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ABSTRACT

This is a taxonomic revision of Malagassy allodapine bees, with keys, descriptions, and illustrations. At least 13 species are known, seven of which (*Braunsapis madecassella*, *Effractapis furax*, *Allodapula rufa* and *platyprosopon*, *Halterapis kraussi* and *tulearensis*, and *Macrogalea infernalis*) are described as new and one, whose name was preoccupied, is provided with a new name (*Allodapula benoisti*).

Outstanding among the findings are (1) a new parasitic genus, *Effractapis*, allied to and presumably parasitic upon *Braunsapis*; (2) distinctive groups of species tentatively placed in *Halterapis* and *Allodapula* but not closely related to other species of these South African genera; and (3) species of *Braunsapis* and *Macrogalea* closely related to African members of these genera.

INTRODUCTION

When reviewing the African allodapine bees (Michener, 1975), I realized that the Malagassy fauna might contain species of particular interest. I therefore welcomed the invitation from Dr. S. Kelner-Pillault (Museum National d'Histoire Naturelle, Paris) to examine some Malagassy material; the present paper is a result of that activity.

The fauna is still little known, and it is especially unfortunate that larvae of certain groups are unknown, because larvae are necessary to verify relationships in some cases. The following account is preliminary, designed to do what can now be done with this fauna; field work in Madagascar may alter the conclusions significantly.

To document the locations of specimens, abbreviations in brackets indicate museums in which they are preserved:

[Basel], Naturhistorisches Museum, Basel
[BM], British Museum (Natural History)
[KU], Snow Entomological Museum, University of Kansas
[Paris], Museum National d'Histoire Naturelle, Paris, France
[AMNH], the American Museum of Natural History, New York, New York

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tional d'Histoire Naturelle, Paris; Dr. C. Baroni Urbani, Naturhistorisches Museum, Basel; and to the authorities of the British Museum (Natural History).

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KEY TO MALAGASSY ALLODAPINE BEES

1. Rather robust bees with hairy head and thorax; stigma slender, basal part parallel-sided; prestigma about as long as distance from base of stigma to base of vein r; jugal lobe of hind wing enormous, almost as long as vannal lobe (Genus *Macrogalea*) 2
   Slender, inconspicuously hairy; stigma broad, not parallel-sided; prestigma usually half as long as distance from base of stigma to base of vein r; jugal lobe of hind wing of ordinary size, extending little if any beyond vein cu-v of hind wing. 3
2. Scopa and thoracic pubescence whitish; clypeus with longitudinal yellowish or whitish band. . . . . .*Macrogalea ellioti*
   Scopa black on outer side of tibia; pubescence of thoracic dorsum intermixed with dusky; clypeus black or with ill-defined dark red-brown longitudinal band . . . . . *Macrogalea infernalis*
3. Face without pale marks; labial palpi three segmented, last segment not diverging from axis of segments 1 and 2; scopa reduced . . . . . *Effractapis furax*
   Face with yellow or white markings, at least on clypeus; labial palpi four segmented, last two segments diverging from axis of segments 1 and 2; scopa normal 4
4. Body and legs (coxae to basitarsi) black; no yellow or white along inner orbits of eyes of females; dorsum of sixth tergum in transverse section convex, gradually bent to form ventrolateral part of tergum; male gonostylus a thin, rounded sheet less than twice as long as broad . . . . . *Braunsapis*[1] *madecassa* and *madecassella*
   Body and legs at least partly red-brown (except in some *Halterapis tulearensis*); yellow or white along inner orbits of female (except in *Halterapis tulearensis*); dorsum of sixth tergum more or less flat in transverse section, sharply bent to form ventrolateral part of tergum (except in *Allodapula rufa*); male gonostylus in known forms more than twice as long as broad 5
5. Wing length 3.5 mm. or less; ground color of thorax black. (Genus ?*Halterapis*). 6
   Wing length 4 mm. or more; ground color of thorax at least partly red-brown. (Genus ?*Allodapula*). 7
6. Pale color of female head (yellow) occupying most of clypeus and forming band along inner orbit . . . . .*Halterapis kraussi*
   Pale color of female head (white) restricted to T-shaped mark on clypeus . . . . . *Halterapis tulearensis*
7. Pale band along posterior orbit of eye absent (female); dorsal surface of sixth tergum of female convex in cross section, curving gradually to form ventrolateral areas, no distinctive vestiture on dorsal surface . . . . . *Allodapula rufa*
   Pale band present along posterior orbit (female); dorsal surface of sixth tergum rather flat in cross section, curving abruptly to form ventrolateral areas, dorsal surface with vestiture different from that of lateroventral areas 8
8. Face (female) flat or slightly concave; upper half of clypeus as wide as lower half; hind tibia (female) with brush of dense, robust, barbed, red hairs on upper surface of distal half. . *Allodapula platyprosopon*
   Face (female) not flat or concave; upper half of clypeus narrower than lower half; hind tibia (female) without red brush. 9
9. Forewing length nearly 6 mm.; thorax black except for the largely red-brown scutum . . . . . *Allodapula keiseri*
   Forewing length 5 mm. or less; thorax largely red-brown 10
10. Graduli of terga 4 and 5 extending but little behind spiracles; head unusually elongate (fig. 35). . . . . *Allodapula benoisti*
    Graduli of terga 4 and 5 extending well behind spiracles toward posterior tergal margins; head of usual shape (fig. 34) . . . . . *Allodapula seyrigi*

[1] One or more additional species of *Braunsapis* occur in Madagascar. They will run here, and are briefly discussed below.

GENUS *BRAUNSAPIS*

The first two species described below are members of the *Braunsapis minutula* group of

Michener (1975). They are very similar and not readily distinguished in the female, although males are clearly distinct. Most available specimens are from Bekily. At that locality males and presumably females of both species were taken in some numbers by A. Seyrig, and are in the museum in Paris. Unfortunately Benoist named the species *madecassa* from two females and a male selected from this material, the type being a female. The type has not been located but presumably it would not have clarified the situation since I cannot distinguish females of the two species. Three available females are from the same locality and date as the type, and one of them carries Benoist's identification label. Possibly it is the type specimen, although it lacks a type label.

On the basis of a minor average difference in the darkness of the dorsal metasomal pubescence, I have selected the species to be called *madecassa.* Benoist's description says nothing about dark metasomal hairs and the specimen with his identification label has these hairs rather pale. This selection may be in error, but such an error can only be verified if good distinguishing characters for females can be found.

In the following descriptions I have followed the style and numbering system for characters used by Michener (1975) to provide for ready comparison with African species. In the keys in that work, females of both species run to the *minutula* group while males run to couplet 20.

While on the subject of the key to *Braunsapis* species in Michener (1975), it is appropriate to note that forms falling in the second alternatives of couplets 13 for females and 9 for males sometimes have the first recurrent and first transverse cubital veins interstitial. This does not weaken the couplets. Unfortunately, also, the names *trochanterata* and *calidula* are transposed in couplet 11 of the key for males, as was pointed out to me by Roy R. Snelling of the Natural History Museum, Los Angeles County, California.

Braunsapis madecassa (Benoist), new combination
Figures 1-6, 12, 13, 17-19

Allodape madecassa Benoist, 1954, p. 152. Type: Bekily, Tuléar Prov. [Paris, not seen].
Allodape madecassa: Benoist, 1962, p. 141 (part).

Description. Female: (1) Length 4 to nearly 5 mm.; wing length 3 mm. (2-12) Black, mandibles, labrum, and sometimes other areas brownish, the labrum in one specimen yellowish brown. Clypeal mark yellowish, typically occupying entire upper half of clypeus and extending onto lower half medially, thus shaped as usual in *B. leptozonia* (Vachal) or *ghanae* Michener (see Michener, 1975), but variably reduced in some specimens (figs. 17-19). Posterior lobe of pronotum yellowish, sometimes only along posterior margin. Scape black or with brownish yellow at base and occasionally also at apex. Tegula translucent to brown, sometimes with yellowish spot. Axillary sclerites brown to yellowish brown, inner half of median axillary sclerite usually darker, outer half often yellowish brown. Legs black or brownish black, small segments of tarsi reddish brown. Posterior margins of terga brownish. (13) Wings slightly brownish, veins and stigma dark brown. (14) Dorsal metasomal hairs slender, short, brown to whitish, tapering to sharp apices, not or slightly curved apically. (16) Clypeus usually with small to moderate-sized punctures, large punctures on lower part, especially marginally; ground between punctures shining to dull, minutely roughened. (20) Interocellar distance slightly less than ocellocular distance; ocello-occipital distance subequal to ocellar diameter. (25) Upper margin of clypeus somewhat concave, sometimes with median convexity. (27) Clypeo-antennal distance less than or subequal to diameter of antennal socket. (29) Lower clypeocular distance less than width of scape; upper clypeocular distance greater than 1.5 times width of scape. (31) Genal area nearly bare, with a few weak punctures, weakly lineolate, shining. (33) Malar area anteriorly about one-third to one-half as long as diameter of scape. (37) First flagellar segment nearly as long as wide; middle segments about as long as wide. (43) Stigma shorter than costal margin of marginal cell, which is longer than distance from apex of cell to wing tip. (44) Apex of marginal cell almost on wing margin. (45) Submarginal cells usual for genus. (52) Basitibial plate not defined.

