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**A REVIEW
OF THE *ANTHOPHORA*-SPECIES OF EGYPT**

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INTRODUCTION

Owing to the difficulties I encountered in trying to identify the Egyptian material of *Anthophora* in the collections of the Cairo and Ain Shams Universities, I had to penetrate more deeply into this matter, especially when I found that quite a number of species of the local collections were no doubt incorrectly named.

With the progress of science, in our particular case with the improvements achieved by finding new distinctive characters and especially in the better relative evaluation of those already known, gained by experience and eye training, there lies upon us the bitter task to criticise and correct our late authorities on this subject who actually did all the spade work that enabled us to start on a considerable higher level of knowledge than that having been at their disposal.

Apart from the relatively excellent work of KLUG (1845) and a number of species described by SPINOLA and — much later — GRIBODO, most of the taxonomic work on *Anthophora* of this country was done by H. FRIESE and A. ALFKEN, their work having been mainly based upon the Apid collections of our late A. ANDRES, while my late friend ALFKEN had also examined specimens he received from the Ministry of Agriculture, Mr. A. ALFIERI and the author. ALFKEN had, obviously with the intention of avoiding the creation of synonyms, identified a number of Egyptian species with such of Asiatic origin. In most of the cases they proved to be different from them.

Although further research may reveal that some of the forms treated as species in this paper, may finally turn out to be races of foreign species of wider distribution, I am convinced that only a few of them will come into this category. Moreover, I consider it better to treat forms, as e.g. *A. speciosa*, *A. niveiventris*, *A. pretiosa*, a.o., which were varieties by FRIESE, as species than to put them as varieties to such species where they do not belong.

As on previous occasions I am much indebted to Prof. Dr. TAHER SAYED (Ain Shams University), Prof. Dr. MAHMOUD HAFEZ (Cairo University), Mr. ABDEL HAMID IBRAHIM (Ministry of Agriculture) and Mr. A. ALFIERI (General Secretary of the Entomological Society of Egypt) who put the material of the collections in their charge at my disposal for study. To Dr. M. BEIER (Museum Vienna) I owe the permission of examining the large *Anthophora* collection of the Vienna Museum, and I am also much obliged to Dr. G. STEINBACH (Museum Berlin) for the opportunity of studying some types of KLUG and FRIESE, deposited in the Museum Berlin.

GENERAL REMARKS TO THE MORPHOLOGY

The importance of the pubescence or pilosity (length, shape, position and colour) for the differentiation of the species requires careful treatment of the specimens: they should not get wet in the killing bottles and should not be relaxed in the usual relaxing jars. The best method of killing them I consider the use of cyanide; ether should be avoided. After the insects had remained for some hours in the cyanide tube, I used to take them out and put them, i.e. about a score of specimens together, in an empty tube (e.g. 10 by 3.5 cm.) where I left them over night. By this method the specimens get slightly relaxed without getting wet, and the legs can be easily arranged on the setting board, while the pile remains intact. It gave me great satisfaction at the time when ALFKEN (i.l.) stressed the perfect condition of the specimens collected by myself which were treated in the above manner. Apidae the hairs of which are stuck together or discoloured by the killing agent or by intestinal juices of the insects, or which are rubbed, can often not be identified accurately.

The extending of the wings is not absolutely necessary, although the venation can more easily be examined when the wings are expanded. Specimens that are left in the the cyanide bottle too long change the light face colours, the white colour becoming more or less crimson, the yellow becoming orange or brownish.

Pollen of the flowers visited by the bees often adheres in quantities to the tibial scopa. The pollen grains should be carefully taken off the scopa by means of a needle. This procedure prevents the beginner from a faulty judgement of the colour of the tibial pubescence, characteristic to the species.

The shape of the hairs may be much differing. Somewhat roughened or slightly plumose are nearly all hairs of the head, thorax and abdomen, however, in some cases the plumosity of the vertically raised hairs is more conspicuous than usually, well visible already at a 20-fold magnification, as e.g. on tergite II of *A. aegyptiaca*, *A. senescens*, *A. scopipes*, a.o. Also the decumbent hairs of the abdominal fasciae (e.g. in the *quadrifasciata*-group) are thick hairs that appear plumose under *higher* magnification; but these hairs are flattened, and plumose at their sides only, not all around so, as it is the case in the first mentioned species.

The peculiar tufts of hairs of the males of many species, especially the brush on the 5th joint of the middle tarsi, and also the fan-shaped tuft of metatarsus II,

are well known. These tufts may get rubbed off in older specimens; but also in such examples some single black hairs may yet be noticed so that we are rarely in doubt whether a male is "brush-bearer" or not.

The pubescence of the wing cells has hardly been noticed hitherto, but can also be made use of for the characterisation of the species. In most forms at least the anterior parts of the cells situated at the fore margin of the fore wing are set with very short fine microsetae, viz. cells m 1, r 1 and sc. In some species (e.g. *A. savignyi*) the discal cells too show this kind of pubescence. The most extensive pubescence we find in *A. inclyta* and *A. crocea*. Nearly bare is the wing of *A. andresi*. In old specimens these microsetae may be missing (rubbed off), but in this case the fine points of insertion can be seen under the microscope.

Of great importance, particularly for the differentiation of the small uniformly grey species, is the wing venation. Although it is in general as generic character naturally quite uniform, certain details of it are very important for the distinction of species or species-groups. Thus the species of the *quadrifasciata*-group have always a distinctly prefurcal nervulus (vein Cut 1) so that the basal vein and the 2nd abscissa of Cu form a very shortly pedicelled fork. In the species of the other groups the nervulus is mostly interstitial or even slightly postfurcal so that no pedicel is visible. In the older descriptions of palaerctic species I found this character mentioned occasionally by DUSMET only.

With regard to the characterization of the legs in the descriptions of this paper I distinguish between interior and exterior side (face), anterior (inferior) and posterior (upper) side. The exterior side is naturally the one that lies outside when the leg is attached to the body; in many cases this side bears paler and stronger pilosity than the inside. The anterior (inferior) side is in the species having distinctly triangular cross-section of the tibia mostly smooth, flattened or grooved, and limited by two sharp edges. The upper or posterior side (edge) of the tibia is usually sharp-edged or rounded.

The sculpture of the tergites and sternites, also often given in the descriptions, is not a very practical means for the distinction of the species, first of all because just in fresh, well preserved specimens it is often wholly covered by the pubescence; the same applies to the thorax and often the head too. Furthermore, it is very difficult to comparatively describe the puncturation, since it is either dense and fine, or less dense and fine in most cases, and there are no really *striking* differences. Also the foveae on the apical sternites, present in most of the males do not show such apparent peculiarities as e.g. in *Halictus*; moreover, the segments vary as to their state of contraction, and the apical sternites are often not visible in otherwise perfect specimens.

Although even the *shape* of the abdomen could be included as character in the descriptions of a species (e.g. *A. humilis* Spin., or *A. alfkenella* sp. n. which have decidedly a more flattened abdomen than allied species) this character may be misleading, as can be seen from a large series of specimens of one species, and this

again owing to the varying state of contraction of the segments. One should think this point not worth mentioning, but just experienced authors have erred in this respect, and thus I have to draw the attention of the student of this genus to not to mistake species having black-haired basal portions of the tergites with such in which the tergites are wholly covered with pale hairs, but have the segments distended (cf. *A. mucorea* as against *A. byssina*).

The colour shade of the face of species having wholly or partly pale frons, clypeus and labrum is very important as specific character, thus one has to distinguish white, ivory yellow and yellow. That these shades are constant in the species is common knowledge. However, also the dark clypeal spots are important with regard to their shape and extension, and should be described in detail; I found only one species in which a certain variation seems to occur in this respect, provided that I am not mistaken and am still mixing up some very closely allied species (cf. *A. lutulenta*).

As to the terminology of the parts of the head, I should like to remark that the often pale coloured part of the frons joining the base of the clypeus I named: "frontal area"; it is the "Stirnfeld" ALFKEN's or "supraclypeal area" of other authors. What ALFKEN termed "Wangen" (-genae) should not bear this name but may better be called "sides of frons" or "facial triangles"; this part is situated between the lateral margins of the clypeus and the inner orbits, and is usually triangular, more or less attaining the fore angles of the clypeus. The part called "genae" in the descriptions of this paper is identical with FRIESE's "Wangen" and ALFKEN's "Wangenanhang" (= genal appendix), i.e. the space between the eyes and the base of the mandibles, which is either rudimentary or linear in many species (e.g. groups V, VII) or distinctly developed, representing a small smooth and shining area (cf. groups I and II). In FRIESE's monograph we find the species even combined to subgenera on the base of the development of these "Genae"; COCKERELL's "intermalar space" is the same, if I am not mistaken, because the literal meaning of this term suggests something else. In judging the greater or lesser degree of development of this space between apex of eyes and base of mandibles the student can easily be misled, and it was for this reason that in the keys I gave more importance to other characters, though I remain well aware of the systematic importance of this character. The keys should not be a copy of the system but a taxonomic help for identification.

With the new species it was sometimes difficult to determine which male belonged to which female, and this owing to the rather marked sexual dimorphism combined with the great similarity of many species. This dimorphism manifests itself mainly in the shape and markings of the face, the antennae, the form, sculpture, pubescence (and colour of it) of the legs and also the body. However, in many cases just the equality or similarity of the hairs of the tergites (II-IV) proved to be an indication of the specific identity of certain specimens of different sex. Details of the wing venation (nervulus !) and the cell pubescence are equal in both sexes. On the other hand, there seem to exist a few cases in which the dimorphism is parti-

cularly strongly marked; thus I am convinced that the nearly wholly black *A. vidua* Kl. and the pale *A. boops* are the sexes of one single species. *A. maculigera* sp. n. might also be the male of a black female, but this remains a guess for the present.

SYSTEMATIC AFFINITIES OF THE SPECIES

In FRIESE's work "Bienen Europas" (pp. 18-22) we find the genus *Anthophora* (*Podalirius*) divided in four subgenera and the larger ones of these again in groups. Apart from the subgenus *Habropoda* Sm. the subgenera (*Paramegilla*, *Amegilla* and *Anthophora*) are connected by various transitional species so that it looks to me more correct to arrange the bulk of *Anthophora* in a series of groups of equal value. The final system in this respect has to be made on a world wide base, it is not the task of this paper. However, on comparing the Egyptian species with one another and with a great number of those of Eurasia I could see that there appear quite a number of natural groups which, as it seems to me, show much better the natural affinities of the species than the former grouping that took into account, apart from the length of the genae, only or mainly the colour and pattern of the pubescence.

It is obviously better to give more importance to the wing venation and the male characters (without disregarding the pile of the body), and group the species according to these characters *in combination* with the development of the genae and the pattern of the hair-covering.

Thus, the Egyptian species can be tentatively grouped as follows :

GROUP I (*fulvitaris*) : Larger species with raised pilosity and distinctly plumose hairs of tergite II. Genae developed. Nervulus interstitial. Male : Metatarsus II with fan, joint 5 of tarsi II with brush. Tergite VII with 2 fine comparatively long teeth which are separated by an arched excavation. — Species : *aegyptiaca* DT. and Fr., *senescens* Lep.

