Punctures on average 1-2 diameters apart on vertex, scutum and mesosternum. Length of gastral tergum I 1.3 times apical width. Pygidial plate densely punctate, its marginal carina interrupted apically. Sterna II-V with well defined, partly glabrous apical depressions. Sternum VIII rounded apically. Inner claw of hindtarsus as long as arolium. Length 5.5-6.5 mm. Volsella and penis valve: figs 93, 94.

Scutal hair erect, slightly longer than DOA.

Gaster black. Foretibia red, with dark outer face; mid and hindtibia largely black, reddish basally and apically. Tarsi red.

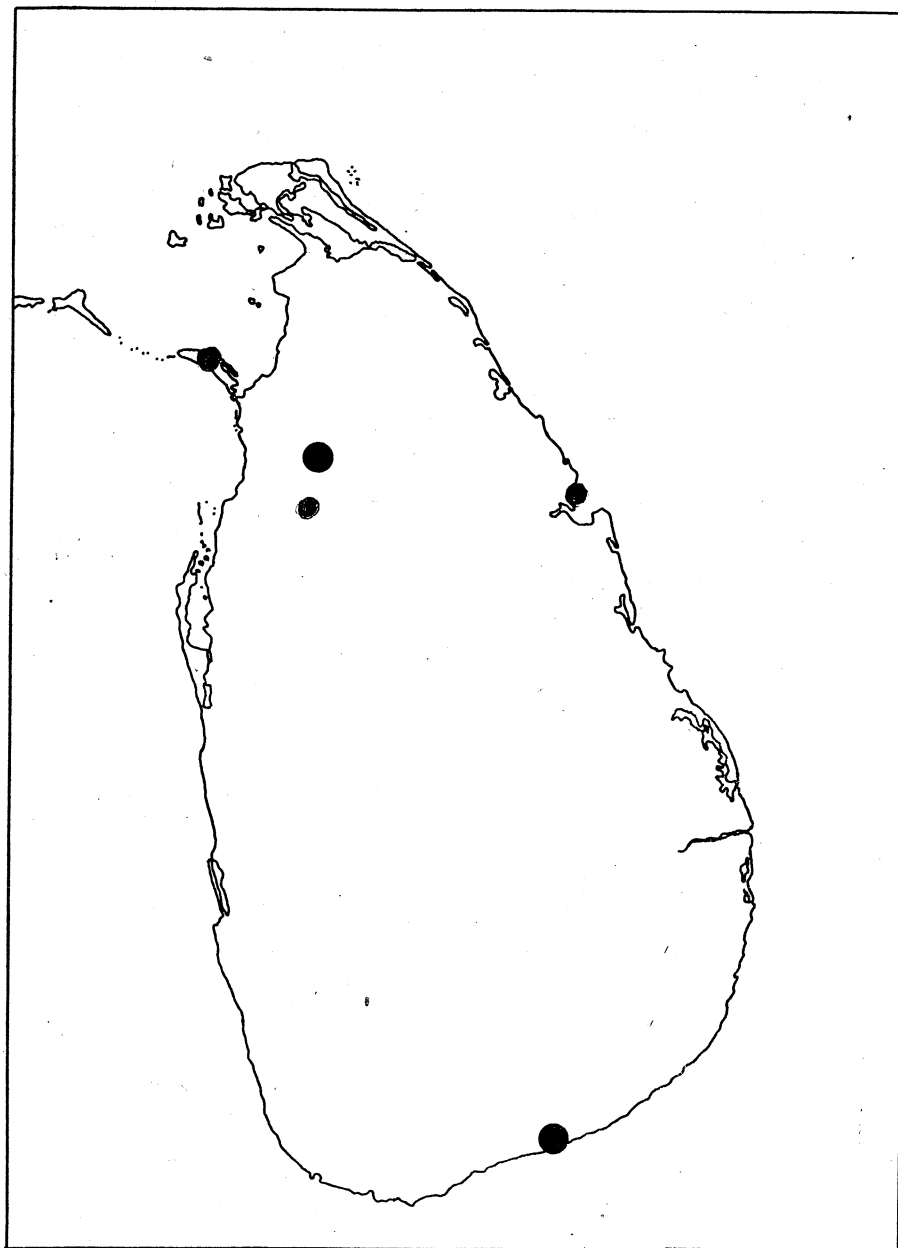


Fig. 95. Geographic distribution of *P. flora*

MATERIAL EXAMINED (distribution: fig. 95)

Holotype ♀: Sri Lanka, Hambantota, 28. X. 1970, O. S. Flint, Jr. (USNM).

Paratypes:

Sri Lanka: 1 ♂, Vavuniya Dist.: Parayanalankulam Irrigation Canal, 25 mi. nw. Medawachchiya, 20–25. III. 1970, D. Davis and W. Rowe (USNM); 3 ♂, no locality or date, Nietner (ZMB, WJP).

Also seen: Manar Distr.: Kokmatte Bungelow, 5 mi. ne. Wilpathu Natl. Park (1♀, 1♂);
 Olathoduwa, 10 mi. nw. Mannar (1♂, USNM);
 Trincomalee Distr.: Trincomalee, China Bay (1♀, USNM).

Parapiagetia erythropoda (Cameron)

Tachytes erythropoda CAMERON, 1889:135, ♀. ! Holotype ♀: India: Uttar Pradesh: Mussooree (OUM, Oxford; coll. Rothney). — DALLA TORRE, 1897:689 (as *T. erythropus*); BINGHAM, 1897:187. — In *Notogonia*: CAMERON, 1890: pl. IX fig. 5. — In *Parapiagetia*: TURNER, 1917:196; BOHART and MENKE, 1976:281.