Male: Similar to female except as follows: (1m) Length 3.5 mm.; forewing length 2.75-3 mm. (2m-12m) Black, the following parts yellow: clypeus except sometimes lateral margins, at least much of labrum, pronotal lobe or its poste-

rior margin; tegular and axillary coloration as in female. Apex of mandible reddish brown. Legs colored as in female, the basitarsi blackish. (29m) Lower clypeocular distance about half width of scape, upper slightly greater than width of scape. (33m) Malar area with length less than one-fourth width of scape. (37m) First flagellar segment broader than long; middle flagellar segments usually broader than long. (58) Front basitarsus distinctly longer than segments 2-4 together, segments 2-3 as wide as or scarcely wider than distal part of basitarsus. (59) Hind trochanter with apical and postmedian tooth, the surface between the two strongly concave in profile; hind femur with basal flat area about one-third as long as femur on underside, not surrounded by distinct ridge, area covered with erect, white plumose hairs as long as maximum femoral diameter near base but shorter apically; hairs on both trochanter and femur extending much below lower surface of segment. (60) Membranous convexities of eighth tergum with few wrinkles. (61) Seventh sternum with apical concavity strong but much narrower than in *B. facialis* (Gerstaecker). (63) Ventroapical plate of gonocoxite with apical margin as in figure 3, its mesal projection with five large, blunt, up-curved setae arising dorsally at apex, its lateral projection laterally flattened so that it appears much broader from oblique or lateral views than from beneath. (64) Gonostylus longer than wide, rounded. (65) Penis valve broad with rounded dorsolateral angle, without thickened or peglike setae.

Distribution. Bekily, Tuléar Prov. [Paris]. Ranomafana, Fianarantsoa Prov. [Paris]. Nosy-Komba, Diégo-Suarez Prov. [Paris].

Braunsapis madecassella, new species
Figures 7-11; 14-19

Perhaps some of the types of *Braunsapis madecassa* belong to this species, and at least one male recorded by Benoist (1962) from Tuléar is this species.

Description. Female: Agrees with female of *Braunsapis madecassa.* On the average, dorsal metasomal pubescence darker, so that dusky or blackish hairs can be seen in profile.

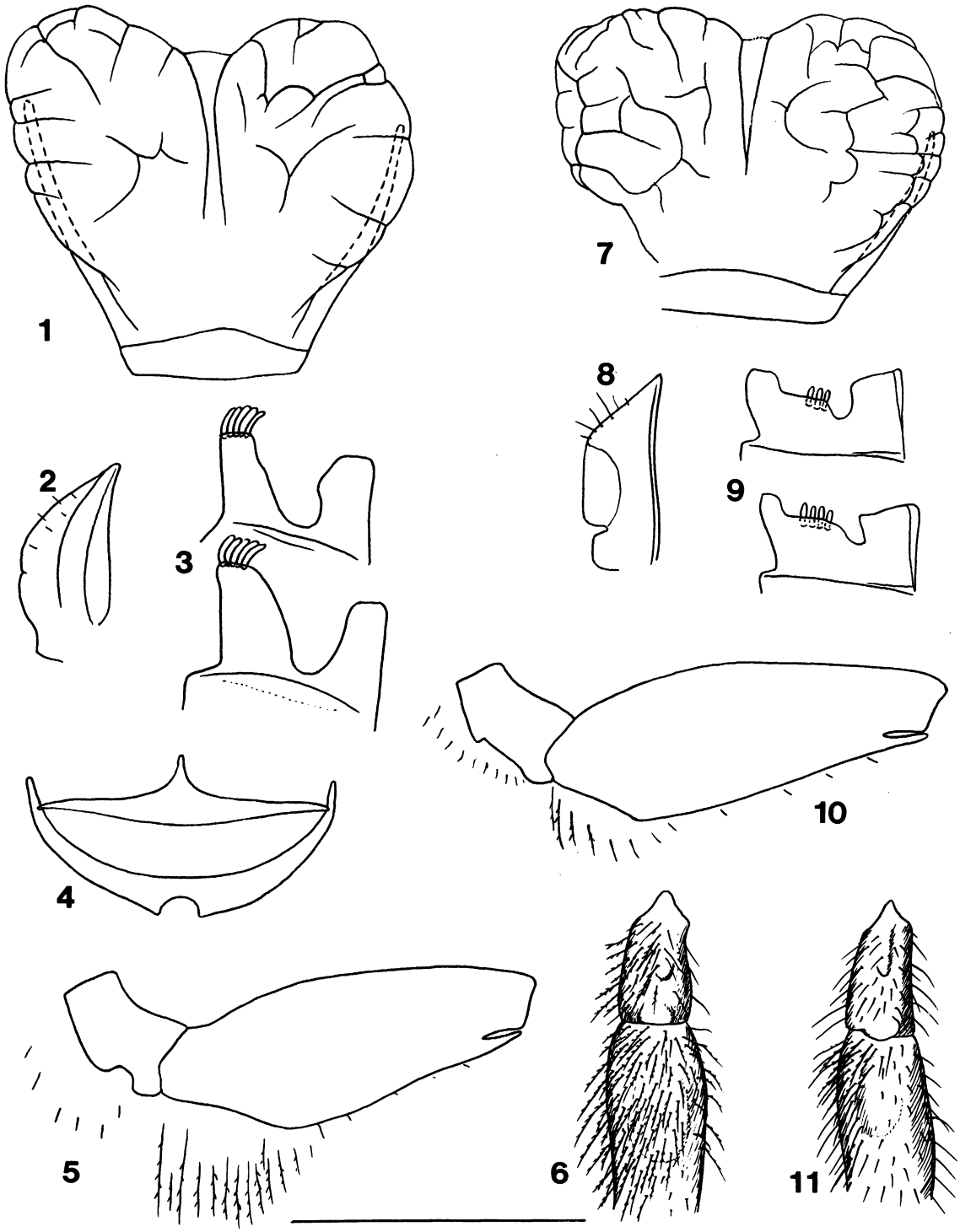
Male: Agrees with male of *B. madecassa* except as follows: (2m-12m) Mandible in some paratypes with yellow spot; underside of scape and small mark in paraocular area near middle of clypeus yellow in holotype and certain paratypes. (37m) Middle flagellar segments slightly longer than broad. (59) Hind trochanter with apical and median tooth, the latter as seen in profile small and acute, surface beyond it straight; hind femur with basal flat or weakly concave ventral area less than one-third as long as femur, not surrounded by distinct ridge, area with erect simple or scarcely plumose gray hairs shorter than femoral diameter; hairs on both trochanter and femur extending well below lower surfaces of segments, but shorter than in *Braunsapis madecassa.* (60) Membranous concavities of eighth tergum with more wrinkles. (63) Ventral plate of gonocoxite as in figure 9, a series of about three or four large, blunt, up-curved setae arising on a lateral shoulder of the mesal projection; lateral projection with a sharp angle separating ventral from a broad lateral surface. (65) Penis valve not especially broad, without thickened or peglike setae.

Type Material. Holotype male: Behara, Tuléar Prov., March, 1937 (A. Seyrig) [Paris]. Paratype males: One from same locality and date; one from same locality, November, 1938; two from Bekily, Tuléar Prov., October, 1938, and January, 1939, all collected by A. Seyrig [Paris]; two from Nosy-Komba, Diégo-Suarez Prov., January, 1952 (N. L. H. Krauss) [Paris]; one from Tuléar, Tuléar Prov., March 9, 1958 (F. Keiser) [Basel].

FIGS. 1-6. *Braunsapis madecassa*, male. 1. Eighth tergum and roof of genital chamber. 2. Dorsal view of left penis valve. 3. Ventral views of left ventroapical plates of gonocoxites, two individuals. 4. Seventh and eighth sterna. 5. Lateral view of hind trochanter and femur. 6. Under side of hind trochanter and base of femur, outer surface to the right.

FIGS. 7-11. *Braunsapis madecassella*, male. 7. Eighth tergum and roof of genital chamber. 8. Dorsal view of left penis valve. 9. Ventral views of left ventroapical plates of gonocoxites, two individuals. 10. Lateral view of hind trochanter and femur. 11. Under side of hind trochanter and base of femur, outer surface to the right.

The scale line equals 0.5 mm. and is accurate only for the leg structures.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Other Distributional Data. Localities other than those listed in the two above species accounts, for females that belong either to *Braunsapis madecassa* or *B. madecasella*, are as follows: Hell-Ville, Nossi-Bé, Diégo-Suarez Prov. [Paris]; Ambato-Boeni, Majunga Prov. [Basel]; Bevilany, Tuléar Prov., 800 m. altitude (K. M. G. and P. D.) [BM].

BRAUNSAPIS sp.?