GROUP II (*mucida*) : Mainly large species with raised pilosity at least on tergites I and II. Genae developed. Nervulus almost always interstitial, never distinctly prefurcal. Fan of metatarsus II sometimes, brush of tarsal joint 5 almost always, developed. Tergite VII of male with more or less slender terminal plate, not with separated teeth. — Species (in subgroups) : (a) *albosignata* Fr., *arabica* sp. n., *atriceps* Pér., *atricilla* Ev., *cinereiceps* Alfken, *desertorum* sp. n., *dispar* Lep., *facialis* sp. n., *lanata* Kl., *mucida* Grib., *niveiventris* Fr., *pretiosa* Fr., *speciosa* Fr.; (b) *flabella* a sp. n., *scopipes* Spin., *spinolana* sp. n.; (c) *alfierii* Alfken, *hispanica* F.

GROUP III (*ambigua*) : Moderately large species (ca. 10 mm.), with raised pilosity of the abdomen, narrower genae and interstitial nervulus. Males with two small teeth of segment VII separated by a roundish or straight emargination. Hind legs enlarged in some cases and armed with teeth. Mid tarsi with joint 5 slender and

without brush. — Species : *extricata* sp. n., *moricei* Fr., *priesneri* Alfken, *wegelini* Fr., *zanoni* Grib.

GROUP IV (*blanda*) : Genae not developed. Pilosity of abdomen short. Nervulus interstitial. Posterior legs of male strongly enlarged, tibiae and metatarsi armed. Tergite VII with two median carinae, 2 short teeth and a lateral excavation forming two more teeth, i.e. quadridentate. — Species: *blanda* Per.

GROUP V (*lutulenta*) : Small species without distinct genae, with decumbent (or very scarce raised) abdominal pilosity. Male usually with brush on segment 5 of tarsi II, the latter being often enlarged. Tergite VII with 2 *triangular* teeth that are separated by a triangular excision, seldom with 1 or 2 small tubercles in addition; tergite VII with median longitudinal carina. Nervulus almost always interstitial.— Species : *alfkenella* sp. n., *concinna* (Kl.), *elbana* sp., n., *fallaciosa* sp. n., *fayoumensis* sp. n., *galalensis* sp. n., *helouanensis* sp. n., *humilis* Spin. (?), *lutulenta* (Kl.), *mellina* sp. n., *perlustrata* sp. n., *selecta* sp. n., *shagrensis* sp. n., *tenella* (Kl.), *tridentella* sp. n.

GROUP VI (*inclyta*) : Genae not developed. Pilosity of the abdomen mainly decumbent, short. Nervulus interstitial. Male with tergite VII *tridentate* or trilobed, median tooth broader, blunt or rounded, and more protruding than the two lateral smaller teeth. Metatarsus III with a hump or tooth at its inferior edge. — Species : *alternans* (Kl.), *armata* Fr., *boops* Alfken, *concolor* Alfken, *fumipennis* Alfken, *inclyta* Wik., *maculigera* sp. n., *oraniensis* Lep. (?), *semirufa* Fr., *valga* (Kl.), *vidua* (Kl.).

GROUP VII (*quadrifasciata*) : Pilosity of the abdomen short and mainly decumbent, either unicolorous (white or greyish) or with marginal decumbent fasciae of paler colour. Genae absent. Orbits convergent anteriorly. Male always without brush on joint 5 of tarsus II, and with slender ultimate joint. Nervulus distinctly prefurcal. Tergite VII of male with two small teeth. — Species : *albigena* Lep., *andresi* Fr., *byssina* (Kl.), *candidella* sp. n., *carnea* Grib., *crocea* (Kl.), *deceptrix* sp. n., *klugi* n. n., *latizona* Spin., *litorana* sp. n., *magnilabris* Fedt., *montivaga* Fedt., *mucorea* (Kl.), *nivosella* sp. n., *omissa* sp. n., *pipiens* Mocs., *punctifrons* Wik., *quadrifasciata* Vill., *savignyi* Lep., *torensis* sp. n.

GROUP VIII (*gracilipes*) : Female about as in group VII, male with unusually elongated hind legs in which the tarsi are longer than the tibiae. Nervulus prefurcal. — Species : *tarsalis* sp. n.

KEY TO THE SPECIES

Males

- 1 (4) Ultimate joint of fore and middle tarsi with black hairs on both sides forming a fan or brush.

- 2 (3) White fasciae on tergites II and III almost decumbent. Pilosity of thorax and tergites I and II yellow-grey or grey. Middle and hind tibiae at the posterior margin clothed with decumbent or semi-erect whitish hairs. Clypeus with fine shallow but more distinct puncturation than in *pretiosa*. Width of thorax about 6 mm. **atricilla** Ev. ssp. **aegyptorum** nov.
- 3 (2) White fasciae on tergites II-IV composed of thin, somewhat raised hairs. Thorax and tergites I-(II) with ferruginous hairs. Pilosity towards apex of middle and hind tibiae long and raised. Width of thorax about 7.5 mm....
..... **pretiosa** Fr.
- 4 (1) Ultimate joint of fore tarsi without a brush of dark hairs.
- 5-(55) Ultimate joint of middle tarsi with conspicuous brush of blackish hairs, or at the sides with slightly raised black hairs.
- 6 (54) Apical joint of hind tarsi shorter than the metatarsus.
- 7 (36) Larger species, surpassing a length of 11 mm.
- 8 (29) Mandibles dark, without yellow or whitish spot at base.
- 9 (12) Ground colour of face black. Body length 11-12 mm.
- 10 (11) Face and under side of body with black pilosity. Tergites I-III with more or less pale raised hairs, without fasciae **facialis** sp. n.
- 11 (10) Face at least on labrum with whitish hairs. Tergites I and II of abdomen with white-grey, the rest with black raised hairs. Metatarsus II with dark fan. Brush on joint 5 of tarsi II weak. Thorax with grey pilosity
..... **atriceps** Pér.
- 12 (9) At least the clypeus in the middle more or less broadly yellow or whitish.
- 13 (16) Sides of frons dark on the ground. Face with white, at the orbits with black, pilosity. Metatarsus II without fan.
- 14 (15) Labrum almost or wholly black. Tergites from III onwards with almost only black hairs. Hind tibiae and metatarsus III with with many black hairs among the pale ones, also at the margins. Body length 13.5 - 14.5 mm... **cinereiceps** Alfken
- 15 (14) Labrum yellow with dark sides. The whole body clothed with long raised grey-white hairs which are on tergites from III onwards mixed with black hairs. Hind tibiae and metatarsus III at the upper margin with long, at the apex with short, whitish hairs. Length 14.5 - 16 mm.....
..... **lanata** (Kl).
- 16 (13) Sides of frons yellow or whitish, or the orbits with pale line.
- 17 (20) Metatarsus III exteriorly strongly convex, like swollen, shining.
- 18 (19) Vertex, thorax and tergite I with ferruginous pilosity, the remaining tergites evenly clothed with grey-white hairs, only on tergite V with black hairs between the others **disparilis** Fr.
- 19 (18) Tergites III and IV wholly or for the major part clothed with black hairs.

- a (b) Thorax and tergite I clothed with testaceous hairs, profusely mixed with black hairs; tergite II with grey hairs in basal portion, tergites III and IV with black, or only few white, hairs **dispar** Lep.
- b (a) Thorax and tergite I with ferruginous pilosity, sparingly mixed with black hairs; tergite II with pale hairs only, III and IV with black, at the hind margin with long white, hairs **speciosa** Fr.
- 20 (17) Metatarsus III normal, not swollen exteriorly.
- 21 (22) Metatarsus II with conspicuous black fan, otherwise with long, pilosity. Thorax clothed with grey-white to grey-yellow hairs. Brush on joint 5 of mid tarsi conspicuous. Tergite VII with 2 small teeth **senescens** Lep.
- 22 (21) Metatarsus II without fan, only with scattered long hairs. Tergite VII of different structure.
- 23 (24) Thorax mainly with grey-white pilosity. Tergite VII with slight triangular excision at apex. Brush on joint 5 of tarsi II weak. Orbits with fine yellow line only. Length 11 - 11.5 mm. **desertorum** sp. n.
- 24 (23) Thorax in fresh specimens with reddish-brown or ferruginous pilosity. Broader species of at least 12 mm. length.
- 25 (26) Genae linear **cf. tenuiciliata** Alfken
- 26 (25) Genae well developed.
- 27 (28) Ground of face whitish, sides of frons distinctly triangularly whitish. Antennal joint 3 longer than the three following joints together. Tergite VII truncate at apex, and somewhat emarginated, angles slightly protruding **albosignata** Fr.
- 28 (27) Ground of face yellow, sides of frons only narrowly yellow. Antennal 3 as long as the three following joints together. Tergite VII truncate at the apex, apical margin slightly reflexed **mucida** Grib.
- 29 (8) Mandibles yellow at base, or with yellow spot.
- 30 (35) Ground of metatarsi II and III brown-red and clothed with such or ferruginous hairs, often also the tibiae reddish-brown instead of black, and with such hairs. Abdominal fasciae wanting or very fine. Brush of joint 5 of tarsi II large, circular. Length 14-15 mm.
- 31 (34) Face white on the ground.
- 32 (33) Hind margins of tergites not transparent. Pilosity of thorax and tergites I and II white-grey. Fasciae practically absent. Metatarsus II somewhat less slender. Nervulus interstitial. Tergite VII dark, the produced portion broader, with distinct lateral apical angles **spinolana** sp. n.
- 33 (32) Hind margins of tergites transparent, yellow-grey to ferruginous. Pilosity of thorax and tergites I and II grey-yellow. Tergite II mostly with fine white fascia. Nervulus very slightly prefurcal. Tergite VII narrower, angles rounded **scopipes** Spin.

- 34 (31) Face yellow. Tergites II-III (-IV) at the sides with very fine white fasciae, the hind margins yellowish transparent. Tergite VII reddish, narrowly produced, slightly emarginated at middle of apical margin. Nervulus slightly prefurcal **flabellata** sp. n.
- 35 (30) Legs blackish on the ground, only the tarsi paler. Plate of tergite VII with 2 acute ferruginous teeth. Metatarsus II exteriorly in apical half with fan of black hairs. At least tergites II and III in fresh specimens with a narrow white fascia. Face yellow, clypeus strongly protruding. Length 15-17 mm **aegyptiaca** D. and Fr.
- 36 (7) Small species of 6-10 mm. length.
- 37 (42) Hind tibiae triangular in cross-section, with a tooth-or lobe-like projection inferiorly at the apex. Tergite VII without longitudinal carina.
- 38 (39) Length 8-10 mm. Hind tibiae with apical spine. Metatarsus of hind leg exteriorly with black hairs, that of mid leg exteriorly at base with few white hairs. Fasciae of abdomen narrow, whitish or pale yellowish. Clypeus densely punctured **fulvodimidiata** Dours
- 39 (38) Length 6-8 mm. Apex of hind tibiae with small lobiform tooth, interior face of tibia smooth, bare, shining. Pilosity brown-red to ferruginous. Clypeus with flat median convexity, but without lateral foveae, shining. Nervulus indistinctly prefurcal. In front of the abdominal fasciae there are no pale hairs on tergites II and III.
- 40 (41) Calcaria of tibiae II dark, of tibiae III margined with black. Metatarsus III exteriorly clothed with black or dark brown hairs .. **concinna** (Kl.)
- 41 (40) Calcaria of middle and hind legs yellow. Metatarsus III exteriorly at base with some reddish hairs. (Hedjas) **concinna hegasica** nov.
- 42 (37) Hind tibiae rounded at the apex or the inferior angle pointed but without distinct tooth-or lobe-like production. Interior face of tibiae punctured and pilose, not wholly smooth. Tergite VII with fine longitudinal carina. Nervulus interstitial or slightly postfurcal. Body above with grey or grey-yellow pilosity.
- 43 (46) Fore margin of yellow clypeus with a brace-shaped transverse keel and, connected with it, a median carina towards base, forming two large lateral foveae.
- 44 (45) Tergites of the abdomen also in front of the yellowish fasciae with some decumbent yellowish pilosity. Metatarsus III interiorly with ferruginous hairs **fayoumensis** sp. n.
- 45 (44) Tergites in front of the fasciae only with black short raised or semidetached hairs. Metatarsus III with brown pilosity within. Joint 5 of tarsi II without visible brush of hairs cf. **mellina** sp. n.
- 46 (43) Clypeus pale yellow or white, at most with broad median convexity, without carinae or lateral impressions behind fore margin.