Tachytes denticulata MORICE, 1897:305, ♀. Lectotype ♀: Egypt: Zeitun near Cairo (OUM, Oxford); present designation. Synonymized by PULAWSKI, 1975:314. — HONORÉ, 1942:57. — In *Parapiagetia*: PULAWSKI, 1961:86 (redescr., ♂).

Parapiagetia capensis BRAUNS, 1910:666, ♀, ♂. ! Lectotype ♀: South Africa: Cap Province: Willowmore (TMP, Pretoria); present designation. New synonymy. — ARNOLD, 1922:133; BOHART and MENKE, 1976:281.

Parapiagetia wickiwarei TURNER, 1914:256, ♂. ! Holotype ♂: Sri Lanka: Colombo (BMNH, London). New synonymy. — BOHART and MENKE, 1976:281.

Parapiagetia capensis BRAUNS var. *rhodesianum* ARNOLD, 1922:134, ♀. ! Holotype ♀: Rhodesia: Sawmills (NMR, Bulawayo). New synonymy. — As ssp. *rhodesiana*: BOHART and MENKE, 1976:281.

Parapiagetia capensis BRAUNS var. *ferox* ARNOLD, 1922:134, ♀. ! Holotype ♀: Rhodesia: Victoria Falls (NMR, Bulawayo). New synonymy. — ARNOLD, 1951:157. — As ssp. *ferox*: BOHART and MENKE, 1976:281.

Parapiagetia saharica DE BEAUMONT, 1956:201, ♂. ! Holotype ♂: Libya: Fezzan: Brak (BMNH, London). Synonymized by PULAWSKI, 1975:315. — DE BEAUMONT, 1955b: 223 (nomen nudum), 1960:243.

DIAGNOSIS

P. erythropoda occurs in Ethiopian and Palaearctic Africa, Pakistan, India and Sri Lanka. The female differs from all other *Parapiagetia* by the combination of the anteriorly carinate forecoxa and the clypeal lobe with an arcuate crest (the crest is acutely angulate in some Rhodesian individuals).

The male of *P. erythropoda* is very similar to *P. flora*. Both have a sharply pointed clypeal lobe, the gastral sternae are covered with appressed pubescence, and flagellomere I is shorter than flagellomere II. They differ by the proportions of flagellomere I (its ventral length equals 1–1.2 apical diameter in *P. erythropoda*, 0.75–0.8 in *P. flora*), and also by the shape of the volsella and penis valve. The two species have different geographic ranges; *P. flora* is known only from Sri Lanka.

DESCRIPTION

Mesopleural punctures fine, 1 diameter apart or less. Propodeal dorsum slightly longer than scutellum. Forecoxa (except many males) shallowly concave anteriorly, with carinate foremargin. Mid and hindtarsomere V long, markedly curved (fig. 106).

Hair erect on vertex, slightly longer than 1 DOA on postocellar impression. Mesopleural vestiture of most populations totally obscuring underlying integument.

Head and thorax black, tibiae and tarsi red, gaster and femora of variable color.

♀ — Clypeal lobe with arcuate crest which is low or evanescent mesally, but prominent laterally (figs 96–98); free margin of lobe emarginate mesally, with angulate lateral corner; free margin with small, obtuse projection between lobe and orbit. Vertex punctures of diverse size: small, medium, large. Scutal punctures fine, dense, and also large, scattered. Mesosternal punctures fine, dense. Scutellum weakly convex. Pygidial plate with setigerous punctures that are about 1 diameter apart (fig. 105). Rake spines of forebasitarsus slightly longer than forebasitarsus width. Usual length 7.5–10 mm, but 7–12 mm in Rhodesian specimens.

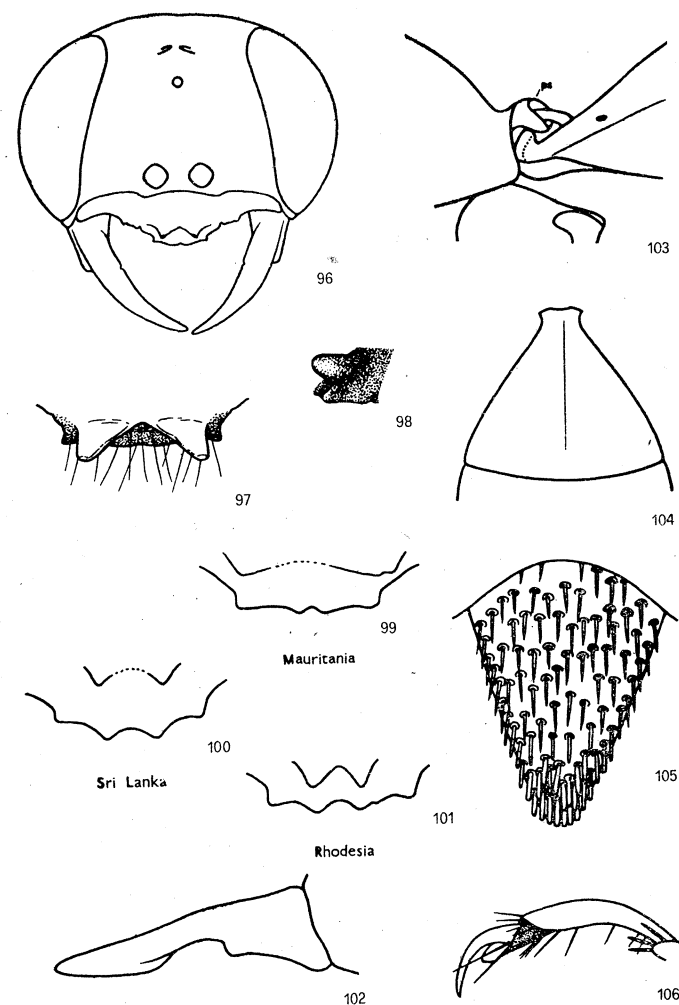
Scutal hair suberect to erect, about 0.5 DOA long.