Several females of a *Braunsapis* larger than those described above and with a T-shaped clypeal mark were collected at Nosy-Komba and Nossi-Bé, Diégo-Suarez Prov., by N. L. H. Krauss [Paris]. They are quite variable and may not all be the same species, but some at least, are clearly a different species from either of those described above and from species known to me from Africa. More material, particularly males, should be obtained before naming the species.

EFFRACTAPIS, NEW GENUS

Type species: *Effractapis furax*, new species.

Discussion. This genus is parasitic, to judge by the reduction of its mouthparts and pollen carrying hairs. It appears to be a derivative of small species of *Braunsapis* which it resembles in appearance. As indicated by Michener (1970) there are some parasitic species of *Braunsapis* as well as one previously described generically distinct parasitic derivative of *Braunsapis*, *Nasutapis straussorum* from Africa. *Effractapis* differs from *Braunsapis* approximately as much as does *Nasutapis*; hence it appears to warrant generic status.

As there is only one known species, it is difficult to judge which characters should be called generic and which specific. The description below is based on that of *Braunsapis* by Michener (1975), using the same numbers for ready comparison of characters, and omits characters that are in full agreement with all *Braunsapis* species.

Characters that differentiate *Effractapis* from *Braunsapis* are italicized in the description of *E. furax* below. In a number of features in addition to the mouthparts and pollen handling hairs, *Effractapis* resembles *Nasutapis straussorum* Michener. Such characters are the short head, widely separated antennae, reduced lateroclypeal carinae, fine punctation of the clypeus and labrum, relatively flat labrum, etc. Such features are all presumably convergent, for the two forms differ strikingly in the midapical clypeal projection and wide head of *Nasutapis*, as well as its extensive facial maculations, swollen front coxae, and the like.

Michener (1970) listed some convergent features frequent in parasitic species of allodapine bees. *Effractapis* shares several of these although it does not exhibit a flat or concave face, reduced eyes, robust legs, or large tibial spines. In fact the smooth, gently convex face is one of its distinguishing features. Especially interesting is the pair of long, whiplike setae arising just above the clypeus in the female. In addition there are four or five unusually long hairs on the outer surface of the front tibia, and other such hairs on the outer surface of the front basitarsus, as well as long hairs on the apical part of the abdomen. These hairs may have a sensory function important for a parasitic bee in an unfamiliar nest, and suggest a more delicate approach to nest owners than do the bulldozer face and thickened legs of the other parasitic genera.

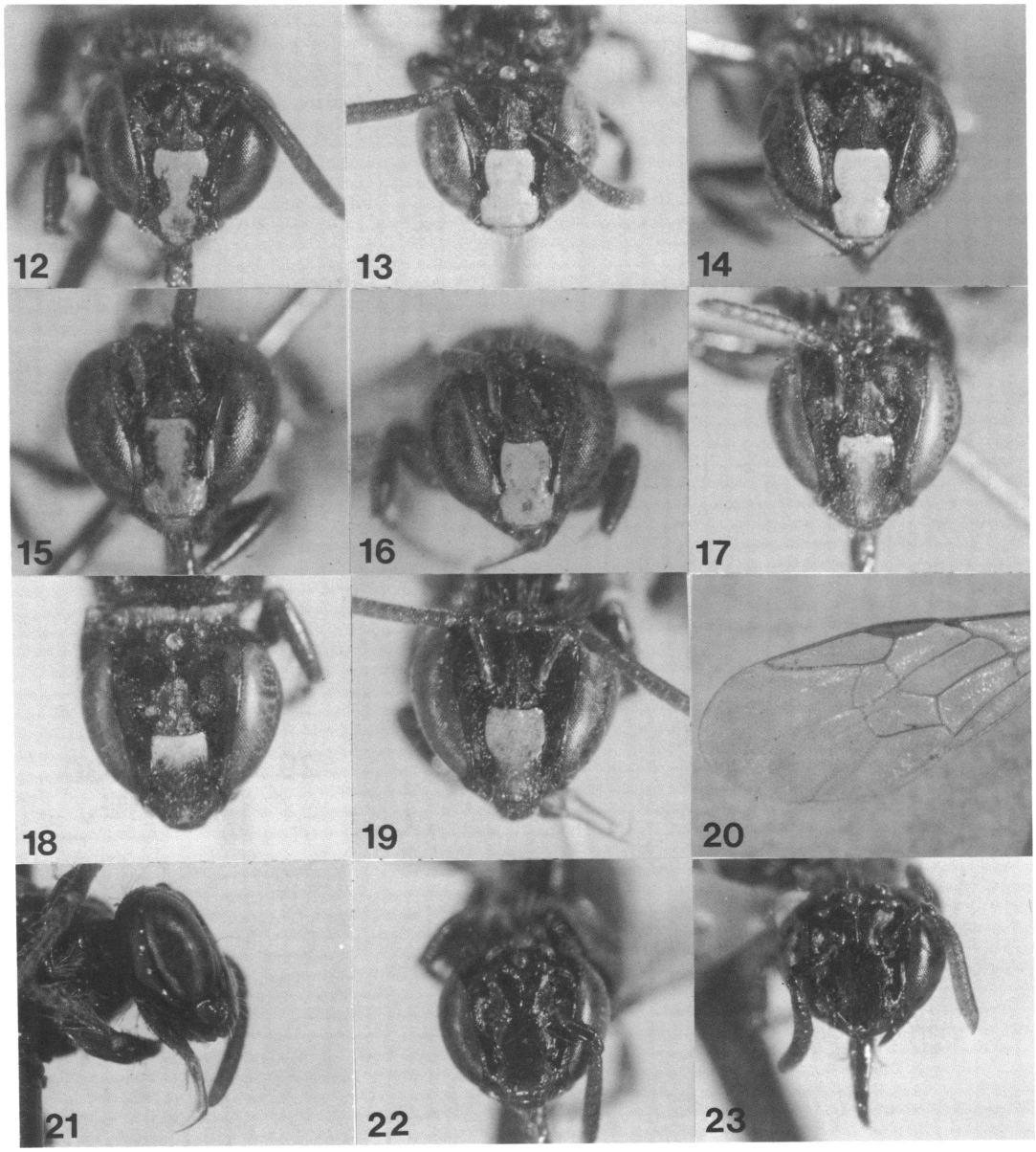
The generic name is from the Latin *effractor* (house-breaker) and *apis* (bee).

Effractapis can be incorporated into the key to genera of allodapine bees of the world (Michener, 1975) by a modification of couplet 2 and addition of a new couplet, as follows:

2. Labial palpus with apical segments not diverging from axis of first two segments (Proboscis short; no functional scopa, no brush at base of middle femur of female) 2a
   Labial palpus with apical segments small and in ordinary position sharply divergent from axis of first two segments 4
2a. Labial palpus three segmented; frons and apex of clypeus without projections . . . . . *Effractapis*
   Labial palpus four segmented; frons or apex of clypeus with projection. 3

Effractapis furax, new species
Figures 20-32

Description. Female: (1) Length 4 mm.; forewing length about 2.7 mm. (2-12) Entirely black except for dark brown tints on clypeus, labrum,



FIGS. 12, 13. *Braunsapis madecassa*, facial views of males from Nosy-Komba and Bekily.

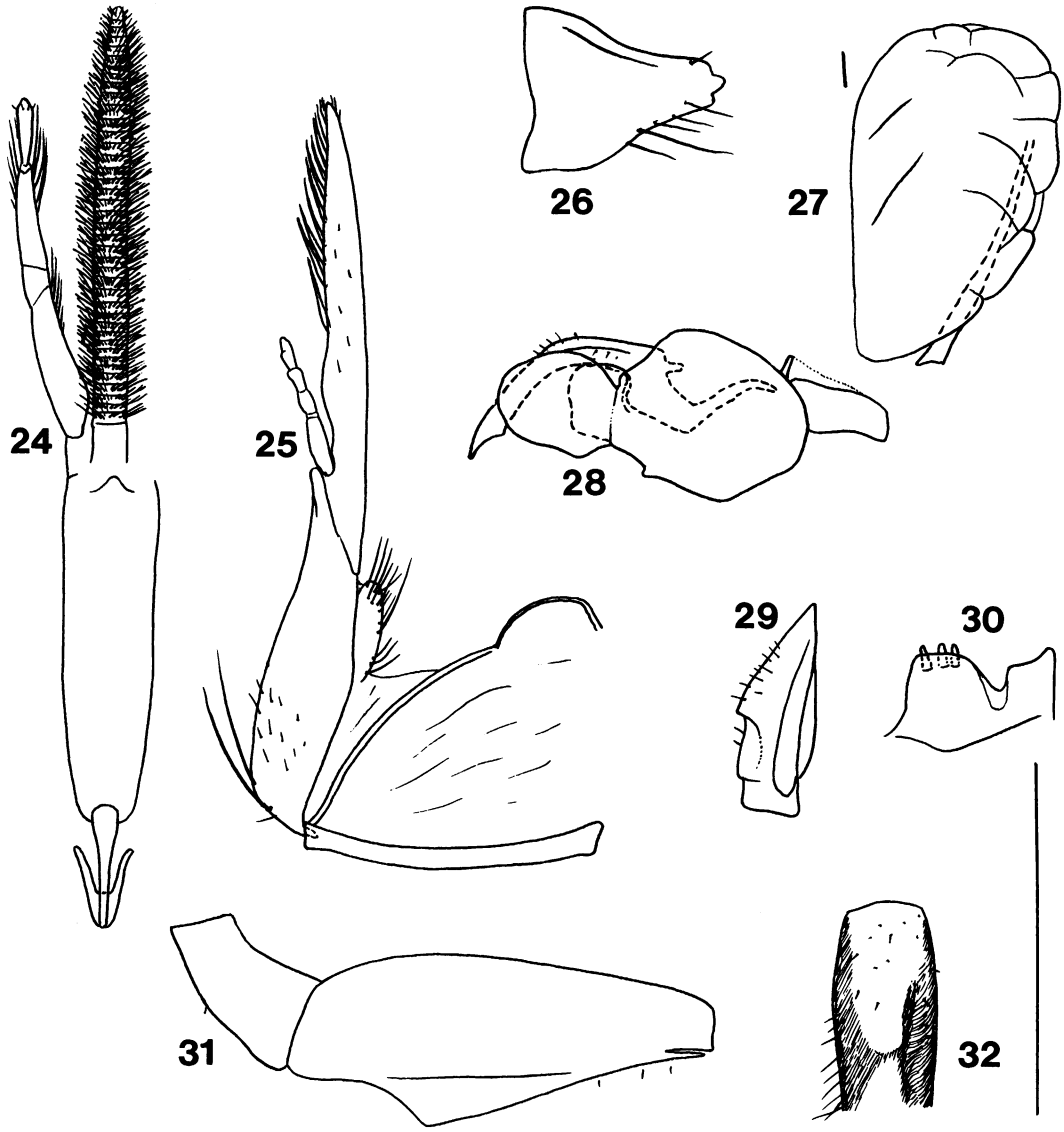
FIGS. 14-16. *Braunsapis madecassella*, facial views of males. 14, 15. Paratypes from Behara and Nosy-Komba. 16. Holotype from Behara.