- 47 (48) Metatarsus III interiorly with yellowish or testaceous hairs. Whitish or yellow pilosity present in front of fasciae. Width of head at least 3.5 mm. (1) Pilosity of body grey to slightly yellow grey **lutulenta (Kl.)**
- 48 (47) Metatarsus III with reddish-brown or blackish hairs within. Fasciae narrower. Pale pubescence in front of fasciae scarcer. Flagellum below scarcely paler or only brown, not ferruginous.
- 49 (50) Face white. Excision on tergite VII triangular. Nervulus slightly postfurcal. Vertex, thorax and tergite I in fresh specimens with yellow pilosity **alfkenella sp. n.**
- 50 (49) Face yellow.
- 51(52,53) Marginal excavation of tergite VII broad, but not deep, about brace-shaped. Antennal 3 scarcely longer than broad **elbana sp. n.**
- 52(51,53) Apical excavation of the dark tergite VII almost straight or forming a shallow arch, at the sides with 2 small dark teeth; in the middle of the apical margin there are 2 small tubercles. Antennal 3 little longer than broad **perlustrata sp. n.**
- 53(52,51) Tergite VII testaceous, with 2 triangular teeth separated by a triangular excision. Antennal 3 about 1.5 times as long as broad. Fasciae of tergites very narrow **fallaciosa sp. n.**
- 54 (6) Middle and particularly hind *tarsi* very long, joint 5 longer than the metatarsus. Tibiae and metatarsi with teeth. Margins of tergites pale transparent. Nervulus slightly prefurcal. Body length 9 mm., length of hind tarsi about 7 mm. **tarsalis sp. n.**
- 55 (5) Ultimate joint of middle tarsi without brush, only sometimes with a few adpressed black hairs, but in this case joint 5 much widened towards apex.
- 56 (75) Hind legs with certain special characters : either metatarsus with apical or inferior tooth or dilatation near middle or inferior edge, or femora very strongly enlarged, with or without teeth, or the tibiae armed with a tooth.
- 57 (66) At least tergites II and III without long raised hairs. Metatarsus III at the inferior edge with a hump or a pointed or blunt tooth.
- 58 (59) Hind tibiae and tarsi interiorly and exteriorly with black pilosity. Thorax and abdominal tergite I with red or ferruginous pilosity. Metatarsus III at the inferior edge with blunt tooth **semirufa Fr.**
- 59 (58) Hind tibiae exteriorly with pale pilosity or otherwise different.
- 60 (61) Thorax and tergite I clothed with grey or yellow-grey hairs, tergites II-III (-IV) at the sides of the hind margins with partial fasciae or wedge-shaped hair-spots. Metatarsus III with about rectangular tooth behind middle. Length 16 mm **maculigera sp. n.**

(1) If head less than 3.5 mm. broad, and black hairs on joint 5 of middle tarsi scarce cf. *A. tenella* (Kl.)

- 61 (60) Tergites II and III not with cuneiform lateral hair-spots, but with full fasciae or without any.
- 62 (63) Pilosity of thorax whitish, fasciae on tergite V and VI interrupted in the middle. Tooth of metatarsus III obtusely angled. Tergite VII sinuated laterally, the sinuations separated each by a small tooth. **boops Alfken**
- 63 (62) Thorax above and base of tergite I with yellowish or reddish hairs, or the whole abdomen with ferruginous or yellow hairs.
- 64 (65) Metatarsus III broad, tooth large, blunt. Tergite VII medially at the apical margin rounded, at each side with a tooth. Hind tibiae at the interior face with black hairs. Wings infumated **inclitya Walker**
- 65 (64) Metatarsus III with somewhat pointed tooth. Tergite VII emarginated at apex. Hind tibiae interiorly with black hairs only at base. Wings almost hyaline..... **cf. valga (Kl.)**
- 66 (57) Tergites from II onwards, besides the decumbent fasciae, with raised pilosity.
- 67 (68) Hind femora strongly enlarged; trochanters dentate; hind tibiae club shaped, their interior face carinated, with blunt angle; metatarsus III with large pointed tooth, below. The white fasciae narrow, well defined. Thorax clothed with yellow to ferruginous hairs. Clypeus with black central spot **blanda Pér.**
- 68 (67) Metatarsus III without tooth. Thorax more greyish. Fasciae less well defined.
- 69 (70) Hind legs enlarged, without conspicuous teeth. Tergite VII with 2 small pointed teeth. Sides of frons broadly V-shaped white. Labrum pale **extricata v. clavatipes nov.**
- 70 (69) Hind femora and (or) tibiae with blunt or pointed teeth.
- 71 (74) Hind tibiae at the inferior apex with long pointed tooth.
- 72 (73) Hind femora sulcate at hind margin, at base with a short blunt tooth. Grey pilosity of thorax with slight yellowish tinge. White spot on sides of frons triangular **priesneri Alfken**
- 73 (72) Hind tibiae at base with pointed tooth. Pilosity grey. The yellow portion the interior orbits is a more or less narrow stripe **zanoni var. borgensis nov.**
- 74 (71) Hind tibiae at the apex without long lower tooth. Hind femora in the middle with pointed tooth **cf. crassipes Lep.**
- 75 (56) Hind legs without remarkable tooth-like structures, at most the apex of the hind tibiae exteriorly slightly pointed or reflexed.
- 76 (77) Ground colour of abdomen ferruginous with dark posterior tergites or dark spots on them. Tergites I - V with broad white fasciae. Length 13-15 mm. **carnea Grib.**

- 77 (76) Tergites of abdomen dark on the ground, at most the margins pale transparent, or only tergite I partly reddish; seldom in immature specimens the basal segments somewhat brown-red.
- 78 (87) Ground colour of head black.
- 79 (84) Very large species of 17-21 mm. length.
- 80 (81) Metatarsus II with triangular fan of black hairs which are curled at the tips. Pilosity of body ferruginous (or red) and black **hispanica F.**
- 81 (80) Metatarsus of mid leg without large fan of hairs. Head almost wholly with black hairs.
- 82 (83) Thorax and tergites I and II with raised reddish or yellow hairs, the remaining tergites with short raised black hairs **alfierii Alfken**
- 83 (82) Thorax and tergite I with yellow to white-yellow hairs, II and following tergites with black hairs **armata tetra Fr.**
- 84 (79) Smaller species, having a length of 11-12 mm. and almost vertically raised pilosity on the whole body.
- 85 (86) The whole face and under side of body covered with black hairs, only vertex, thorax and abdominal tergites I-III with grey hairs
. **cf. facialis sp. n.**
- 86 (85) Face with grey or whitish hairs too, particularly at the lower portion. Metatarsus II with distinct brush of black hairs **cf. atriceps Pér.**
- 87 (78) Clypeus wholly or partly yellow or white, sometimes only at the fore margin.
- 88 (91) Large species of 16-18 mm. length.
- 89 (90) Thorax and tergites I and II with grey pilosity. Fascia on III and IV very narrow, disks wholly dark. Clypeus, sides of frons and frontal area yellow, clypeus with 2 small black dots **cf. vetula (Kl.)**
- 90 (89) Tergite IV wholly, tergites V and VI laterally with raised white pilosity, basal tergites wholly dark **nubica (Kl.)**
- 91 (88) Smaller species of other coloration.
- 92 (95) Species of 14-16 mm. length in which thorax and tergites I or II (or only I) are clothed with reddish or yellow hairs, the rest of the abdomen with black hairs. White fasciae very fine. Genae linear.
- 93 (94) Thorax and tergites I and II with ferruginous to reddish-brown, the remaining tergites with black, pilosity. Fine fasciae present on tergites I and II **cf. tenuiciliata Alfken**
- 94 (93) Colour similar, but fasciae developed on tergites II-IV (-V)
. **oraniensis Lep.**
- 95 (92) Either the thorax not with reddish pilosity, at most yellowish-grey, or, if ferruginous, then smaller species; or abdomen with broader white fasciae.

- 96 (147) At least tergites II and III without distinctly raised pilosity, or with only quite short, black, semi-erect hairs; or with scattered white or black hairs only.
- 97 (136) Antennal joint 1 white or yellow in front (beneath) or with such longitudinal spot.
- 98 (101) Apical margin of tergite VII with *three* short teeth, a median blunt tooth and two lateral short triangular, or three very small, teeth.
- 99 (100) Length 12-15 mm. Hind tibiae slightly curved. Abdominal fasciae broad, illdefined in front, widened laterally. Fore tarsi short **alternans (Kl.)**
- 100 (99) Length 7.5-8 mm. Hind tibiae straight. Tergites in front of the scarcely marked fasciae with grey pilosity. Antennae dark. Joint 5 of mid tarsi somewhat thickened, with dark hairs, but without brush. Clypeus transverse. Tergite VII with three very small teeth **tridentella sp. n.**
- 101 (98) Apical margin of tergite VII with two spiniform or triangular teeth, rarely with slender conical reddish apical plate, bearing indistinct teeth.
- 102 (107) The pale pilosity of body and legs ferruginous or reddish. Fasciae testaceous to ferruginous. Clypeus and labrum yellow. Flagellum more or less ferruginous below.
- 103 (104) Broadly built species of 9-10 mm. length. Clypeus without carinae. Tergites in front of the fasciae too with decumbent pale hairs. Wings slightly infumated, cells pubescent. Scutellum smooth, shining in front. Nervulus slightly prefurcal **crocea (Kl.)**
- 104 (103) Slenderer, smaller species in which the clypeus shows a raised fore margin and median keel, and two shallow foveae. Scutellum densely punctured. Tarsal joint 5 of mid legs thickened, with a few black hairs but without brush. Nervulus interstitial or slightly postfurcal.
- 105 (106) Tergites II-IV in front of fasciae with black pilosity only. Antennal joint 4 not twice as broad as long. Metatarsus III slightly bent at base, interiorly with brown hairs. Labrum in the middle of the fore margin slightly produced **mellina sp. n.**
- 106 (105) Tergites II-IV not only at the hind margin, but also in front of the densely haired fasciae, with not very dense decumbent ferruginous hairs. Antennal 4 twice as broad as long. Metatarsus straight, with golden-yellow hairs within and without **cf. fayoumensis sp. n.**
- 107 (102) The pale pilosity white or grey, at most on head and thorax yellowish; the fasciae never testaceous or ferruginous, in any case the posterior fasciae white. Nervulus slightly prefurcal.
- 108 (125) Metatarsus III exteriorly with black hairs only, at most the extreme base or upper margin with single white hairs.