♂ — Clypeal lobe sharply pointed (fig. 107). Ventral length of flagellomere I 1.0–1.2 times apical diameter, shorter than flagellomere II. Punctures more than 1 diameter apart on vertex and scutum, less than to more than 1 diameter apart on mesosternum. Length of gastral tergum I 1.1–1.5 times apical width (fig. 108). Pygidial plate densely punctate, its marginal carina interrupted apically. Sterna II–V with well defined, partly hairy apical depressions. Sternum VIII with rounded apex (fig. 7). Inner claw of hindtarsus as long as arolium. Usual length 6–7.5 mm, but 5.5–9 mm in Rhodesian specimens. Volsella and penis valve: figs. 109–112.

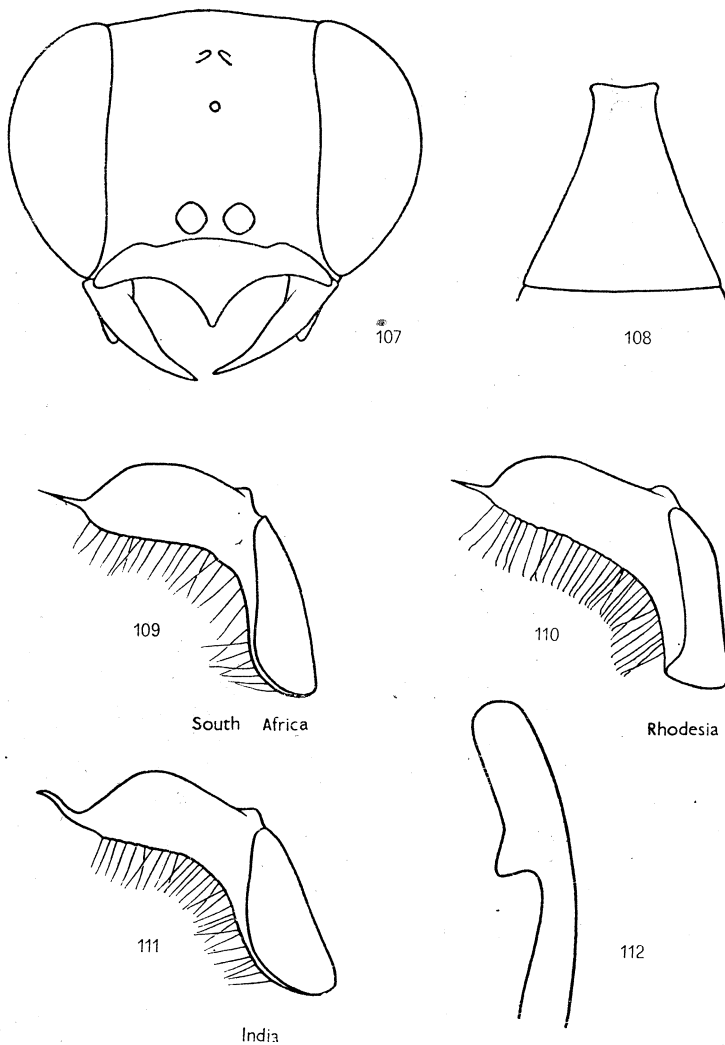
Scutal hair erect, slightly longer than DOA.

GEOGRAPHIC VARIATION

The clypeal crest of the female varies both individually and geographically. The distance between its forecorners, expressed as a fraction of the diameter of an antennal socket, has the following values in populations of various areas: 0.8–1.6 in Rhodesia, 1–1.4 in Sri Lanka, 1.2–1.5 in South Africa and Ethiopia, 1.6 in Senegal and India (Deesa), 2 in Libya, Egypt and India (Mussooree), 2.4 in Mauretania. The only specimen seen from the last country has the carina interrupted mesally; this form is probably an individual one rather than geographic.



Figs 96–106. *P. erythropoda*, female, 96 — head, frontal view (Egypt), 97 — crest of clypeal lobe (Egypt), seen obliquely from above, 98 — clypeal crest, lateral view, 99 — clypeal lobe and crest (Mauritania), 100 — same (Sri Lanka), 101 — same (extreme Rhodesian specimen), 102 — mandible, outer view, 103 — gastro-propodeal articulation (ps: propodeal socket), 104 — gastral tergum I, 105 — pygidial plate, 106 — apical hindtarsomere



Figs 107–112. *P. erythropoda*, male, 107 — head, frontal view, 108 — gastral tergum I, 109 — volsella (Willowmore, South Africa), 110 — same (Bulawayo, Rhodesia), 111 — same (Deesa, India), 112 — penis valve

The female gaster is black in Africa south of the equator (except sometimes in Rhodesia), but segments I and II or I–III are red in populations from the northern hemisphere; segments I–III are red in a female from Victoria Falls, Rhodesia (holotype of *P. ferox*); segments I and II

are dark reddish in a Senegal female. The gaster is nearly all red in Egyptian and Libyan females, only tergum IV and adjacent portions of terga III and V being black.