FIGS. 17-19. *Braunsapis madecassa* or *madecassella*, facial views of females from Bekily.

FIGS. 20-23. *Effractapis furax*. 20. Forewing of holotype. 21. Side view of head of holotype female showing long hair arising above clypeus (it arises slightly below antennal bases, not above as suggested by this photograph), convex face, and short proboscis. 22. Facial view of holotype female. 23. Facial view of paratype male.

In these and other photographs, certain highlights have been eliminated or softened by hand to make the distinction between pale areas and highlights clearer.

mandibles, legs, and sometimes metasoma and sides of thorax. Flagellum dark brown beneath. (13) Wings slightly brownish, veins and stigma dark brown. (14) *Hairs dusky*, sparse, whitish on posterior lobe of pronotum and on coxae and thoracic venter; *supraclypeal area with two simple hairs, longer than scape, arising above clypeal margin and directed forward*; dorsal metasomal hairs not tapering, gently curved, blunt at apices, lateral ones unusually long (up to .25 mm. in



FIGS. 24-32. *Effractapis furax*; 24-26, female; 27-32, male. 24. Ventral (=posterior) view of labium. 25. Lateral view of maxilla. 26. Mandible. 27. Eighth tergum and roof of genital chamber, right side only. 28. Lateral view of genitalia. 29. Dorsal view of left penis valve. 30. Ventral view of left ventroapical plate of gonocoxite. 31. Lateral view of hind trochanter and femur. 32. Ventral view of base of hind femur, lateral surface to the right.

The scale line represents 0.5 mm. and applies to all drawings.

length). (15) *Clypeus gently convex in profile, extending but little below lower ends of eyes, lower lateral parts curved back but only to a slanting, not a longitudinal plane.* (16) *Clypeus with scattered small punctures, none larger than those of frons,* on a shining surface. (17) *Lateroclypeal carina short, terminating well below level of tentorial pit.* (19) *Interantennal distance more than three times antennocular distance.* (20) Vertex behind ocelli concave, interocellar distance more than ocellocular distance; head declivous immediately behind posterior ocelli so that there is almost no recognizable ocelloccipital distance. (22) Frons not protuberant, *not ridged longitudinally as in* Braunsapis *but gently convex seen from above* with strongly impressed longitudinal line *in a depression* extending down from median ocellus to just *above* level of middles of antennal sockets. (23) Antennal depression as in *Braunsapis* but better delimited than usual by the gentle ridge that curves from the inner orbit toward the median ocellus, this ridge forming an unusually prominent rounded shining impunctate convexity in front of lateral ocellus. (25) Upper clypeal margin nearly straight, difficult to see because of fusion of clypeus and frons. (26) Upper clypeal margin more than twice as long as width of paraocular area. (27) Clypeoantennal distance less than diameter of antennal socket. (29) Lower clypeocular distance less than width of scape; upper clypeocular distance greater than width of scape. (31) Genal area uniformly shining with widely scattered minute punctures. (33) Malar area anteriorly about one-third as long as diameter of scape. (34) *Labrum only moderately convex, without large punctures, more than twice as wide as long, apical margin concave medially.* (36) Scape about four times as long as wide (excluding basal bulb). (37) First flagellar segment wider than long; *seven or eight flagellar segments broader than long.* (38) Apical width of mandible less than half basal width, *teeth less prominent than in* Braunsapis. (41) *Proboscis short, less than half as long as in* Braunsapis *of comparable size. Labial palpus three segmented*; first two segments flattened, first longer than second; *third segment not divergent from axis of first two.* (42) *Maxillary palpus four or five segmented* (depending on fusion of last two segments), nearly four times as long as galeal width. (43-47) Wing venation similar to that of *Braunsapis leptozonia* as figured by Michener (1975) but stigma slightly shorter than costal margin of marginal cell, the latter longer than distance from apex of cell to wing tip. Apex of marginal cell sharply pointed almost on wing margin. Second submarginal cell usually more narrowed toward marginal cell. (48) Hamuli five or six. (49) *Fore basitarsus without bent hairs,* with scattered hairs longer than basitarsus arising on outer surface; fore tibia with several almost equally long hairs on outer surface. (52) Basitibial plate entirely absent. (54) *Scopa reduced,* almost as illustrated for *Nasutapis straussorum* (Michener, 1970) but hairs on apical third of tibia about as long as tibial diameter; *no coarsely branched hairs as in pollen collecting forms*; *brush at base of mid-femur and apex of mid-trochanter absent. All femora smooth and shining, under surfaces hairless or nearly so.* (55) Tergum 6 as usual for *Braunsapis* but apex with only small, weak emargination and small shining median area not elevated as a recognizable pygidial plate. Sting strong, upcurved, about as long as hind tibia (length the same as in *Braunsapis*). (57) *Graduli of terga 4 and 5 not extending backward appreciably behind spiracles.*

Male: Similar to female except for usual sexual characters; like female, lacks pale maculations. Characters 29 and 33 as in female. (14m) Pair of long hairs arising from supraclypeal area absent. (30m) Mandibular axis well behind ocular axis. (34m) Labrum as in female but apical margin not emarginate. (37m) Flagellum with all segments except last broader than long, segments 2 and 3 about twice as broad as long. (39m) Apex of mandible rounded, edentate. (58) Front basitarsus longer than segments 2-4 together, mediotarsal segments not broadened, segments 2-3 as wide as distal part of basitarsus; middle and hind tarsi as described for *Braunsapis facialis* (Michener, 1975) but hind basitarsus only about .6 times as long as tibia. (59) Hind trochanter simple; hind femur with basal ventral concavity which accentuates a strong ventral tooth about one-third of distance from base to apex of femur; undersurfaces of trochanter and femur shining, almost hairless. (60) Membranous convexities of eighth tergum with few wrinkles. (61) Seventh sternum with apical margin uniformly convex. (63) Ventroapical plate of gonocoxite with apical margin as in figure 30, its

mesal projection with two or three large, blunt setae arising dorsally near apex, its lateral projection with a carina separating the ventral from the broad lateral face. (64) Gonostylus about as wide as long, rounded, hairless. (65) Penis valve with strong dorsolateral angle, not as strongly downcurved as in most *Braunsapis*, without thickened or peglike setae.

Type Material. Holotype female, allotype male, and two female and one male paratypes: Bekily, Tuléar Prov., January, 1942 (A. Seyrig) [Paris].

Comments. The specimens of *Effractapis furax* bear the same data as series of *Braunsapis madecassa* and *madecassella*, and it is probable that *E. furax* is a parasite of one or both of those species.

The specific name is from the Latin *furax*, thievish.

GENUS *ALLODAPULA*

A major group of Malagassy allodapine bees is known only from adult females, which suggest the genus *Allodapula*. In the absence of both males and larvae, this generic assignment, as well as the subgeneric placement, remain doubtful. The facial markings and other features of the Malagassy species are suggestive of *Allodapula ornaticeps* Michener from Cape Province.