- 109 (116) White fascia of tergite V interrupted in the middle, or tergite V wholly black.
- 110 (111) Flagellum ferruginous below. Labrum large, as long as broad or appearing even elongate. Clypeus strongly protruding. **magnilabris Fedt.**
- 111 (110) Flagellum dark.
- 112 (113) Vertex and thorax with ferruginous pilosity. Anterior fasciae with yellowish tinge. Excision between teeth of tergite VII arched **quadrifasciata Vill.**
- 113 (112) Vertex and thorax with yellow-grey to white-grey pilosity. Fasciae white. Excision between teeth of tergite VII straight for some distance.
- 114 (115) Fasciae of abdomen narrower. Posterior tarsi slenderer. Face with slight yellow tinge **litorana sp. n.**
- 115 (114) Fasciae broader. Posterior tarsi broader. Face white **klugi n. n.**
- 116 (109) Fascia on tergite V not interrupted in the middle.
- 117 (122) Colour of face pale yellow.
- 118 (119) Head, thorax and tergite I without black hairs, at most in front of the scutellum with single black hairs. Antennae somewhat stouter, flagellum ferruginous below. (Arabia) **farinosa (Kl.)**
- 119 (118) At least hairs of thorax and tergite I mixed with a great number of black hairs.
- 120 (121) Flagellum dark brown to black, length of antennae 4-4.5 mm. Joint 3 nearly or wholly twice as long as broad, joint 5 distinctly longer than broad. Metatarsus III mostly with distinct spot of white hairs exteriorly at base **cf. savignyi Lep.**
- 121 (120) Flagellum ferruginous below, length of antennae less than 4 mm., joint 3 scarcely to 1.5 times longer than broad, joint 5 not or very slightly longer than broad. Metatarsus III black exteriorly or with only single white hairs at base. Smaller species **punctifrons Wlk.**
- 122 (117) Face white to ivory-white. Flagellum dark brown to black, or only joints 3-4 testaceous.
- 123 (124) Tergites of abdomen almost evenly clothed with white-grey hairs. Nervures of wing at least basally yellow. Joint 1 of antennae at most with pale dot. Metatarsus III black **cf. byssina (Kl.)**
- 124 (123) Tergites of abdomen in front of the fasciae clothed with black hairs. Veins dark. Joint 1 of antennae whitish beneath. Metatarsus III for about 1/3 of its length with white hairs exteriorly **albigena Lep. ssp. afra nov.**
- 125 (108) Metatarsus III exteriorly with white hairs either all along or at least for half of its length; these hairs may be sometimes slightly raised.
- 126 (131) Species with dense white or greyish pilosity in which the whole tergites are white or grey pubescent in front of the fasciae, the ground being not or scarcely visible; in the latter case, no black hairs present.
- 127 (130) Smaller species of 6.5-8 mm. length. Flagellum mostly ferruginous below.

- 128 (129) Antennae longer and slenderer, joints 5-13 distinctly longer than broad. The whole face pale yellow **tenella** (Kl.)
- 129 (128) Antennae stouter. Labrum, mandibles and clypeus, the latter distally, white **nivosella** sp. n.
- 130 (127) Larger species of 8.5-9.5 mm. length. Clypeus, labrum, mandibles and frontal area yellow. Antennae long, flagellum below at most brown. Similar to *byssina* **deceptrix** sp. n.
- 131 (126) Tergites in front of the fasciae partly with black pilosity.
- 132 (135) Clypeus and sides of frons white or yellow-white. Flagellum dark.
- 133 (134) Sternites dark, without white fringe of hairs at the sides. Joint 5 of middle tarsi slender. Nervulus prefurcal cf. **albigena** Lep.
- 134 (133) Sternites with white hairs at the sides and testaceous hairs in the middle. Joint 5 of middle tarsi thickened towards apex, but without brush. Metatarsus II with yellow hairs within. Nervulus interstitial cf. **helouanensis** sp. n.
- 135 (132) Clypeus pale in front only, two basal spots and sides of frons beneath the white pile black. Face with very dense but short white hairs. Nervulus prefurcal **latizona** Spin.
- 136 (97) Antenna¹ joint I wholly black, or brown beneath, sometimes with a set of white hairs.
- 137 (142) Tergites II-III (-IV) also in front of the fasciae with more or less dense pale pilosity, the fasciae only somewhat more densely pubescent than the disks.
- 138 (141) Metatarsus III exteriorly clothed with black hairs, only at base with single white hairs. Sides of face dark, clypeus yellow or white.
- 139 (140) Margin of tergite VII between the two teeth nearly straight, teeth pointed. Sternite VI somewhat shining, densely punctured. Face white, with very dense white pile **byssina** (Kl.)
- 140 (139) Margin of tergite VII between the less acute teeth arched (concave). Face yellow, with less dense and shorter white pilosity. Sternite VI smooth towards apex, polished, scarcely punctured **mucorea** (Kl.)
- 141 (138) Metatarsus III exteriorly wholly clothed with white hairs, all joints of middle tarsi exteriorly with white hairs. Face with dense white pilosity. Antennae dark. Thorax without black hairs. Clypeus more strongly protruding than in *byssina* cf. **deceptrix** sp. n.
- 142 (137) Tergites in front of the fasciae more or less clothed with black hairs.
- 143 (144) Pale band of tergite V interrupted in the middle, or the tergite nearly wholly black, with a few white hairs at the sides.
- a (b) Metatarsus II with white hairs at the extreme base, metatarsus III with black hairs only. Tergite V with a few white hairs at the sides. **andresi** Fr.

- b (a) Metatarsi II and III exteriorly all along with white hairs. Tergite V with white fascia broadly interrupted in the middle **montivaga Fedt.**
- 144 (143) Tergite V all across clothed with white hairs, or with a complete white fascia apically.
- 145 (146) The whole metatarsus III and also joints 2-3 (-4) of hind tarsi exteriorly with white hairs. Clypeus yellow, with large square black basal spots. Thorax with many black hairs intermixed **pipiens MocS.**
- 146 (145) Metatarsus III only at base with single white hairs. Clypeus pale yellow. Sternite VI strongly shining **cf. mucorea (Kl.)**
- 147 (96) Tergites from II onwards, besides the fasciae which may be present or absent, with distinctly raised pilosity. Nervulus almost always (except in *nivosella*, 7.5-8.5 mm.) interstitial or slightly postfurcal.
- 148 (151) Labrum black.
- 149 (150) Slenderer species. Joint 5 of middle tarsi without raised black hairs. Tergites I-IV with marginal fasciae of semi-erect white hairs. Antennal 3 thin, abruptly conically widened at apex, longer than the three following joints together. Metatarsus III slender, slightly curved, upper edge slightly convex. Venter with grey pilosity **arabica sp. n.**
- 150 (149) Broader species. Joint 5 of middle tarsi with some raised black hairs. Tergites without white fasciae, only some white raised hairs at the sides of tergites III and IV. Antennal 3 less abruptly thickened. Metatarsus III slender, parallel-sided. Venter with black pilosity **cf. cinereiceps Alfk.**
- 151 (148) Labrum for the major part or wholly yellow or white.
- 152 (153) Larger species, length 14-16 mm. The whole body uniformly clothed with long white-grey hairs, without fasciae. Antennal 3 less slender than in *arabica*, scarcely as long as the three following joints together **cf. lanata (Kl.)**
- 153 (152) Smaller species.
- 154 (155) Clypeus elevated in front and medially, with two lateral foveae, yellow. Tergite VII with median carina **cf. fayoumensis sp. n.**
- 155 (154) Clypeus without distinct impressions.
- 156 (157) Tarsal joint 5 of mid leg thickened, but without black hairs laterally. Length 9 mm. **helouanensis sp. n.**
- 157 (156) Joint 5 of middle tarsi slender or, if slightly thickened, then pilosity of face very dense, white.
- 158 (167) Mandibles black or with small yellow line or dot at the broad base. Sides of face with pale, mostly V-shaped, distal spot.
- 159 (162) Antennal joint 3 only twice as long as broad, shorter than 4 and 5 combined. Somewhat smaller, 8-9 mm. Cells near for margin of wing more or less distinctly pubescent (microsetae). Mandibles mostly black.

- 160 (161) Thorax with a few black hairs between the whitish hairs. Tergites of the abdomen without black hairs. Mandibles black *moricei* Fr.
- 161 (160) Thorax with many dark hairs intermixed. Tergites with a few black hairs. Mandibles with small yellow dot *moricei* var. *nigripilis* nov.
- 162 (159) Antennal joint 3 as long as or longer than 4 and 5 combined. Somewhat larger species. Mandibles mostly with pale dot.
- 163 (164) Thorax and abdominal tergites with whitish hairs only. Antennal 3 as long as 4 and 5 together *wegelini* Fr.
- 164 (163) Thorax with some black hairs between the pale ones. Tergites (II-) III - V with many raised black hairs mixed with the white hairs. Antennal joint 3 thinner, somewhat longer than 4 and 5 combined. Pilosity of thorax with very slight yellowish tinge.
- 165 (166) Hind legs normal *extricata* sp. n.
- 166 (165) Hind legs somewhat incrassate *extricata* var. *clavatipes* nov.
- 167 (158) Mandibles for the major part yellow or whitish. Flagellum often ferruginous below. Veins often yellowish cf. 126 ff., 143-146.

Females

- 1 (116) At least the tergites II and III of the abdomen with decumbent pilosity; if it is somewhat raised the hairs are either very short or only semi-erect.
- 2 (9) Head, thorax and abdomen covered with black hairs, seldom the propodeum or only tergites I or II, or IV or V conspicuously white-haired. Length of body 14-19 mm.
- 3 (6) Abdomen without white pilosity. Ground of face and clypeus dark.
- 4 (5) Wings strongly infuscated, blackish-brown with violet lustre. 19 mm *fumipennis* Alfken
- 5 (4) Wings only slightly shaded. 14-17 mm. *concolor* Alfken
- 6 (3) At least one of the abdominal tergites with a white transverse fascia.
- 7 (8) White fasciae on tergite I or also II. Legs black and clothed with black hairs. 16-18 mm. *vidua* (Kl.)
- 8 (7) Tergite IV wholly with decumbent white, V laterally and propodeum with raised white, pilosity. Clypeus yellow, with two large black spots. Length 17-18 mm. *nubica* Lep.
- 9 (2) Head, thorax and abdomen showing a pilosity different from that of the species sub : 3-8.
- 10 (35) Large species, having a length of 16-20 mm.
- 11 (14) The whole body covered with ferruginous pilosity.
- 12 (13) Tergites II-IV almost bare. Clypeus and legs ferruginous, thorax and at least tergite I of the abdomen ferruginous on the ground. Abdomen with pale postero-marginal fasciae *carnea* Grib.