The female femora are red in most populations, but the fore and midfemur are often black in South African and Rhodesian specimens. All femora are black (except red apically) in Sri Lanka females.

The male gaster is black in specimens from South Africa, Rhodesia, Chad, Mali, and Senegal, but gastral segment I, or segments I and II, are red or reddish in specimens from Sudan, Libya, Egypt, India and Sri Lanka.

The male femora are black (except red apically), but the hindfemur is red in Egyptian and some Indian specimens.

The apical volsellar process is straight in the southern hemisphere populations (figs 109, 110), and curved upwards in those north of the equator (fig. 111).

Rhodesian specimens of *P. erythropoda* pose special problems, as some of them differ considerably from average specimens of this species. Most Rhodesian individuals are unusually large, with maximum body length 12 mm in the female and 9 mm in the male. In some large females the clypeal crest is unusually short (0.8 diameter of antennal socket), almost angulate (fig. 101), but intermediate specimens also exist. The crest is of the usual form in the holotypes of both *P. ferox* and *rhodesiana*. The forecoxa of certain females is very shallowly concave, almost not carinate, but this is not correlated with the unusual clypeal crest. The male genitalia are identical to those of South African specimens. The female holotype of *P. ferox* is the only known southern hemisphere specimen with a red gaster.

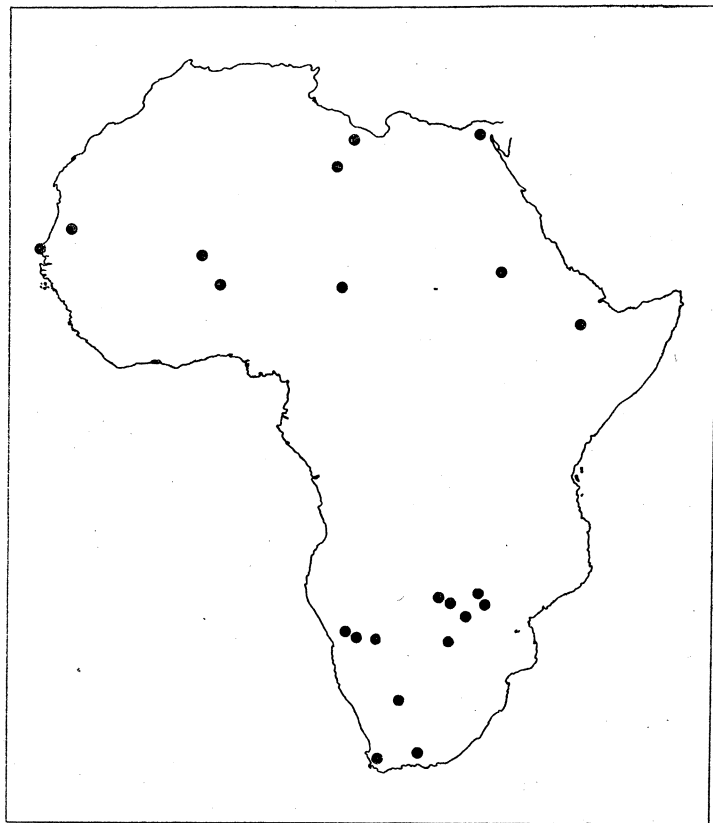
BIOLOGY

Individuals of *P. erythropoda* spend the night on dry, low plants near Willowmore, South Africa according to BRAUNS (1910). They sit transversely on stems, but they do not hold the substrate with their mandibles. They nest in loose, sandy soil in Sawmills, Rhodesia (ARNOLD, 1929).

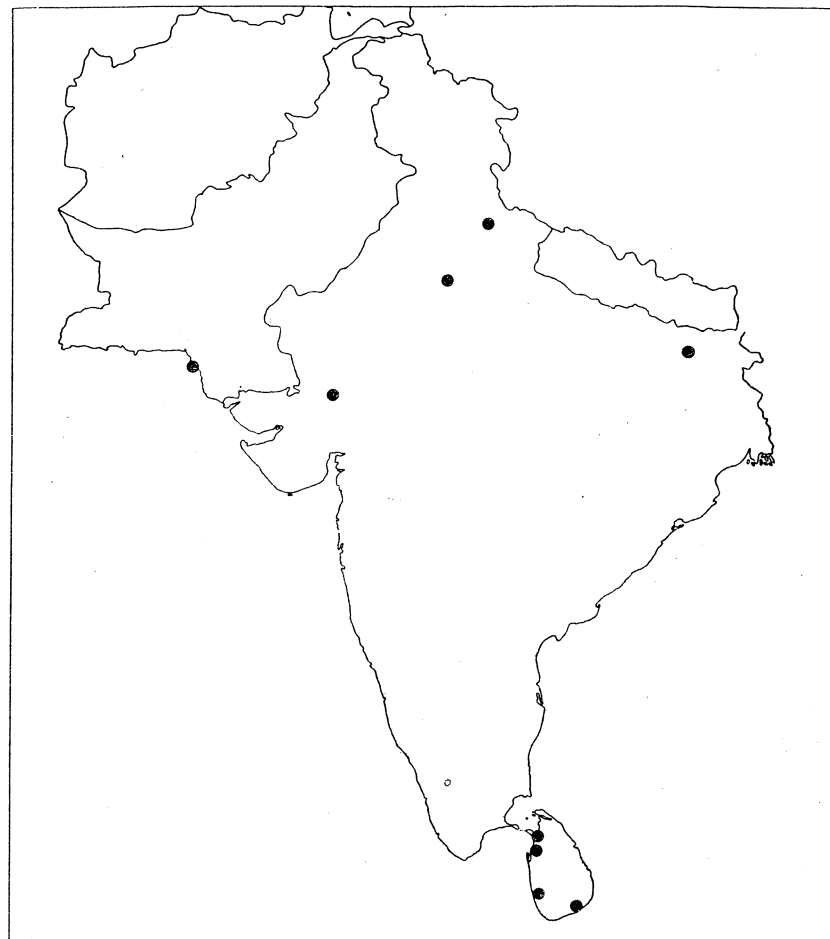
MATERIAL EXAMINED AND RECORDS (distribution: figs 113, 114)