The scarcity of males in a group of species of allodapine bees is not without precedent. Michener (1971a) documented widely different production sex ratios among the species. The four species of the group of *Allodape derufata* Strand, although known from many female specimens, are not yet known in the male (Michener, 1975) unless the one male specimen described as *mirabilis* Schulz belongs with *derufata*. Thus it is probable that the group here under consideration produces few males or that they are not readily collected for some other reason.

In the following descriptions, characters that differ from the description of *Allodapula* (Michener, 1975) as well as distinctive specific characters are italicized.

Allodapula seyrigi (Benoist)

Figures 33, 34

Allodape seyrigi Benoist, 1962, p. 141. Type: Bekily, Tuléar Prov. [Paris].

Description. Female: Length 5-6.5 mm.; forewing length 4-4.5 mm. (2-12) Body and appendages reddish brown, or head, mandible and antenna often dark brown or almost black, the following sometimes infuscated: anterior margin of scutum, scutellum, metanotum, sides of thorax, propodeum, much of metasoma. The following areas cream-colored: longitudinal band on clypeus, broadened across summit to form a "T"; usually small spot just above clypeus; line on underside of scape, sometimes reduced or absent; broad band along inner orbit from near mandibular base to above antenna; large area on mandible; often small spot on malar area; broad band along outer orbit; and pronotal lobe. Labrum, axillary sclerites, usually "knees" and much of front tibia yellowish brown; inner half of median axillary sclerite reddish brown. Tegula transparent yellowish brown. (13) Wings clear, veins and stigma brown. (14) Hairs sparse, dull whitish, scopa yellowish white; dorsal hairs of metasomal terga 4-6 short, pallid, curved posteriorly, thickened, and blunt (but see discussion below). (16) Clypeus shining with sparse small punctures and very few large ones. (17) *Lateroclypeal carina rounded, not sharp, and not extending up to level of tentorial pit.* (19) Antennal bases above middles of eyes; interantennal distance less than twice antennocular distance. (20) Interocellar distance more than ocellocular distance. (22) Impressed frontal line ending above level of lower margins of antennal sockets; no frontal tubercle or a small feeble elevation at lower end of impressed line. (25, 26) Upper margin of clypeus gently concave, less than twice as long as width of paraocular area. (27) Clypeoantennal distance about equal to diameter of antennal socket. (28) Anterior tentorial pits below middle of clypeus. (29) Lower clypeocular distance about equal to width of scape, upper clypeocular distance less than twice width of scape. (33) Malar area about two-thirds as long as width of scape. (34) Labrum strongly convex, *twice as wide as long, with sparse coarse punctures.* (37) First flagellar segment broader than long, second twice as broad as long, third as broad as long, remainder longer than broad. (42) Maxillary palpus six segmented, over four times as long as maximum galeal width, galea with a series of flattened hairs. (43) Stigma about as long as costal length of marginal cell. (48) Hamuli five; hamular sinus wider than deep. (49) Hairs of outer side of fore basi-

tarsus slender, curved apically; under surface with some blunt but not spatulate hairs. (50) Tibial brush absent, the scopa well developed but without specialized brush area. (55) Tergum 6 with upper surface rather flat in cross section, slightly concave in profile, apex produced with a minute weak emargination basad to which is minute pygidial plate not hidden by hairs. (56) Posterior lateral margins of tergum 6 abruptly bent under with a sharp change from the dorsal to the lateroventral vestiture. (57) Graduli 4 and 5 strong, extending far back toward posterior margins of terga.

Distribution. Bekily, Tuléar Prov., May and October, 1938 (A. Seyrig) [Paris]; Fort-Dauphin, Tuléar Prov. (A. Seyrig) [Paris].

Variation. Two other specimens perhaps belonging to this species are available. Both are from Tamatave Province and differ considerably from the seven specimens from Tuléar Province. Once of the two is the only paratype of *A. seyrigi*; it is from Perinet [Basel]. The other is from Rogez [Paris].

These specimens have more extensive and bright yellow face marks (lateral band nearly filling paraocular area, clypeal band broadened below as well as above, lower lateral extremity of clypeus with small yellow area); some of the hairs on the head and body are dusky; and the scopal hairs along the upper margin of the hind tibia and basitarsus are blackish. The one from Rogez has moderately long, robust, erect, blunt, blackish hairs on the dorsa of terga 4 to 6, in addition to short, curved pale hairs as in typical *A. seyrigi*. The other, from Perinet, has very long, slender, erect, blunt, blackish hairs on these terga, and instead of short, robust, curved pale hairs, it has somewhat longer, slender, more erect dark hairs.

It is not clear whether these two specimens are variants of *A. seyrigi* or represent one or two new species.

Allodapula keiseri (Benoist)

Figure 36

Allodape keiseri Benoist, 1962, p. 139. Type: Vohiparara, Fianarantsoa Prov. [Basel].

Except as otherwise indicated, the characters listed below distinguish this species from *A. seyrigi*.

Description. Female: (1) Length nearly 8 mm.; forewing length nearly 6 mm. (2-12) Black except that scutum, front and mid-tibiae and basitarsi, tegula and axillary sclerites are largely dark red-brown; metasoma with red-brown tints. Small segments of tarsi lighter reddish brown. The following areas yellow: Irregular longitudinal band on clypeus, very small lower lateral spot on clypeus, dot just above clypeus, under side of scape, broad band along inner orbit from near mandibular base to above antennal socket, large spot on mandible, streak on malar area, broad band along outer orbit. (13) Wings yellowish, veins and stigma yellowish brown. (14) Hairs rather dense and long for an allodapine, dusky to blackish, scopa black; dorsal hairs of metasomal terga 4-6 rather long, black, curved posteriorly, thickened near apices and blunt. (16) Clypeus shining, minutely roughened, with rather numerous coarse punctures. (17) As in *A. seyrigi*. (19) Antennal bases well above middles of eyes; interantennal distance twice antennocular distance. (20) Interocellar distance less than ocellocular distance. (22) As in *A. seyrigi*. (25, 26) Upper margin of clypeus gently concave, fully twice as long as width of paraocular area. (27, 28) As in *A. seyrigi*. (29) Lower clypeocular distance greater than width of scape, upper clypeocular distance nearly twice width of scape. (33) Malar area about as long as width of scape. (34) Labrum as in *A. seyrigi* but with more coarse punctures. (37) As in *A. seyrigi*. (42) Apparently as in *A. seyrigi*. (43) Stigma shorter than costal length of marginal cell. (48) Hamuli six; hamular sinus wider than deep. (49) As in *A. seyrigi* but under surface of front basitarsus with numerous spatulate hairs. (50, 55, 56, 57) As in *A. seyrigi*.

Distribution. This species is known only from the type specimen from Vohiparana, Fianarantsoa Prov. [Basel].

Allodapula benoisti, new name

Figure 35

Allodape longula Benoist, 1962, p. 140 (not *A. albipennis* var. *longula* Friese, 1916). Type: Ambalamanankana, Fianarantsoa Prov. [Basel].

Except as otherwise indicated, the characters listed below distinguish this species from *A. seyrigi*. Some of the most unusual features are described in italics.