- 13 (12) The whole abdomen with fine, adpressed, ferruginous pilosity. Abdomen without fasciae. Wings infumated. 16 mm. *inolyta* Walker
- 14 (11) Not the whole body with ferruginous pilosity.
- 15 (18) Posterior margins of tergites rather broadly yellowish transparent. At least tibiae partly and tarsi with ferruginous or pale brown ground-colour.
- 16 (17) Tergites from III onwards with black pilosity. Tergite III without fine pale marginal line of white hairs *scopipes* Spin.
- 17 (16) Tergite III with fine pale marginal fascia; tergite V with ferruginous pilosity at middle *flabellata* sp. n.
- 18 (15) The posterior margins of the tergites not pale and transparent but black brown or black like the rest of the tergites. Legs darker.
- 19 (20) Clypeus yellow, with two black spots fused with black sides of frons. Tergites (I-) II-III with white postero-marginal fascia, tergites IV and V with white pilosity at the sides only. Metatarsus III white-haired at base only, rest with black hairs. Genae present *atricilla* ssp. *aegyptorum* nov.
- 20 (19) Integument of head quite dark.
- 21 (24) Head for the major part covered with black hairs.
- 22 (23) Thorax and tergites I and II with yellow or ferruginous, the following tergites with black, pilosity. Hairs on tergite II plumose. Tibiae and tarsi predominantly with black pilosity. Wings not infuscated *cf. alfierii* Alfken
- 23 (22) Thorax and tergite I with yellow pilosity. Wings strongly darkened. 20 mm. *armata* v. *tetra* Fr.
- 24 (21) Pilosity of head pale or partly brown, without or with few black hairs.
- 25 (30) Tergites without white fasciae.
- 26 (27) Head and tergite I with yellowish or ferruginous, the remaining tergites with black, pilosity. 15-17 mm. *semirufa* Fr.
- 27 (26) Tergites I and II with pale pilosity, the remaining tergites with black pilosity.
- 28 (29) Thorax and tergites I and II with yellow or ferruginous pile. 19-20 mm. *cf. hispanica* F.
- 29 (28) Thorax and tergites I and II with grey pilosity 14-16.5 mm. *cf. spinolana* sp. n.
- 30 (25) Tergites I-II (-III) with very fine margins of white hairs. Frons clothed with whitish-yellow hairs.
- 31 (32) Genae linear. Margins of sternites almost only with black pilosity. Tergites III and following with black hairs *cf. tenuiciliata* Alfken
- 32 (31) Genae well developed
- 33 (34) Tibiae III with white scopa *mucida* Grib.
- 34 (33) Tibiae III with black or ferruginous scopa *cf. albosignata* Fr.

- 35 (10) Smaller species.
- 36 (71) Posterior margins of the tergites with more or less sharply defined white or yellow fasciae, the disk in front of the fasciae with decumbent black pilosity; there are therefore no pale hairs in front of the fasciae.
- 37 (52) Metatarsus III exteriorly with black pilosity, or with only single white hairs at the base, above.
- 38 (39) Tibiae III exteriorly with black pilosity or only with a short stripe of white hairs at the base, above. Tergite II in fresh specimens with greyish-yellow tomentum across the base too so that the tergite appears to have a dark transverse band or line. **fulvodimidiata** Dours
- 39 (38) Tibiae III not clothed with black hairs. No dark transverse fasciae across middle of any tergite.
- 40 (41) Tergite V clothed with black hairs only, without white hairs at the sides. Venter with dark hairs only. Antennae dark. Clypeus at fore margin, and a conical median line, pale yellow. Metatarsus II only at the base and the exterior margin with a few white hairs **omissa** sp. n.
- 41 (40) Tergite V either wholly or at the extreme sides with whitish pilosity.
- 42 (49) Tergite V only at the sides with white hairs.
- 43 (44) Smaller species, measuring 8.5-12.5 mm. Wing cells nearly without any pubescence. Very similar to *omissa*, but apart from the different pilosity of tergite V, differing in that the pale colour of the clypeus is more whitish than pale yellow, and the frontal area is dark **andresi** Fr.
- 44 (43) Larger species, measuring 12-15 mm., with distinctly pubescent wing cells, at least near the fore margin of the fore wing.
- 45 (46) Flagellum of antennae ferruginous below. Head, thorax and tergite I of abdomen without noticeable black hairs among the pale ones.
..... **cf. farinosa** (Kl.)
- 46 (45) Antennae dark. Hairs on head, thorax and tergite I of abdomen pale, mixed with black ones.
- 47 (48) The yellow median stripe of the clypeus conical, narrowed towards base, the yellow fore margin more than one-third as long as the black base. Pilosity of the thorax grey to yellowish grey. Fasciae of the abdomen white. Size larger, on an average **klugi** nom. nov.
- 48 (47) The yellow median line narrower, parallel-sided; the yellow fore margin at the narrowest space less than one-third as thick as the length of the dark base. Thorax with ferruginous pilosity; the anterior fasciae of the abdomen have a yellowish tinge **quadrifasciata** Vill.
- 49 (42) Tergite V with white pilosity for all its width, only in the middle of the hind margin with black velvety spot.

- 50 (51) Fasciae of the tergites very broad. Thorax with yellow-grey pilosity. Clypeus shining in the middle, comparatively sparingly and coarsely punctured. Frontal area only narrowly yellow. Joint 1 of antennae in front (beneath) black or brown, with white pilosity but without white ground-spot **mucorea** (Kl.)
- 51 (50) Fasciae normal. Thorax with numerous black hairs mixed with the pale hairs. Antennal 1 yellow beneath, flagellum ferruginous beneath. Sides of frons yellow so that the spots of the clypeus are isolated on three sides. Frontal area forming a yellow triangle **punctifrons** Walker
- 52 (37) Metatarsus III with white pilosity at least in basal half, or with a large white patch at base, or white-haired for all its length; these hairs decumbent or sometimes semi-erect.
- 53 (56) Face black, or only the labrum reddish.
- 54 (55) Length 11-12 mm. Face black. Tergites II-IV with white fasciae
..... **blanda** Pér.
- 55 (54) Length 8.5 mm. Labrum red with black anterior angles
..... **kneuckeri** Alfken
- 56 (53) Clypeus and labrum at least partly yellow or whitish.
- 57 (58) The whole tergite V with black pilosity.
- a (b) Larger, 13-15 mm. Fasciae of abdomen broad. Black spots of clypeus broadly rounded interiorly, not angular. Antennal 3 as long as the three following joints together **alternans** (Kl.)
- b (a) Smaller, 12-13 mm. Fasciae normal. Anterior margin of clypeus only very narrowly pale. Antennal 3 somewhat shorter than the three following joints combined **montivaga** Fedt.
- 58 (57) Tergite V at least at the sides with white hairs. Smaller species of at most 12 mm. length.
- 59 (60) Antennal joint 3 long, longer than the three following joints together, more than three times as long as broad. The dark spots of the clypeus angular exteriorly, about their middle. Venter often brownish. Wings also in the discal cells with microsetae. Antennal joint 1 dark
..... **savignyi** Lep.
- 60 (59) Antennal joint 3 less elongate.
- 61 (68) Clypeus in front and the median line *broadly* yellow or white. Flagellum usually ferruginous below. Tergite II with adpressed pilosity only.
- 62 (63) Sides of frons and frontal area yellow, clypeus with two dark spots that are surrounded by yellow. Antennal 1 yellow beneath
..... **cf. punctifrons** Wlk.
- 63 (62) Sides of frons dark, spots of clypeus fused with the former.
- 64 (67) Fasciae of the abdomen broad. Antennal 1 sometimes ferruginous below, but not lined with yellow. Flagellum ferruginous below.

- 65 (66) Metatarsus III exteriorly with large whitish spot of hairs. Fasciae very broad, their fore margin somewhat convex, i.e. broader in the middle. Clypeus and labrum whitish-yellow, the pale median stripe of the former conical. Thorax somewhat narrower, the yellow-grey pilosity mostly mixed with brown or black hairs **latizona** Spin.
- 66 (65) Metatarsus III black or with only few basal white hairs, exteriorly. Fasciae broad but evenly wide. Clypeus and labrum similar, but yellow, less pale. Thorax with uniformly yellowish-grey pilosity
..... **cf. mucorea** (Kl.)
- 67 (64) Fasciae of abdomen very narrow, whitish. Tergites II-IV also in front of the fasciae with not very dense grey tomentum. Antennae hardly paler beneath. Length 9-9.5 mm..... **cf. alfenella** sp. n.
- 68 (61) Clypeus along middle and anteriorly only very narrowly white or yellow (2).
- 69 (70) Frontal area narrowly pale yellow; the pale median line of the clypeus always reaching base. Metatarsus III with white hairs exteriorly for about half its length **albigena** Lep. **ssp. afra** nov.
- 70 (69) Frontal area black; the pale median line of the clypeus does mostly not reach base or is absent; yellow fore margin fine. Metatarsus III clothed with white or greyish hairs exteriorly for the whole length **pipiens** Mocs.
- 71 (36) Abdomen more or less *evenly* clothed with decumbent grey, yellow-grey or testaceous hairs; the fasciae usually less contrasting from the disks or not contrasting at all. In some cases the tergites (I-) II-III have a narrow transverse black line or band across middle. Scattered raised pale hairs are sometimes visible in profile.
- 72 (73) Hind tibiae and tarsi exteriorly and interiorly clothed with black hairs, the former exteriorly at base with single white hairs. Clypeus with two dark spots, each being pointed anteriorly within. Thorax with ferruginous pilosity. Middle of tergites I-III with dark transverse line between the pale pilosity of fore and hind margin. Length 10-11 mm
..... **fulvodimidiata** Dours
- 73 (72) Hind tibiae exteriorly with white, grey or yellow to rubiginose pilosity.
- 74 (81) Metatarsus III exteriorly clothed with black hairs or only up to basal half with white hairs.
- 75 (78) Metatarsus III with large spot of white hairs at base, its apical half or third with black hairs.
- 76 (77) Hairs of thorax of two colours, white and blackish. Fasciae very broad, on tergite II broader at middle than laterally. Clypeus and labrum whitish-yellow **cf. latizona** Spin.

(2) cf. *A. montivaga* Fedt.