South African Republic: Ceres (2♀, BMNH, USNM), Upington (1♂, BMNH), Wellington: Rooshoek (1♀, PMFV), Willowmore (1♂, BMNH; 2♂, NMR; 1♀, 1♂, TMP; 1♂, USNM).

Namibia (= S. W. Africa): Gobabis (3♀, BMNH), Okahandja (2♂, BMNH; 1♂, USNM; 1♀, 1♂, WJP), Omaruru (1♀, 1♂, ZMK).

Fig. 113. Geographic distribution of *P. erythropoda* in Africa

- Botswana: Palapye: 22°33'S, 27°08'E (1 ♀, 1 ♂, BMNH).
 Rhodesia: Bulawayo (1 ♂, USNM), Matetsi – Wankie (1 ♀, NMR), Igusi (1 ♂, NMR), Rhodesdale (1 ♂, BMNH; 3 ♀, 3 ♂, NMR), Sanyati Valley (1 ♀, NMR), Sawmills (3 ♀, 1 ♂, NMR; 1 ♀, USNM), Turk Mine in Matabeleland (1 ♀, NMR), Victoria Falls (1 ♀, 2 ♂, NMR).
 Ethiopia: Ufdem [= Afdem] (1 ♀, BMNH).
 Sudan: Khartoum (1 ♂, WJP).
 Chad: Kanem Dist.: N'Guri (3 ♂, MRAC, WJP).
 Niger: Niamey (1 ♂, KMG).
 Mali: 30 km s. Ansongo (1 ♂, KMG); Mourdiyah (2 ♀, 1 ♂, BMNH).
 Senegal: Dakar (1 ♀, BMNH), no locality data (1 ♂, ZMB).
 Mauritania: Aleg (1 ♀, BMNH).
 Libya: Tripolitania: Hon oasis (1 ♀, MZL); Fezzan: Brak (2 ♂, BMNH, MZL).
 Egypt: Cairo area: Zeitun (2 ♀, NHMV, OUM), Kerdasa (1 ♂, MZL).
 Pakistan: Karachi (1 ♀, BMNH).

Fig. 114. Geographic distribution of *P. erythropoda* in Asia

- India: Punjab: Rohtak (2 ♂, BMNH); Bombay State: Deesa (4 ♀, 6 ♂, BMNH; Also see 1 ♀, 1 ♂, USNM; 1 ♀, 1 ♂, WJP). Uttar Pradesh: Mussooree (1 ♀, OUM); Bihar: Pusa Tranqui
 Sri Lanka: Anuradhapura Dist.: Wildlife Society Bungalow, Hunuwilagama, Wil- India,
 pattu (4 ♀, USNM, WJP); Colombo Dist.: Colombo (1 ♂, BMNH); Hambantota Dist.: Delhi,
 Palutapana (1 ♀, USNM); Vavuniya Dist.: Parayanalankulam Irrigation Canal, 25 mi.
 nw. Medavachchiya (2 ♀, USNM, WJP).

Parapiagetia richteri de Beaumont

- Parapiagetia richteri* DE BEAUMONT, 1970:15, ♀, ♂. ! Holotype ♀: Iran: Baluchistan:
 Iranshahr (SMNS, Stuttgart). — BOHART and MENKE, 1976:281.

DIAGNOSIS

P. richteri is known from se. Iran. The female can be recognized by the triangular clypeal lobe and short flagellum (flagellomeres IV–IX about as long as wide). The male is characterized by the arcuate clypeal lobe; unlike *P. nilotica* whose clypeal lobe is of similar general shape, *P. richteri* has a sparsely punctate pygidial plate, glabrous apical depressions on sterna II–V, and the scutal integument is largely obscured by vestiture.

DESCRIPTION

Vertex and mesothorax with fine punctures which are about 1 diameter apart (except subcontiguous mesopleural punctures); vertex also with few large, sparse punctures. Propodeal dorsum a little shorter than scutellum. Mid and hindtarsomere V shorter, less curved than in *P. erythropoda*, almost as in *P. nilotica*.

Hair appressed on vertex and mesothorax, totally obscuring underlying integument on mesopleuron, almost totally on scutum.