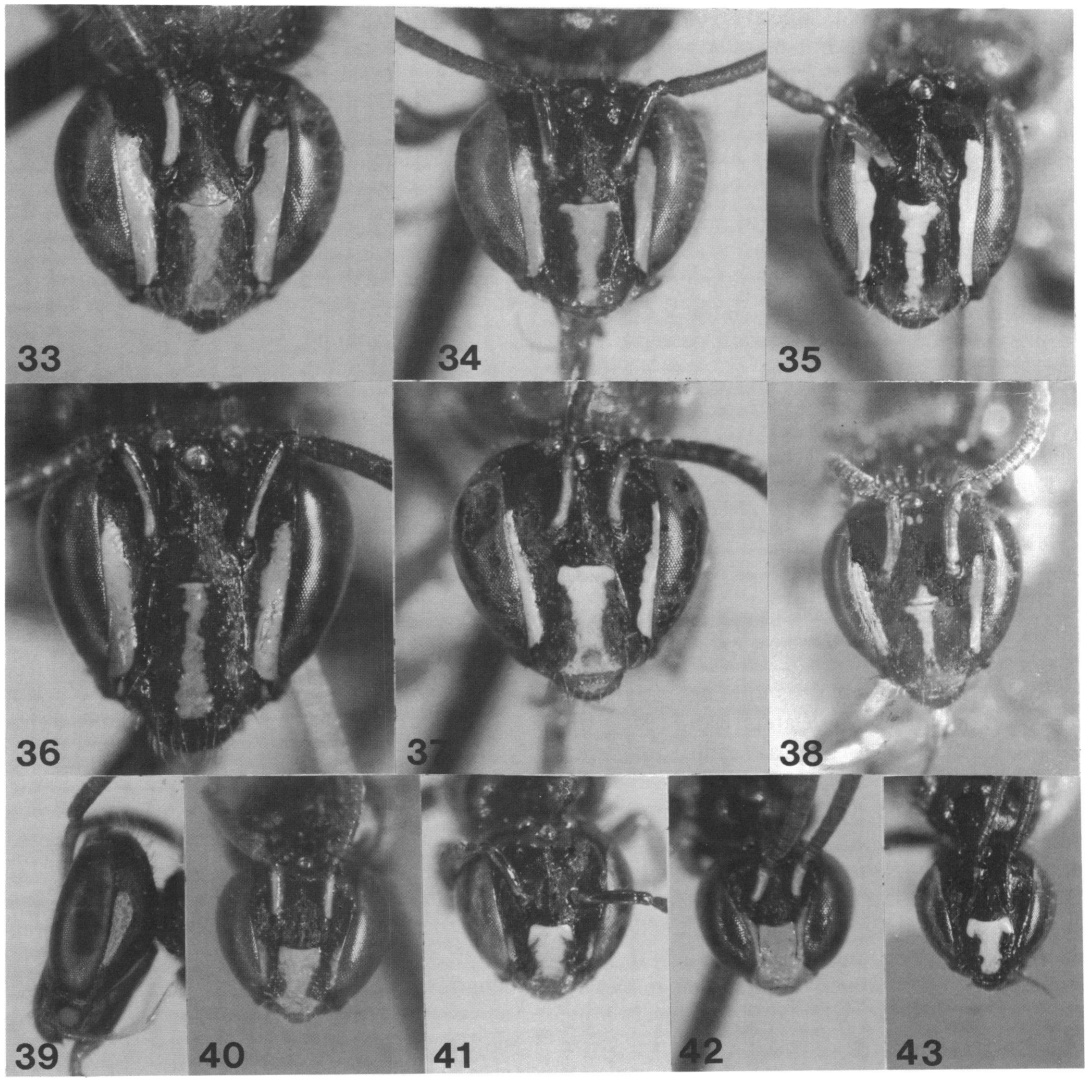


FIG. 33. *Allodapula seyrigi* (?), facial view of female from Rogez.
FIG. 34. *Allodapula seyrigi*, facial view of topotypical female from Bekily.
FIG. 35. *Allodapula benoisti*, facial view of holotype female of *A. longula* from Ambalamanamkana.
FIG. 36. *Allodapula keiseri*, facial view of holotype female from Vohiparara.
FIG. 37. *Allodapula rufa*, facial view of holotype female from Ivondro.
FIGS. 38, 39. *Allodapula platyprosopon*, facial and lateral views of holotype female from Nosy-Komba.
FIGS. 40-42. *Halterapis kraussi*, facial views. 40. Paratype female from Nosy-Komba. 41. Female from Moramanga. 42. Paratype male from Nosy-Komba.
FIG. 43. *Halterapis tulearensis*, facial view of holotype female from Lavanomo.

Description. Female: (1) Length 6 mm.; forewing length 5 mm. (2-12) Head black, clypeus, labrum, mandible, malar area, and part of hypostomal area brown; thorax red brown with pronotum (except yellow-brown posterior margin and lobe), upper two-thirds of mesepister-

num, metathorax, and propodeum dark brown; metasoma brown, third and fourth terga and to a lesser degree other areas infuscated; antenna (except for diffuse yellow-brown area at base of scape) and mid- and hind-legs brown, foreleg reddish brown, a yellowish streak extending full length of outer surface of tibia. Tegula transparent brownish; axillary sclerites light brown. The following parts cream-colored: longitudinal band on clypeus, broadened across summit to form a weak "T"; broad band along inner orbit from near mandibular base to above antennal base; broad band along outer orbit. (13) As in *A. seyrigi.* (14) Hairs sparse, dusky on head, whitish on thorax, yellowish on legs but some dusky on mid tibia and basitarsus and black on hind tibia and basitarsus, mostly dusky on metasoma; dorsal hairs of metasomal terga 5-6 (specialized area not extending forward onto 4) short, pallid, curved posteriorly, appressed, *slender and pointed*, the few longer hairs and lateral longer hairs also slender and pointed, dusky. (16) Clypeus shining, surface minutely roughened with widely dispersed moderate-sized punctures. (17) As in *A. seyrigi.* (18) *Head unusually elongate, eyes only slightly converging below* (fig. 35). (19) As in *A. seyrigi* but antennal bases far above middles of eyes. (20) Interocellar distance less than ocellocular distance. (22) Impressed frontal line ending about at level of lower margins of antennal sockets, a distinct small elevation at lower end of impressed line. (25, 26) *Upper margin of clypeus strongly concave, scarcely longer than width of paraocular area.* (27, 28) As in *A. seyrigi.* (29) Lower clypeocular distance less than width of scape, upper clypeocular distance about 1.5 times width of scape. (33) Malar area shorter than width of scape. (34, 37) As in *A. seyrigi.* (42) Maxillary palpus broken in only specimen. (43) As in *A. seyrigi.* (47) Unlike related species, *jugal lobe not attaining level of cu-v of hind wing.* (48, 49, 50, 55, 56) As in *A. seyrigi.* (57) Metasoma unusually long, parallel-sided. *Graduli of terga 4 and 5 extending but little behind spiracles, not approaching posterior tergal margins.*

Distribution. The type and only known specimen is from Ambalamanankana, Fianarantsoa Prov.

Discussion. This species is named for R. Benoist who did much to add to the knowledge of bees of Madagascar and who first described this species, unfortunately under a preoccupied name. Incidentally, the *Allodape albipennis* var. *longula* represents a distinct species, not a form or synonym of *albipennis* (Michener, 1975).

Allodapula rufa, new species
Figure 37

This species is superficially similar to *A. seyrigi* and is perhaps closely related to that species, but differs by several striking characters italicized below.

Description. Female: (1) Length 6 to 6.5 mm.; forewing length 4.7 mm. (2-12) Head and antenna black, clypeus, scape, and mandible with some brown and ground color of labrum red-brown, the following pale yellow: broad longitudinal band on clypeus, broadened above and (except in two paratypes) below; dot (or small spot) on lateroclypeal carina; large spot on labrum and on mandible; under side of scape; broad band along inner orbit starting near mandibular base, attenuate above but extending well above antennal base. *No band along outer orbit.* Thorax, legs, and metasoma red-brown, hind tibia and basitarsus and in two paratypes dorsum of propodeum infuscated, anterior tibia with reddish yellow stripe on outer surface. Tegula transparent yellow-brown; axillary sclerites yellowish brown. (13) Wings light brown, veins and stigma brown. (14) Hairs sparse, dusky yellowish, noticeably dark on mid-basitarsus, *black on upper surface of hind tibia and basitarsus and on metasoma; dorsal hairs of metasomal terga 4-6 not specialized but similar to those of sides and venter, slender, tapering to points, intermixed moderately long and long, suberect, not strongly curved or recumbent.* (16) Clypeus somewhat shining, minutely roughened, with numerous moderate sized punctures. (17, 19) As in *A. seyrigi.* (20) Interocellar distance less than ocellocular distance. (22) Impressed frontal line ending on level of lower margins of antennal sockets; frontal tubercle present (weak in a paratype). (25, 26) Upper margin of clypeus convex medially, little longer than width of paraocular area. (27) Clypeoantennal distance slightly more than diameter of antennal socket. (28, 29) As in *A. seyrigi.* (33) Malar area about three-fourths as long as width of scape. (34) As in *A. seyrigi.* (37) First flagellar segment slightly longer than

broad, second much broader than long, third slightly broader than long, fourth and sometimes fifth about as long as broad, remainder longer than broad. (42) Apparently as in *A. seyrigi* although last two (?) segments broken off. (43, 48) As in *A. seyrigi.* (49) As in *A. seyrigi* but under surface of front basitarsus with spatulate hairs. (50) As in *A. seyrigi.* (55) *Tergum 6 with upper surface convex in cross section*, slightly concave in profile, apex about as in *A. seyrigi.* (56) *Posterior lateral portions of tergum 6 not abruptly bent under* as in other *Allodapula* but *gradually curved under* as in Braunsapis; *no sharp change from the dorsal to the ventrolateral vestiture.* (57) *Graduli 4 and 5 not exposed, not extending behind spiracles.*

Type Material. Holotype female and three female paratypes: Ivondro, Tuléar Prov., August, 1940 (A. Seyrig) [Paris].

Etymology. The specific name refers to the largely red body.

Allodapula platyprosopon, new species
Figures 38, 39

This is the most distinctive of the Malagassy species of *Allodapula.* In its size, form, and coloration it is the one most similar to *A. ornaticeps* Michener from Africa. Its most notable differences from *A. seyrigi* are italicized below. The flat face and the dense mass of red hairs on the hind tibia are unique in the genus.