- 77 (76) Thorax without black hairs. Tergites densely and evenly clothed with grey hairs, up to the base. Labrum and clypeus, the latter in front and middle, yellow **toensis sp. n.**
- 78 (75) Metatarsus III exteriorly with black hairs or single white hairs only at base.
- 79 (80) Tergites fairly evenly clothed with white-grey hairs, on each tergite up to the basal ridge. Veins for the major part dark. Pale parts of ground of face whitish. Legs black on the ground **byssina (Kl.)**
- 80 (79) Intermediate tergites narrowly black at fore margin of disk. Veins for the major part testaceous. Clypeus in the middle not very densely punctured. Pale parts of ground of face yellowish. Legs brown
..... **cf. mucorea (Kl.)**
- 81 (74) Metatarsus III exteriorly with pale pilosity for all its length.
- 82 (83) Broadly built species, 10-12 mm. long. Pilosity ferruginous, with intermixed black hairs on vertex, thorax and tergite I. Wings slightly shaded, cells distinctly pubescent. Antennae wholly ferruginous below. Legs brownish on the ground. Scutellum shining in front, sparingly punctured. Clypeus with two large angular black spots **crocea (Kl.)**
- 83 (82) Smaller species; if 10-11 mm. long, then the pilosity not ferruginous.
- 84 (85) Length 11 mm., width of head 4.4 mm. Abdomen evenly densely clothed with decumbent grey hairs. Antennal joint 3 about 3 times as long as broad. Clypeus with very dense white pile. Nervulus interstitial
..... **galalensis sp. n.**
- 85 (84) Smaller species of lesser width of head.
- 86 (109) Dark spot of clypeus large, occupying basal half or more; pale median line narrow or cuneiform or wanting.
- 87 (98) Nervulus interstitial or very slightly postfurcal.
- 88 (93) Clypeus with angularly limited black basal spots occupying about basal half. Frontal area narrowly pale. Head at least 3 mm. broad.
- 89 (90) Abdomen with distinct narrow white fasciae; in perfect specimens also base of tergites with some greyish pilosity, though disks chiefly black. Metatarsus III interiorly with black-brown or black hairs. Flagellum dark or at most brownish below. Face white in front
..... **alfkenella sp. n.**
- 90 (89) Abdomen more extensively clothed with grey hairs, at most tergite II with a narrow blackish fascia across middle. Flagellum ferruginous below. Margins of tergites yellowish transparent. Metatarsus III interiorly with ferruginous to brown hairs.
- 91 (92) Vertex, thorax and abdomen with uniformly grey to yellowish-grey pilosity. Tergite V medially at hind margin with ferruginous hairs. Metatarsus III interiorly with dark brown hairs. Labrum and fore margin of clypeus yellow **mellina sp. n.**

- 92 (91) Vertex and thorax with grey and black mixed pilosity. Tergite II with more or less conspicuous dark transverse line. Tergite V with black postero-median cushion of hairs. Metatarsus III interiorly with reddish hairs. Labrum and fore margin of clypeus pale yellow. Somewhat larger species **shagrensis** sp. n.
- 93 (88) Clypeus with only narrowly pale fore margin, and sometimes fine raised median line. Frontal area mostly dark.
- 94 (97) Pale hairs of thorax mixed with many black hairs. Pilosity of face less dense. Labrum less strongly transverse.
- 95 (96) Antennae dark. Labrum, base of mandibles, clypeus in front and a fine median line, whitish-yellow. Pilosity of body uniformly grey. Wing veins dark. Metatarsus III interiorly with black-brown hairs **humilis** Spin., Pr.
- 96 (95) Flagellum slightly reddish towards tip. Labrum, base of mandibles and fore margin of clypeus yellow. Pilosity of thorax grey with slight yellowish tinge. Wing veins testaceous, in basal half. Metatarsus III interiorly with brown hairs **selecta** sp. n.
- 97 (94) Thorax without, or with single black hairs only. Pilosity of face very densely white. Labrum strongly transverse cf. **tridentella** sp. n.
- 98 (87) Nervulus distinctly or slightly prefurcal.
- 99 (100) Antennal joint 3 more than three times as long as broad. Labrum not transverse. Clypeus in the middle triangularly, labrum longitudinally, white, sides brown. Tergites II-V between the decumbent grey pilosity with single raised brown hairs. Metatarsus III interiorly covered with rubiginose hairs. Length 10 mm. **tarsalis** sp. n.
- 100 (99) Antennal 3 less elongate.
- 101 (102) Head distinctly more than 3.5 mm. broad. Pilosity of tergite I moderately long, and raised at base only. Tergites evenly clothed with decumbent grey hairs. White facial pilosity not very dense **deceptrix** sp. n.
- 102 (101) Head narrower, width at most 3.5 mm. Very small species.
- 103 (104) Antennae almost wholly dark or only tip brownish below. Clypeus without pale median line, fore margin only narrowly whitish, frontal area dark. Tergite II with a few raised pale hairs besides the decumbent hairs. Fasciae of tergites indicated **tridentella** sp. n.
- 104 (103) Flagellum ferruginous below. Clypeus with more or less narrow pale median line connected with pale fore margin which is broader. Frontal area sometimes pale. Fasciae not pronounced.

- 105 (106) Sternites IV and V with slightly raised *black* pilosity, only the hind margins with very poor white fringe. Antennals 1-4 dark. Metatarsus III interiorly with brown hairs. Tergite II with few pale raised hairs between the dense decumbent white pilosity **candidella sp. n.**
- 106 (105) Sternites on the disks without black, but with slightly raised ferruginous or brown, pilosity; margins with a few white fringe hairs.
- 107 (108) Metatarsus III interiorly clothed with dark brown or black hairs. Abdomen with very dense white-grey pilosity, tergite II without any raised hairs. Antennal joints 1, 2 and base of 3 black, 3 abruptly ferruginous at the distal widening, rest of flagellum ferruginous below. Face with dense white pile. Nervulus distinctly prefurcal **nivosella sp. n.**
- 108 (107) Metatarsus III interiorly with ferruginous or rubiginose hairs. Pilosity of the tergites grey. Face less densely pilose so that the dark ground of the clypeus becomes visible. Tergites II-III with a few raised pale hairs, visible in profile. Antennal joints 1-3 dark, 4-12 ferruginous below. Nervulus only very slightly prefurcal. **tenella (Kl.)**
- 109 (86) Dark spots of clypeus *small*, occupying less than half of the length of the clypeus which is medially broadly pale yellow or yellow to base, or almost wholly yellow.
- 110 (111) Head somewhat more than 3.5 mm. broad. Nervulus interstitial. Tergites II (-III) with or without dark transverse median line. Length 9 mm. **lutulenta (Kl.)**
- 111 (110) Width of head less than 3.5 mm.
- 112 (115) Nervulus very slightly prefurcal. Pale hairs of thorax mostly mixed with black hairs. Metatarsus III interiorly clothed with black-brown to black hairs. Calcaria yellow with dark margins or dark.
- 113 (114) Tergite V with dark brown or black cushion of hairs in the middle of hind margin. Dark central transverse fascia on tergites I-III usually conspicuous **concinna (Kl.)**
- 114 (113) Tergite V with ferruginous hairs in the middle of the hind margin. Dark transverse lines inconspicuous, only indicated on tergites I and II. **concinna hegasica nov.**
- 115 (112) Nervulus interstitial. Metatarsus III interiorly with pale brown ferruginous or brown pilosity. Calcaria of tibiae II and III pale yellow. Thorax without intermixed black hairs. Tergite V in the middle of its hind margin with testaceous to brown hairs **fayoumensis sp. n.**
- 116 (1) Abdomen either with fasciae of pale, more or less decumbent hairs, but the tergites on the disks with distinctly, mostly vertically, *raised* hairs; or tergites with raised hairs and without fasciae. The raised hairs may be plumose or almost simple.
- 117 (158) Larger species of at least 13.5 mm. in length; if smaller, then thorax with ferruginous pilosity.

- 118 (119) At least middle and hind tibiae and tarsi reddish brown or ferruginous on the ground cf. 15
- 119 (118) Legs black on the ground.
- 120 (131) Pilosity of thorax yellow, ferruginous or rubiginose, without black hairs.
- 121 (128) At least tergite II with a fine white fascia at its apical margin.
- 122 (125) Genae linear or practically wanting.
- 123 (124) Tergites II-IV with conspicuous snow-white fascia. Hind tibiae exteriorly with black or dark brown hairs, and a longish triangular spot of white hairs. Metatarsus III with black hairs *oraniensis* Lep.
- 124 (123) Tergites (I-) II with very narrow margin of white hairs. Legs with black pilosity cf. *tenuiciliata* Alfken
- 125 (122) Genae well developed.
- 126 (127) Hind tibiae clothed with black hairs, or only tips of tibiae and metatarsi with a few white hairs or with reddish hairs towards lower margin. Tergites I-II (-III) with very fine fascia of white hairs .. *albosignata* Fr.
- 127 (126) Hind tibiae exteriorly clothed with white hairs. Tergites II-III with very fine fascia of white hairs *mucida* Grib.
- 128 (121) Tergites without white marginal fasciae or only at the sides with some white hairs. Large species : 17-20 mm.
- 129 (130) Pilosity of head predominantly black or brownish .. *alfierii* Alfken
- 130 (129) Pilosity of head for the major part pale. Hairs of tibiae more distinctly raised..... *hispanica* F.
- 131 (120) Thorax above clothed with white-grey or yellow-grey to brown-grey hairs, in the latter case often mixed with black hairs.
- 132 (139) The white fasciae of the tergites broadly interrupted in the middle.
- 133 (134) Large species (16-17 mm.) with distinctly plumose hairs on tergite II, pale transparent margins of the tergites and with brownish or testaceous markings on the clypeus cf. *aegyptiaca* DT. & Fr.
- 134 (133) Not the above characters combined.
- 135 (136) Pilosity of head and hind tibiae entirely black. Slenderer species, length 12.4-14 mm..... cf. *facialis* sp. n.
- 136 (135) Head predominantly with pale pilosity.
- 137 (138) Hind tibiae exteriorly clothed with white hairs. Fasciae conspicuous, white, but always interrupted in the middle. Length 11-13 mm. *atriceps* Pér.
- 138 (137) Hind tibiae with black pilosity. Broad species cf. *albosignata* Fr.
- 139 (132) Fasciae of the abdomen not interrupted, or entirely absent.
- 140 (141) Pilosity of hind tibiae and head black *facialis* sp. n.