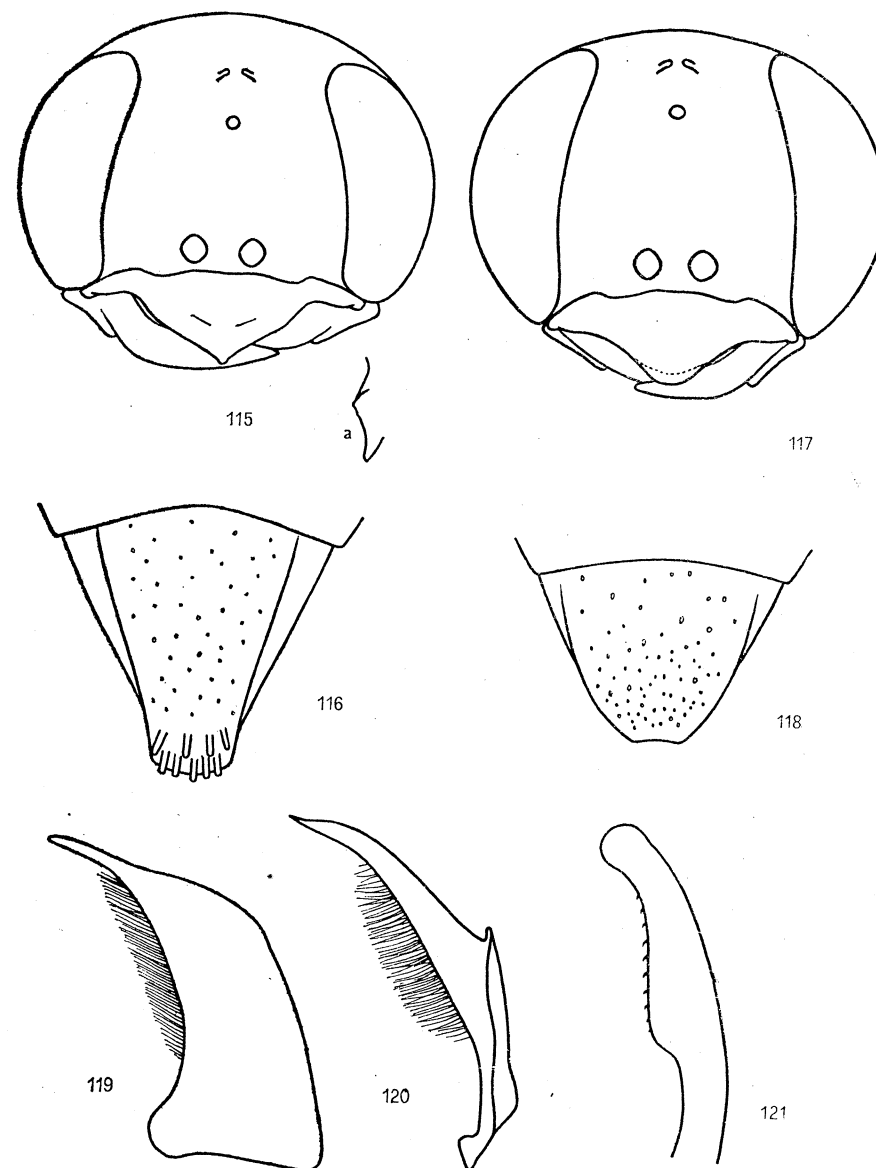
♀ — Middle clypeal section convex, with transverse crest which is evanescent mesally, prominent laterally; concave in lateral view between crest and free margin; the latter triangularly produced, without lateral teeth (fig. 115). Flagellum shorter than in other species, flagellomeres IV–IX about as long as wide. Postocellar impression shorter, extending less laterad than in other species. Scutellum convex. Pygidial plate smooth, alutaceous laterally; its punctures of uneven size, irregularly distributed (fig. 116). Forecoxa very shallowly concave near inner margin, foremargin carinate. Rake spines of forebasitarsus 1.3–1.5 times longer than forebasitarsus width. Length 8.5 mm.

Vertex hair obscuring underlying integument.

Head and thorax black (mesosternum and propodeum largely reddish), gaster and legs red.

♂ — Clypeal lobe with arcuate free margin (fig. 117). Ventral length of flagellomere I 1.1 times apical diameter, equal to length of flagellomere II. Length of gastral tergum I less than its apical width. Pygidial plate sparsely punctate (except densely at apex), its marginal carina continuous apically (fig. 118). Sterna II–V with apical depressions which are largely glabrous. Apex of sternum VIII rounded. Inner claw of hindtarsus slightly longer than arolium. Length 6.5 mm. Gonoforceps, volsella and penis valve: figs 119–121.

Head and thorax black, gaster black, with brownish zones (mainly basally). Femora black, tibiae and tarsi red.



Figs 115–121. *P. richteri*, 115 — female head, frontal view (a: clypeal lobe, lateral view), 116 — pygidial plate of female, 117 — male head, frontal view, 118 — pygidial plate of male, 119 — gonoforceps, 120 — volsella, 121 — penis valve

MATERIAL EXAMINED (distribution: fig. 122)

Iran: Baluchistan: Iranshahr (1 ♀, 1 ♂, SMNS).

Parapiagetia rufescens (Gussakovskij)

Psammosphe x rufescens GUSSAKOVSKIJ, 1952:247, ♂. Holotype ♂: Tadjik SSR: Djilikul (ZIL, Leningrad, ? lost). — In *Parapiagetia*: DE BEAUMONT, 1955b:223, 1960:243; BOHART and MENKE, 1976:281.

INTERPRETATION OF THE SPECIES

The holotype of *Psammosphe x rufescens* is probably lost, because I was not able to find it in the Zoological Institute in Leningrad. However, the species may be recognized on the basis of the original description.