Description. Female: Length 5 mm.; forewing length 4 mm. (2-12) Head and thorax black, the following areas yellow: longitudinal band on clypeus, broadened at upper end, at lower end merging with yellowish brown apical clypeal area; area just above clypeus; *pair of small spots in front of anterior ocellus*; ill-defined basal area on under side of scape; broad band along inner orbit from near mandible to above level of antennal base; streak on malar area; large spot on mandible; broad band along outer orbit; and posterior lobe of pronotum. Background of clypeus with brown tint, fading to yellowish brown apically; labrum yellowish brown. Scape, pedicel, and first two flagellar segments yellowish brown, the first fading to dull yellow on under side especially at base; rest of antenna black, under side of flagellum brownish black. Legs, tegula, and axillary sclerites red-brown. Metasoma dark red-brown. (13) Wings faintly brownish, nearly clear, veins and stigma brown. (14) Hairs of head and thorax dusky or yellowish dusky, those of tarsi yellowish red; scopal hairs largely yellow but distal half of upper surface of tibia densely covered with robust, barbed, red hairs forming a brush similar to that of *Allodape*; upper margin of hind basitarsus with similar red hairs. Metasomal hairs largely yellowish, paler than those of head and thorax, dorsal hairs of terga 4-6 numerous, short, yellowish, curved posteriorly, thickened, and blunt. (15) *Clypeus in profile gently concave except for lower extremity*; *upper half as wide as lower half and lateral margins of former convex.* (16) Clypeus shining with scattered minute punctures, a few coarser punctures near apex. (17) As in *A. seyrigi.* (19) Antennal bases slightly above middles of eyes; interantennal distance twice antennocular distance. (20) Interocellar distance subequal to ocellocular distance. (22) As in *A. seyrigi*, frontal tubercle weak. (25, 26) Upper margin of clypeus concave, almost twice as long as width of paraocular area. (27) Clypeoantennal distance less than diameter of antennal socket. (28) As in *A. seyrigi.* (29) Lower *and upper* clypeocular distances about equal to width of scape. (33, 34) As in *A. seyrigi* but scattered punctures of labrum small. (37) First flagellar segment slightly broader than long, second nearly twice as broad as long, third and fourth about as broad as long, remainder longer than broad. (42) Approximately as in *A. seyrigi* (last palpal segment broken off). (43) Stigma slightly shorter than costal length of marginal cell. (48) As in *A. seyrigi.* (49) As in *A. seyrigi* but with some spatulate hairs on under side of basitarsus. (50) Tibial brush as described under (14). (55, 56, 57) As in *A. seyrigi.*

Type Material. Holotype female: Nosy-Komba, Diégo-Suarez Prov., January, 1952 (N. L. H. Krauss) [Paris].

Etymology. The specific name refers to the flat face.

GENUS *HALTERAPIS*

The two species described below are placed in *Halterapis* with some hesitation, since the larvae and nests which are distinctive for the genus are unknown (Michener, 1971a, 1976). The genus has hitherto been known only from South Africa and Rhodesia, and the African species which re-

sembles those from Madagascar is *H. angustula* (Cockerell) from southernmost South Africa.

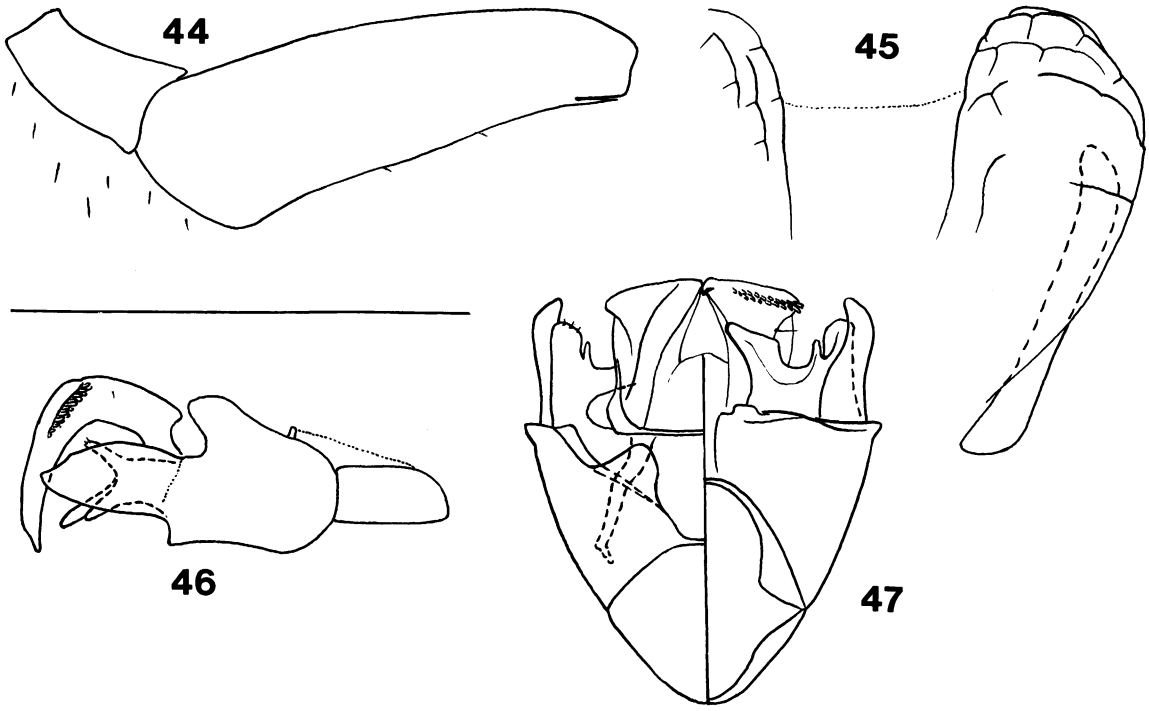
Halterapis kraussi, new species
Figures 40-42; 44-47

Allodape madecassa: Benoist, 1962, p. 141 (Manjakatompo record only).

This species is even smaller and more slender than its probable relative in South Africa, *H. angustula* (Cockerell). Its characters require some modification of the generic description given by Michener (1975). Discrepancies with the generic description and other striking specific characters are italicized in the following description. The numbering system for characters follows that of Michener (1975) to permit ready comparison.

Description. Female: (1) Length 4.5 mm. (to 5 mm. in some paratypes); forewing length 3 mm. (to 3.5 mm. in some paratypes). (2-12) Head and thorax black, the following parts yellow: *clypeus* (except lateral margin of lower half); *band along lower inner orbit*, extending slightly above summit of clypeus; *labrum*; *large spot on mandible*; *underside of scape*; pronotal lobe; *posterodistal surface of front femur* (sometimes no yellow) and spot on tegula (sometimes absent). The following parts light red-brown: scape except for yellow areas; axillary sclerites; legs (coxae often infuscated); metasoma (basal part sometimes dark brown, grading to light red-brown apex). Tegula transparent, in type with yellow spot. (13) Wings light brownish, veins and stigma dark brown. (14) Pubescence dusky whitish or yellowish, dorsal hairs of terga 4-6 blunt, curved backward, rather slender, sometimes darker than most other pubescence. (19) Interantennal distance slightly over twice antennocular distance. (20) *Interocellar distance slightly less than ocellocular distance*; head declivous immediately behind posterior ocelli so that there is no ocelloccipital distance. (25) *Upper clypeal margin gently concave.* (27) Clypeoantennal distance as long as diameter of antennal socket. (29) Lower clypeocular distance less than width of scape; upper clypeocular distance less than twice width of scape. (51) *Lower surface of hind trochanter without an angle* but distinctly convex. (52) Basitibial plate not recognizable. (55) Tergum 6 with dorsal surface gently convex in cross section (more convex than in *H. angustula*), feebly concave in profile, *apex with a small median notch basad to which is a minute pygidial plate as usual in Braunsapis.* (56) Lateral margins of tergum 6 bent rather gradually under, much as in *H. nigrinervis* or most *Braunsapis*, dorsal vestiture of short hairs changing abruptly to scattered long hairs of sides and ventral surface. (57) *Graduli of terga 4 and 5 not extending over half way from spiracles to posterior tergal margins.*

Male: Similar to female except as follows: (1m) Length 3.5-4 mm.; forewing length 2.5-3 mm. (2m-12m) The following parts pale yellow: Clypeus, paraocular area (filling entire space between clypeus and eye and extending up to about level of middle of antennal socket), labrum, mandible, under sides of scape and pedicel; otherwise yellow areas as in female. (19m) Interantennal distance three times antennocular distance. (20m) *Interocellar distance subequal to ocellocular distance.* (25m) Upper clypeal margin strongly concave. (26m) Upper clypeal margin more than twice as wide as paraocular area. (29m) Lower clypeocular distance less than one-fourth as wide as scape; upper clypeocular distance less than two-thirds as wide as scape. (32m) Eye enlarged, less than twice as long as wide, the eyes narrowing the face below (as in *Compsomelissa stigmoides* Michener, see Michener, 1975, fig. 553); upper part of clypeus markedly narrower than lower part, twice as far from eye as lower part. (33m) Malar area where shortest less than one fourth as long as diameter of scape. (36m) *Scape less than three times as long as broad* (excluding basal bulb). (37m) Flagellum nearly five times as long as scape, *first two segments over twice as broad as long*, third broader than long, fourth to sixth or seventh about as broad as long, others broader than long. (42) Maxillary palpus five or more times as long as maximum galeal width, the six segments subequal. (58) Front basitarsus about 0.72 times as long as tibia, *much shorter than remaining tarsal segments taken together*, mediotarsal segments about as wide as basitarsus, distitarsus wider. (59) Legs rather slender, hind trochanter unmodified, hind femur with a rounded angle on under surface at about basal fourth; *trochanter and femur with sparse hairs only.* Hind tibia longer than femur, not dilated apically; hind basitarsus widest basally, otherwise parallel sided, less than half as wide as tibia, about 0.72 times as long as tibia, much longer



FIGS. 44-47. *Halterapis kraussi*, male. 44. Lateral view of hind trochanter and femur. 45. Eighth tergum and roof of genital chamber. 46, 47. Lateral and dorsoventral views of male genitalia.
The scale line represents 0.5 mm. and applies to all drawings.

than remaining tarsal segments taken together; middle basitarsus about 0.87 times as long as tibia, as long as remaining tarsal segments taken together. (61) Seventh sternum with median apical emargination, this and eighth sternum like those of *Braunsapis facialis* (Michener, 1975). (63) *Ventroapical plate of gonocoxite as figured, without hairs except for a few short ones near apex of long lateral projection which is associated with gonostylus; mesal projection robust and not tattered.* (64) Gonostylus thin, flattened, *less than three times as long as wide.* (65) Penis valve robust, strongly downcurved, with strong dorsolateral projecting angle and a series of strong peglike setae on under surface terminating at this angle much as in *H. nigrinervis* (Cameron).