- 141 (140) Pilosity of hind tibiae wholly whitish, grey, yellow or ferruginous.
- 142 (155) Pilosity of hind tibiae golden-yellow, ferruginous or rubiginose.
- 143 (146) Tergites II-IV without black hairs between the long raised white-grey pilosity.
- 144 (145) White fasciae on tergites (I-) II-IV conspicuous. Nervulus interstitial or indistinctly postfurcal **speciosa Fr.**
- 145 (144) Abdomen without noticeable fasciae, with greyish villosity. Nervulus indistinctly prefurcal **lanata (Kl.)**
- 146 (143) At least the tergites III-IV either wholly clothed with black hairs, or with grey hairs which are mixed with some black hairs.
- 147 (148) Smaller species of 13-14 mm. length, and transparent pale margins of the tergites. Pilosity grey, on tergites III and IV not predominantly black, the grey hairs plumose. Interior face of tibiae and metatarsus III with black pilosity **senescens Lep.**
- 148 (147) Tergites III and IV with predominantly or wholly black pilosity. Length 14.5-18 mm.
- 149 (152) At least the tergites II and III with conspicuous fasciae of almost decumbent or slightly raised white hairs.
- 150 (151) Clypeus and labrum mostly with brown or yellow markings. Raised hairs of tergite II distinctly plumose. Legs with rubiginose hairs. Length 16-17 mm. **aegyptiaca DT. & Fr.**
- 151 (150) Head black on the ground. Raised hairs on tergite II not distinctly plumose. Hind tibiae and metatarsi III interiorly clothed with black, exteriorly with ferruginous hairs.
- a (b) Tergites with slight bronze lustre, puncturation denser. Sternites with fringes of ferruginous hairs. Tergites clothed with long grey hairs, mixed with black hairs. Length 17-18 mm. **disparilis Fr.**
- b (a) Tergites black on the ground, puncturation less dense, II-III clothed with black hairs, towards the hind margin with white hairs. Fasciae more conspicuous. Length 15.5-16.5 mm. **dispar Lep.**
- 152 (149) Conspicuous fasciae absent. Tergites I and II clothed with grey, the following tergites almost only with black hairs, some pale hairs at most at the sides of the tergites.
- 153 (154) Mesosternum for the major part, fore and mid legs, hind tibiae within and both sides of metatarsus III clothed with black hairs; hind tibiae exteriorly with rubiginose hairs **cinereiceps Alfken**
- 154 (153) Mesosternum clothed with grey, or in the middle somewhat with yellowish, hairs. At least the hind legs everywhere with ferruginous hairs. Pilosity of thorax and tergites short **spinolana sp. n.**

- 155 (142) Hind tibiae exteriorly and metatarsus III predominantly with white or grey hairs (3).
- 156 (157) Ground of face partly pale yellow. Tergites I-III with white fasciae, and in addition with whitish or greyish decumbent and semi-erect pilosity to base. Tergites IV and V with black, only at the sides with white, raised hairs **atricilla ssp. aegyptorum nov.**
- 157 (156) Face wholly dark. Tergites with raised grey, but without decumbent white-grey, pilosity. Fasciae present on tergites I-IV. Tergite V at the sides with some longer white hairs **niveiventris Fr.**
- 158 (117) Smaller species not exceeding a length of 13 mm.
- 159 (160) Clypeus yellow or white with two black spots, and with median line or at least fore margin pale **cf. 86-115**
- 160 (159) Clypeus black.
- 161 (162) The pure-white fasciae of the abdomen broadly interrupted. Hind tibiae exteriorly with white, metatarsus with black, hairs. General colour black **cf. atriceps Pér.**
- 162 (161) Fasciae not interrupted, or absent. General colour grey.
- 163 (166) Antennal joint 3 about three times as long as 4, or at most as long as the three following joints combined. Fasciae narrow. Cells of wing close to fore margin of it distinctly pubescent. Length 8-9.5 mm. (4).
- 164 (165) Tergites I-IV of abdomen clothed with grey hairs only, V with some black hairs too **moricei Fr.**
- 165 (164) Tergites II-V of abdomen with some black hairs mixed with the pale ones **moricei nigripilis nov.**
- 166 (163) Antennal 3 longer and slenderer, distinctly more than three times as long as 4, and at least above longer than the three following joints together; larger, on an average.
- 167 (168) Sternites II-IV with white or greyish hairs only, without brown or black hairs between them. Wing cells practically bare, only in cell r 1 with some microsetae **wegelini Fr.**
- 168 (167) Sternites at least in the middle of the disks with brown or black hairs between the pale hairs. Thorax and tergites III-IV with white and dark hairs mixed, V with black hairs.
- 169 (172) Tergites III-V in front of the fasciae mainly with black hairs. At least the sternites IV-V with many black hairs.
- 170 (171) Clypeus densely and somewhat rugosely punctured, without median

(3) A grey scopa stuffed with yellow or brownish pollen should not be mistaken with a yellow or brown scopa.

(4) *Anthophora guigliae* Dusmet (*Ann. Mus. Genova*, LIII, p. 314; 1933) may also belong in this section. The rich ferruginous pilosity of tergites V and VI would, as to my opinion, distinguish this species from all those of the *ambigua*-group, if it actually belongs in this group. (Jarabub).

- carina. Abdominal fasciae composed of somewhat raised hairs
 **zanoni var. borgensis nov.**
- 171 (170) Clypeus like above, but in front with narrow median carina. Fasciae of
 abdomen snow-white, denser, more decumbent **desertorum sp. n.**
- 172 (169) Tergites in front of the fasciae predominantly with white or grey hairs.
 Sternites with yellowish or medially with brown hairs.
- 173 (176) Mesonotum with few black hairs between the pale hairs. Hairs of tergites
 raised and mixed with less black hairs. Pilosity with a slight yellowish
 tinge.
- 174 (175) Clypeus coarsely punctured, and at least in front with a small carina.
 Antennal 3 as long as the three following joints together.....
 **priesneri Alfken**
- 175 (174) Clypeus finely and densely punctured, shining. Antennal 3 somewhat
 longer than the three following joints together **extricata sp. n.**
- 176 (173) Mesonotum with many black hairs among the grey hairs. Grey pilosity
 of the tergites less raised and mixed with many black hairs, without yellow
 tinge..... **cf. crassipes Lep.**

DESCRIPTIONS OF THE EGYPTIAN SPECIES

Group I (fulvitaris)

Anthophora aegyptiaca Dalla Torre et Friese

1812. Unnamed, Savigny, Descr. d'Egypte, pl. I, fig. 3 (male).
 1845. *Megilla scopipes* Klug., Symb. phys., pl. 49, fig. 1 (nec *scopipes* Spin.).
 1871. *Anthophora senilis* Walker, List Hym. Egypt, p. 55.
 1895. *Anthophora aegyptiaca* Dalla Torre et Friese, *Entom. Nachrichten*, XXI, p. 60.
 1897. *Podalirius aegyptiacus* Friese, *Bienen Europas* III, p. 174.
 1916. *Anthophora fulvitaris* Storey, Min. Agric., Tech. Bull. 5, p. 18; Cairo.
 1926. *Anthophora aegyptiaca* Alfken, *Senckenbergiana*, VIII, p. 101, 122.

MALE : Length 15-17 mm. Colour of the ground black, the whole face including frontal area, base of mandibles, and 1st antennal joint beneath, yellow. Pilosity appearing for the major part grey, with yellowish tinge like being shortly cut, and being longer and darker only at the posterior tergites; posterior margins of tergites only narrowly pale transparent. Frons clothed with white, vertex profusely covered with black hairs. Thorax and tergites I and II with raised, the latter two with raised and distinctly plumose, hairs, tergites III to VII with raised black hairs. Whitish posteromarginal bands are conspicuous on tergites (I-) II-IV, but mostly interrupted on IV in the middle. Mid legs with anterior black fan of the metatarsus and longer, scarcer, posterior pilosity; joint 5 of tarsi II with distinct hair-brush. Hind tibiae at the margins with dirtily brownish or yellowish pilosity. Posterior metatarsus somewhat *curved*, convex interiorly, concave exteriorly. Calcaria yellow,

narrowly margined with black. Head below with white, chest with yellowish pilosity. Tegulae yellowish-brown.

Genae well developed. Clypeus strongly protruding, shining, very finely punctured. Antennal joint 3 about 3.5 times as long as broad, somewhat longer than the three following joints combined. Wings slightly shaded with grey, with cell r 1 distinctly pubescent. Nervulus (vein Cut1) interstitial. Tergite VII with two comparatively long, ferruginous teeth that are comparatively narrowly separated from each other.

FEMALE : Length 16-17 mm. Black, face too, but clypeus mostly with yellowish spots, or wholly dark brown with yellowish-brown median stripe, or small paler spots or with anchor-shaped design. Labrum dark, mostly yellowish at the basal margin. Pilosity about as in the male. Tibiae and tarsi clothed with rubiginose hairs, margins of the sternites laterally with whitish, medially with ferruginous hairs. Tegulae ferruginous.

HABITAT : A common hibernal species that may be collected, though, from August to April in Middle and Upper Egypt.

A. aegyptiaca can hardly be confused with any other Egyptian species, systematically coming closest to *A. fulvitaris* Brullé. It is heavier than the species of the *scopipes*-group, and differs further from *flabellana*, the only one of the latter having yellow clypeus, by the conspicuous teeth of tergite VII of the male, the curved metatarsi III and the longer antennal joint 3; the females differ from those of the *scopipes*-subsection by the larger size, the dark-haired tergite V, the dark ground-colour of the tibiae and metatarsi and by the pilosity of the thorax which is more strongly mixed with black hairs, in *aegyptiaca*. The specimens in the collection of the Ministry of Agriculture were originally identified with *A. nasuta* Lep., but already in 1926 corrected by ALFKEN in *aegyptiaca*.

Anthophora senescens Lep.

1841. *Anthophora senescens* Lepeletier, Hist. nat. Ins. Hym., II, p. 71 (male and female).

1897. *Podalirius senescens* Friese, Bienen Europas, III, p. 179.

1916. *Anthophora retusa* Storey (nec L.), Min. Agric., Techn. Bull. 5, p. 18; Cairo.

1926. *Anthophora senescens* Alfken, *Senckenbergiana*, VIII, p. 101.

MALE : Length 11-13 mm. Ground colour black, apical margins of the abdominal segments pale, transparent. Antennal joint 1 beneath, clypeus, sides of frons, frontal area transversely and labrum ivory yellow. Mandibles and flagellum black. Pilosity appearing, as a whole, grey, since black and white hairs are mixed almost everywhere. Hairs of frontal sides surpassing clypeus. Head and thorax beneath with long white hairs. Pilosity of the abdominal tergites long and raised, the paler hairs of the tergites are distinctly plumose; at the little conspicuous fasciae the hairs are whitish. Metatarsus II exteriorly with chiefly black pilosity, and with fan at the anterior edge. Tarsal joints 2-4 yellowish, joint 5 dark, possessing a distinct

brush on tarsi II. Pilosity of the hind tibiae black, at the posterior edge and tip whitish; metatarsus III with black, only at the extreme apical margin with whitish, hairs. Tergites very finely and densely punctured. Tegulae dark with pale margin. Wings only in the cells close to fore margin sparingly pubescent. Nervulus interstitial. Antennal 3 abruptly thickened at the apex, about three times as long as broad. Tergite VII with two widely separated fine ferruginous teeth that are partly covered by hairs.

FEMALE : Length 13-14 mm. Black. Clypeus densely punctured, without median carina. Antennal 3 more than three times as long as broad, somewhat longer than the three following joints together. Pilosity about as in the male, but the hind tibiae exteriorly with yellowish or ferruginous pilosity, and the metatarsus III at base profusely set with ferruginous hairs, apex and posterior margin with black hairs. Tarsi dark, calcaria brownish with black margins. Posteromarginal fasciae of the abdomen somewhat more conspicuous than in the male, i.e. on segments I-IV. Tergite VII clothed with black hairs in the middle.

HABITAT : Common from the Delta to Fayoum, and also on the northern belt (Alexandria, Mariout).

Group II (mucida)

Anthophora atricilla Evers. ssp. *aegyptorum* nov.

1812. Unnamed, Savigny, Descr. d'Egypte, pl. I, fig. 9 (female).

1897. cf. *Anthophora atricilla* Eversmann, Friese, Bienen Europas, III, p. 165, fig. (references).

1916. *Anthophora atricillus* Storey, Min. Agric., Techn. Bull. 5, p. 18.

1924. *Anthophora sischurowskyi* Gribodo, Boll. Mus. Zool. Torino, XXXIX, N.S. XVI, p. 7.