DIAGNOSIS

P. rufescens occurs in Arabia and Transcaspia. The female differs from those of all other *Parapiagetia* by its entire (not stepped) ventral mandibular margin. The male can be recognized mainly by the trian-

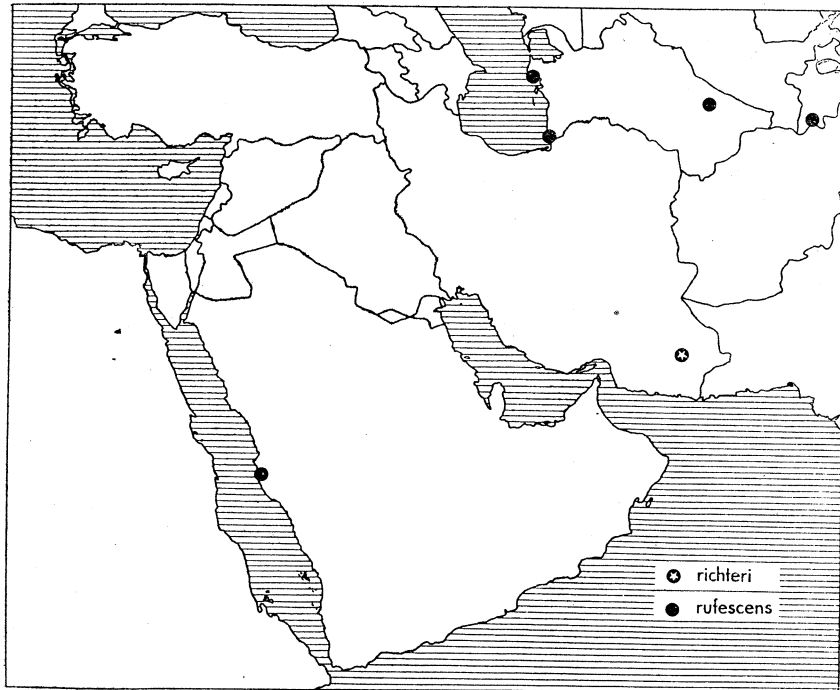


Fig. 122. Geographic distribution of *P. richteri* and *rufescens*

gularly produced hindmargin of gastral sternum VII, and two longitudinal carinae on sternum VIII.

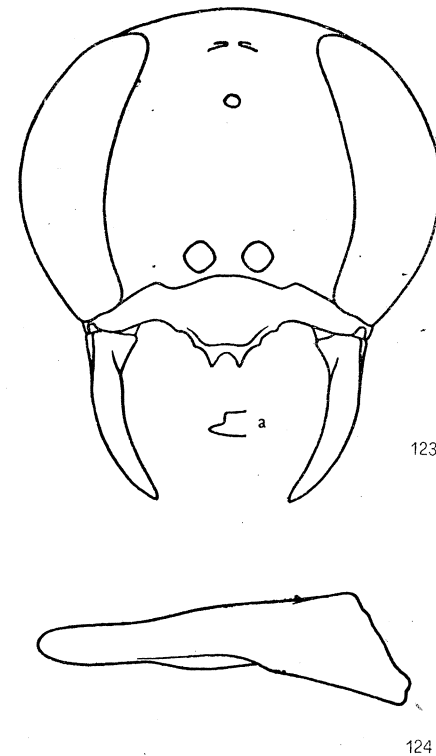
DESCRIPTION

Inner orbits convergent below in lower half. Punctures fine, contiguous on mesopleuron, about 1 diameter apart on mesosternum. Propodeal dorsum slightly shorter than scutellum. Mid and hindtarsomere V shorter, less curved than in *P. erythropoda*, almost as in *P. nilotica*.

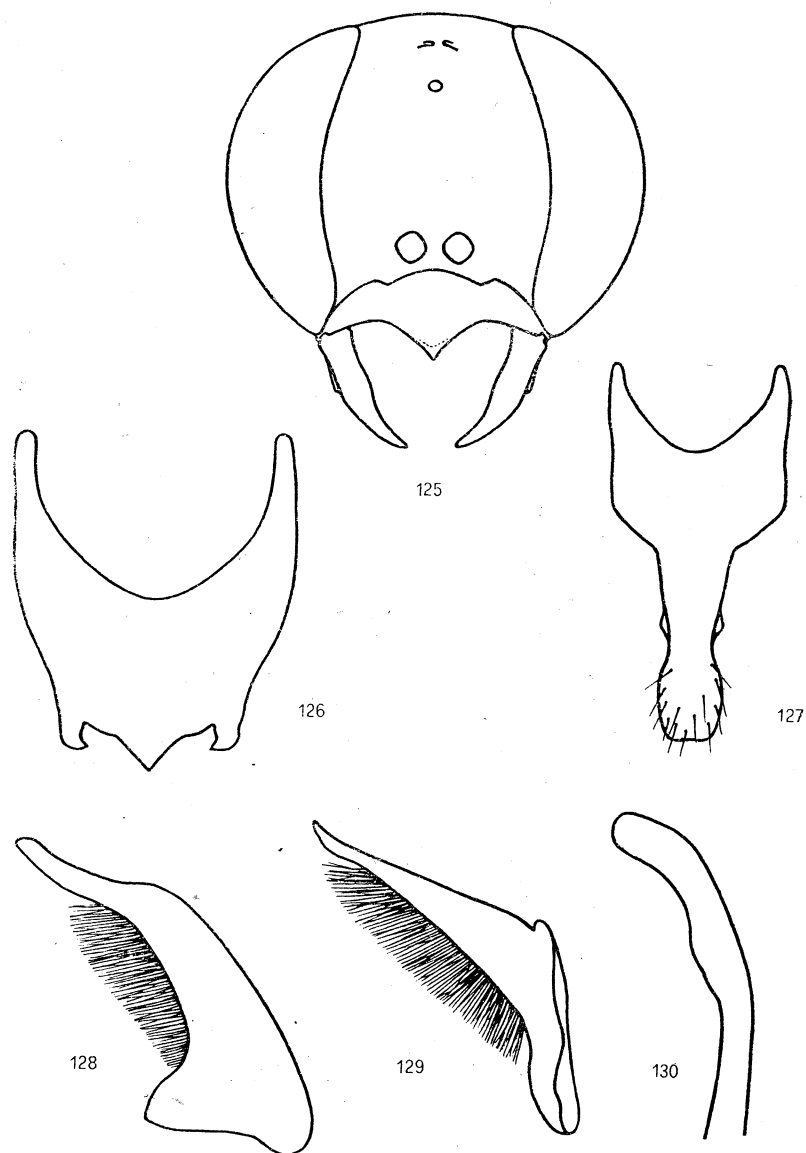
Mesothoracic vestiture appressed, partly obscuring underlying integument on mesopleuron.