Type Material. Holotype female, allotype male, and one female and four male paratypes: Nosy-Komba, Diégo-Suarez Prov., January, 1952 (N. L. H. Krauss) [Paris]. One female paratype: Forêt Maliajeby, Morafenobe, Majunga Prov., May, 1952 [Paris].

Variation. Six additional females (not paratypes), probably belonging to this species, differ in their darker coloration, as follows: Lateral margins of clypeus more extensively black; yellow along inner orbit reduced to a short streak; labrum and mandible light red-brown or mandible with small yellow spot; scape without yellow or that color reduced to diffuse area at base and sometimes also at apex; scape sometimes infuscated; front femur and tegula without yellow; metasoma consistently dark brown near base and sometimes whole metasoma dark brown.

Such specimens are from the following localities: Manjakatompo, Tananarive Prov., March 1, 1958 (F. Keiser) [Basel]; Ankaratra, Tananarive Prov., February, 1941 and 1942 (A. Seyrig) [Paris]; 64 km. west of Moramanga, Tamatave Prov., January 7, 1971, in a *Lantana* stem (H. Daly) [KU].

Discussion. This species was named in the genus *Allodape*, but apparently never published by R. Benoist. I have accepted his name (modi-

fied by omission of one terminal "i"), and the types are specimens in the Paris museum labeled by him. Benoist (1962) also erroneously identified and recorded two specimens of this species as *Allodape madecassa* Benoist, a species of *Braunsapis*.

The specific name is given in honor of the collector of the types and of many other bees, N. L. H. Krauss of Honolulu.

Halterapis tulearensis, new species
Figure 43

This species is more similar to *H. angustula* (Cockerell) than is *H. kraussi*, differing by its small size, extremely slender form, somewhat different coloration, and the characters italicized below.

Description. Female: (1) Length almost 4 mm.; forewing length 2-2.3 mm. (2-12) Black, the following white: thick "T" on clypeus, diffuse areas on under side of base and apex of scape, posterior lobe of pronotum, spot on tegula, axillary sclerites except for brown inner half of median sclerite, and bases of major wing veins. The following areas tinged with brown to dark brown: labrum, under side of flagellum, tibiae (especially anterior ones), and in one paratype much of metasoma. Tarsi paler gray-brown. Tegula transparent with whitish spot. (13) Wings weakly brownish, veins and stigma light brown. (14) As in *H. kraussi* but *dorsal hairs of terga 4-6 short, robust, blunt, strongly bent backward*, suggesting those of *H. nigrinervis* (Cameron). (19) Interantennal distance twice antennocular distance. (20) Interocellar distance greater than ocellocular distance; head declivous as in *H. kraussi*. (25) Upper clypeal margin strongly concave. (27) *Clypeoantennal distance only about half as long as diameter of antennal socket.* (29) Lower clypeoantennal distance less than width of scape, upper about twice width of scape. (42) *Maxillary palpus about four times as long as maximum width of galea, segments three to six much shorter than first.* (51, 52) As in *H. kraussi*. (55) Tergum 6 with dorsal surface only feebly arched, about as in *H. angustula*, distinctly concave in profile, apex produced to small blunt projection, not notched, without evident pygidial plate. (56) Lateral margins of tergum 6 bent sharply under as in *H. angustula*, change from dorsal to latero-ventral vestiture as described for *H. kraussi*. (57) Graduli of terga 4 and 5 extending nearly to posterior margins of terga.

Type Material. Holotype female and three female paratypes (one headless, one without metasoma): Lavanomo s.1., Tuléar Prov., April 8, 1968 (K. M. G. and P. D.) [BM].

Etymology. The specific name refers to the province of Tuléar where the specimens were taken.

GENUS *MACROGALEA*

In my review of this genus (1971b) I recognized only one species from Madagascar. It is now apparent that two species are found there, a possibility suggested in 1971, and that the one which was before me in 1971 was misidentified. It is described below as new.

One of the species, *M. infernalis*, is relatively different from the African *M. candida* (Smith), whereas the other, *M. ellioti*, is similar to the African form. It seems likely that *M. infernalis* represents an earlier invasion from Africa, and *M. ellioti* a relatively recent invasion.

Macrogalea infernalis, new species

Allodape ellioti: Benoist, 1962, p. 139 (misidentification).
Macrogalea ellioti: Michener, 1971b, pp. 66, 69 (misidentification).

Description. Female: Clypeus black (or in some paratypes with dark reddish brown longitudinal band). Punctures of clypeal disc mostly separated by nearly a puncture width, often not much elongated; depression anterolateral to antennal base smooth or with large spaces between the few punctures; vertex with surface dull, punctures well separated, between ocelli and summits of eyes punctures few or nearly absent. Surface of vertex anterior to preoccipital carina gently convex so that carina is less conspicuous than in *M. candida*. Apicolateral angles of sixth tergum gentle convexities, as illustrated for *M. mombasae* Cockerell by Michener (1971b), not angulate as they usually are in *M. candida*. Pubescence of face and vertex largely fuscous; fuscous hairs intermixed with dusky whitish hairs on dorsum of thorax and upper parts of side of thorax. Scopa on outer surface of tibia largely black, on basitarsus variably darkened. Bands of

tomentum on metasomal terga white at extreme sides of tergum 2, otherwise sparse and grayish to absent; dorsal hairs on terga 3 to 6 black or dark fuscous, often some dark hairs also on tergum 2. Wing veins and stigma dusky.

Type Material. Holotype female: Forêt Loukoube, Nossi-Bé, Diégo-Suarez Prov., 1897 (Ch. Alluaud) [Paris]. Paratype females, as follows: Diégo-Suarez Prov.: two, Hell-Ville, Nossi-Bé, January, 1952 (N. L. H. Krauss) [Paris]; one, Nossi-Bé, July, 1964 (J. Berger) [KU]; one, Ambalafar, Nossi-Bé, May 18, 1958 (F. Keiser) [Basel]; one, Ampangorinana, Nosy-Komba, May 16, 1958 (F. Keiser) [Basel]. Tamatave Prov.: two, Tamatave [BM]; one, Andranofotsy, May 1, 1958 (F. Keiser) [Basel]. Majunga Prov.: two, Mahatazana, June 19, 1958 (F. Keiser) [Basel].

Variation. Two specimens from Ile Sainte-Marie, Tamatave Prov., are unusually large and have therefore not been designated as paratypes. One of them [Paris] is from Ambatoroa, May, 1959 (Razafimandimby), the other [AMNH] lacks further data.

Discussion. The specimens listed as *Macrogalea ellioti* by Benoist (1962) and Michener (1971b) are all this species.

The localities are all northern or central and maritime or insular; this form may be allopatric relative to *Macrogalea ellioti.*

The specific name refers to the dark color of this insect and was applied to it but never published by R. Benoist.

Macrogalea ellioti (Saussure)

Allodape ellioti Saussure, 1890, p. 79. Type: southern Madagascar [not seen].

Description. Female: Clypeus with longitudinal whitish or yellowish band. Punctures of clypeal disc and depression anterolateral to antennal base as in *infernalis*; vertex with surface shining to minutely roughened, punctures well separated, between ocelli and summits of eyes punctures widely scattered. Surface anterior to preoccipital carina gently convex as in *infernalis.* Sixth tergum as in *infernalis.* Pubescence of head, thorax and legs yellowish white. Bands of tomentum on metasomal terga dense and white at sides of second tergum, sparse and dull whitish otherwise, somewhat denser laterally than elsewhere; dorsal hairs on metasoma whitish or light fuscous. Wing veins and stigma dark brown.

Distribution. Tuléar Prov.: Belhoa [BM]; Manombo s.l. [BM]; Bekily [Paris]; Ambovombe, Faux-Cap [Paris]; Ankavandra [Paris]. Majunga Prov.: Majunga s.l. [BM].

This species was described by Saussure from southern Madagascar, and the localities listed above are all from southern or western areas.

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