Femora black, red apically (female hindfemur partly brownish). Tibiae and tarsi red.

♀ — Ventral mandibular margin entire, not stepped (fig. 124). Middle clypeal section with a platform-like elevation anteriorly; lobe bidentate;



Figs 123, 124. *P. rufescens*, female, 123 — head, frontal view (a: clypeal lobe, lateral view), 124 — mandible, outer side



Figs 125-130. *P. rufescens*, male, 125 - head, frontal view, 126 - gastral sternum VII, 127 - gastral sternum VIII (lateral carinae invisible), 128 - gonoforceps, 129 - volsella, 130 - penis valve

free margin with obtuse projection between middle and lateral sections (fig. 123). Vertex and scutum finely, densely punctate, and also with large, scattered punctures. Scutellum convex. Pygidial plate with setigerous punctures which are about 1 diameter apart in basal half. Forecoxa weakly convex, foremargin not carinate. Rake spines of forebasitarsus slightly shorter than forebasitarsus width. Length 7-7.5 mm.

Gaster black, pygidial plate brown reddish apically.

♂ - Clypeal lobe sharply pointed (fig. 125). Ventral length of flagellomere I 1-1.1 times apical diameter, shorter than flagellomere II. Vertex and scutum finely punctate; some punctures 1 diameter apart, others more than 1 diameter. Length of gastral tergum I about equal to apical width. Pygidial plate punctate, punctures contiguous apically, more than 1 diameter apart in basal half; its marginal carina continuous apically. Sterna II-V with glabrous apical depressions. Apical margin of sternum VII (fig. 126) triangularly produced (straight or weakly arcuate in other species). Unlike all other *Parapiagetia*, sternum VIII (except apically) has a lateral, longitudinal carina on each side; apex truncate (fig. 127). Length 6-7 mm. Gonoforceps, volsella and penis valve: figs 128-130.

Gaster black, with brownish or reddish zones.

MATERIAL EXAMINED AND RECORDS (distribution: fig. 121)

Arabia: Jeddah (1 ♂, BMNH).

Turkmen SSR: Krasnovodsk (1 ♀, ZIL), Gassan-kuli (1 ♀, ZIL), Repetek (1 ♂, ZIL).

Tadjik SSR: Djilikul (GUSSAKOVSKIJ, 1952).

STRESZCZENIE

Praca stanowi systematyczną rewizję rodzaju *Parapiagetia* z obszaru Starego Świata. Spośród 23 wyróżnionych gatunków 9 zostało opisanych jako nowe. Autor wykrył liczne nie znane poprzednio cechy morfologiczne, zezwalające na łatwiejszą identyfikację gatunków i lepsze ustalenie ich wzajemnych pokrewieństw. Zamieszcza też oryginalne klucze do oznaczania gatunków.

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INDEX OF NAMES

<i>bidens</i> sp. n.	637	<i>nilotica</i> sp. n.	642
<i>biskrensis</i> sp. n.	645	<i>odontostoma</i> (KOHL).	626, 629
<i>capensis</i> BRAUNS	655	<i>piagetioides</i> (SAUNDERS)	618
<i>capitalis</i> (SAUNDERS)	646	<i>pluridentata</i> ARNOLD	635
<i>denticulata</i> (MORICE)	655	<i>rhodesiana</i> ARNOLD	655
<i>erythropoda</i> (CAMERON)	655	<i>richteri</i> DE BEAUMONT	661
<i>ferox</i> ARNOLD	655	<i>rufescens</i> (GUSSAKOVSKIJ)	664
<i>flora</i> sp. n.	652	<i>saharica</i> DE BEAUMONT	655
<i>genicularis</i> (F. MORAWITZ)	612	<i>saussurei</i> KOHL	626
<i>indica</i> sp. n.	649	<i>substriatula</i> (TURNER)	614
<i>integra</i> (KOHL)	612	<i>subtilis</i> sp. n.	648
<i>kaszabi</i> TSUNEKI	624	<i>tridentata</i> TSUNEKI	621
<i>krombetini</i> sp. n.	641	<i>vernalis</i> BRAUNS	617
<i>longicornis</i> ARNOLD	639	<i>wickwari</i> TURNER	655
<i>maligna</i> sp. n.	638	<i>zomba</i> sp. n.	633
<i>mongolica</i> (F. MORAWITZ)	628	<i>zorah</i> DE BEAUMONT	629