MALE : 16-18 mm. Black, face pale yellow with dark spot at the clypeo-frontal suture, mandibles with yellow basal spot, sides of the frons and frontal area narrowly (not triangularly) yellow, antennal joint I yellow beneath. Face with fine white and raised, vertex with slightly yellowish, thorax with pale yellow, pilosity and only few dark hairs intermixed. Tergite I with pale yellowish raised pilosity, without dark hairs, tergite II with shorter raised pilosity, the ground visible everywhere; tergites I-III with narrow white marginal fasciae, and in front of these very shortly, on the posterior segments somewhat longer, raised black pilose. Sterna of thorax clothed with white, sternites of the abdomen with longer and denser such hairs. Metatarsus III clothed with dark, and only a few white, hairs, terminal margin white-haired. Tibiae with scarce whitish pilosity but short black ground-clothing, margin shortly yellowish-white pilose, at the lower margins with long white hairs. Metatarsus II slender, without fan. Joints 5 of the fore and middle tarsi, with a conspicuous brush of black hairs, the one on the middle tarsi larger. The median joints of the tarsi reddish beneath their pilosity.

Clypeus somewhat protruding, densely punctured. Labrum as long as broad or slightly longer. Antennal 3 slender, somewhat thickened at the apex but not abruptly so, slightly more than 3 times as long as broad and longer than the three

following joints together. Tegulae yellowish with dark center. wings slightly shaded, having only cell r l distinctly pubescent; nervulus interstitial. Tergite VII in the middle of the apex produced into a laterally somewhat wavy, posteriorly truncate, plate which is set with white hairs at the sides.

FEMALE : 16-17.5 mm. Black, clypeus in front and labrum yellow, the latter with two lateral dark basal dots, the clypeus at base and the sides of the face dark, the former with fore margin and median band reaching base, yellow, frontal area mostly wholly black. Mandibles black. Pilosity as in the female, yellowish on the vertex but more whitish than yellow on the thorax where it is mixed on the disk with black hairs, and the base of the scutellum is transversely set with black hairs. Tergite I clothed with raised whitish, tergite II with short raised whitish, hairs, tergites I-III, besides, each with a white fascia that is somewhat ill-defined in front; the tergites are not only at the margin but also at the base clothed with partly raised, partly adpressed pale hairs; tergites IV-VI with short raised black pilosity, the lateral margins with long white hairs. Thoracic sterna with greyish-white hairs, abdominal sternites with lateral white fringe being shorter and less dense than in the male. Tibiae exteriorly clothed with white hairs, metatarsus III with large, white, basal hair-spot. Tarsi beneath their clothing black.

Clypeus densely punctured, slightly keeled in the middle, narrowly smooth. Antennal joint 3 long, about four times as long as broad, and about as long as the four following joints combined. Wings as in the male.

HABITAT : This species is not rare at the northern coast (Mamoura, Montaza, Borg-el Arab, Ikingi (II-VI), and was taken in great numbers at Borg by the collectors of the Cairo University.

The male of this species was unknown to ALFKEN, the female he considered to be *cinerascens* Lep. However, our species cannot be identified with *cinerascens*, since the latter possesses a rather small, nearly rectangular black clypeus spot, and the lower margin of the 5th tergite has ferruginous hairs; moreover, the legs have a ferruginous, not black, ground-colour, in *cinerascens*. The species occurs in Nubia, while our species is decidedly Mediterranean. As I could get convinced after examination of specimens in the Vienna Museum, our form is very similar to *atricilla* Ev. which belongs to the few species having a tarsal brush on the middle and fore tarsi of the male. The specimens concerned (2 females, Araxes valley, det. FRIESE) have the posterior metatarsus wholly white exteriorly; in the Egyptian specimens the white hairs are not developed all along the metatarsus; the abdominal tergites II/III have a very dense yellowish-white decumbent pilosity, in the Egyptian specimens the hairs are much less dense, and are white so that in these the fasciae become very conspicuous, while in *atricilla* this is not the case. The pilosity of *atricilla* is more yellow on the thorax, too. Presumably, the Egyptian form can be considered to be a race of *atricilla*. The female specimens of the collection of the Ministry of Agriculture were under the name of *A. robusta niveiventris* Fr., though identified neither by FRIESE nor ALFKEN, but perhaps by STOREY. However, *A. niveiventris* has proved

to be a quite different insect, as can be seen from the description given on a later page. STOREY has *A. atricilla* in his list, thus he must have seen the male, though the above collection does not contain any males from that time.

Anthophora pretiosa Friese

1919. *Anthophora fulvitaris* var. *pretiosa* Friese, *Deutsche Ent. Zeitschr.*, p. 279.

MALE : Length 15.5-16 mm. Black, antennal joint I beneath and the whole face inclusive of the frontal area, ivory-yellow, fore margin of clypeus with a fine black line; mandibles with a yellow spot at the base towards the upper margin. Pilosity of the frons yellow-white, of the vertex ferruginous, only at the upper angles of the eyes with a few black hairs. Thorax and abdominal tergite I clothed with raised ferruginous to rust-coloured hairs, tergite II in the two basal thirds with pale yellow hairs, in the posterior third these are mixed with some black hairs. The middle of the thorax distinctly mixed with black hairs. Tergites III-V with black hairs, hind margins of the tergites II-IV with loose, not quite decumbent, pilosity. Under side of head with grey-white, of thorax with more yellowish hairs, femora with pale yellow or whitish-yellow hairs. Tibiae exteriorly clothed with black hairs, but the margins longer, raised, pale yellow hairs. The fore and hind legs are provided on their 5th joint with a roundish, conspicuous brush. Calcaria ferruginous or with fine black margins.

Clypeus strongly protruding, dull, very finely and indistinctly punctured, finely transversely rugose towards fore margin; labrum nearly square, smooth and shining. Interior orbits convex. Antennal joint 3 abruptly thickened at the apex, about as long as the four following joints combined. Tergites strongly shining, very finely punctured over the whole surface. Metatarsi long and slender, flattened. Wings little shaded, pubescence noticeable only at the fore margin of the anterior cells, more distinctly in cell r 1. Nervulus interstitial. Tergite VII dark reddish, truncate apically, without protruding angles, finely and densely punctured, in the middle with very fine sulcus.

FEMALE unknown.

HABITAT : 1 male, Ikingi 11. ii. 1912, leg. A. ANDRES.

The description is given after the holotype of FRIESE, deposited in the collection of the Berlin Museum.

Among all Egyptian species a distinct lateral brush on the apical joint of the fore tarsi is only developed in this species and in *atricilla aegyptorum*. The latter species has decumbent fasciae on the tergites (I-) II-III, and is clothed with yellowish, not ferruginous, hairs on the thorax and the 1st abdominal tergite, and the pilosity of the legs is much more adpressed. The formation of the VIIth tergite clearly shows that this species does not belong near *fulvitaris*.

Anthophora dispar Lep.

1841. *Anthophora dispar* Lepeletier, Hist. Nat. Ins. Hym., II, p. 56 (male and female).
1897. *Podalirius dispar* Friese, Bienen Europas, III, p. 202, fig. (further references).
1916. *Anthophora dispar* Storey, Min. Agric. Techn. Bull. 5, p. 18, Cairo.
1926. *Anthophora dispar* Alfken, *Senckenbergiana*, VIII, p. 123.

MALE : Length 13-14.5 mm. (5) Black, joint 1 of the antennae beneath and face yellow, i.e. labrum, clypeus, a narrow transverse frontal area and V-shaped spots at the sides of the frons (orbits); the yellow clypeus is therefore separated by a basally narrower, distally broader, black band or line; labrum with 2 dark basal spots. Mandibles dark. Tarsal joints 2-4 and base of 5 more or less dark testaceous. Calcaria yellow to brown, margined dark. Face with raised white, on the vertex more yellowish, pilosity which is mixed at the orbits and the vertex with black hairs. Thorax, 1st and the basal two-thirds of the 2nd tergite with raised yellow to yellow-grey hairs which are on the dorsum of the thorax well mixed with many black hairs; apex of the 2nd and the whole 3rd to 6th tergites with raised black hairs; the margins of the tergites 2-4 with loose white hairs at the sides, which become denser on the 5th and 6th tergites. Under side with raised white hairs. Legs with decumbent and raised black, and raised white hairs between, the latter especially at the hind margins of the tibiae and metatarsi, but also on the intermediate tarsal joints. Metatarsus II with roundish fan of dark hairs exteriorly, 5th joint of tarsi II with a round black brush.

Clypeus protruding, labrum very moderately transverse, both moderately densely punctured, the latter coarsely and rugosely so. Antennal joint 3 abruptly thickened at the apex, about four times as long as broad. Tegulae brown, margins testaceous. Wings somewhat shaded, the cells ml, r1 and sc pubescent near fore margin. Nervulus interstitial. Posterior metatarsus at its exterior face *swollen and shining*. Tergite VII with broad apical plate that is truncate and slightly emarginated apically, the angles are nearly rectangular and not distinctly dentate.

FEMALE : 15.5-16.5 mm. Black. Sides of frons with whitish hairs, vertex and orbits strongly mixed with black hairs; thorax with grey pile, since they are much mixed with black hairs; tergite I clothed only with white hairs, tergite II with white hairs but much mixed with black hairs across the middle, tergites III and IV with black hairs in basal half (or more), then with such raised white hairs; tergites (I-) II-IV, besides, with *white* marginal bands of long, partly horizontal hairs, V at the sides with white, in the middle with black hairs, and a few brown hairs. Sternites at the sides with white, in the middle with dark reddish, fringe hairs. Under side of thorax with dirty-white hairs. Tibiae and metatarsi exteriorly with *rubiginose* hairs.

Clypeus rather coarsely punctured; a fine smooth median line is noticeable. Antennal joint 3 more than four times as long as broad, as long as the four following joints together. Wings as in the male.

(5) According to FRIESE the European males have a length of 16-17.5 mm.

HABITAT : Common in the Delta, from December to March. Localities : Toukh, Nawa, Cairo, Heliopolis, Giza, Meadi, Esbeth-el-Nakhl.

Although the abdominal bands of the typical *A. dispar* are less distinctly white and narrower, the above described form is identical with specimens from Algeria. ALFKEN identified specimens (from Giza, coll. ALFIERI) with *A. dispar* Lep. However, some specimens (from Toukh, coll. PRIESNER) he identified later with *A. dispar* v. *speciosa* Friese which is quite another form, described below. ALFKEN's statement (*Senckenbergiana*, VIII, p. 123, 1926) that *A. speciosa* Friese (*D. E. Zeitschr.*, p. 279, 1919) is the Egyptian form or race of *A. dispar* Lep. can therefore not be correct. *A. speciosa* must be either a separate species or a littoral race of *A. dispar*. Both are Egyptian, the former found mainly in the coastal regions, the latter hitherto only in Middle Egypt.

Anthophora speciosa Friese

1919. *Anthophora dispar* v. *speciosa* Friese, *Deutsche Ent. Zeitschr.*, p. 279 (male).

1922. *Anthophora niveohirta* Friese, *Konowia*, I, p. 60 (female).

1926. *Anthophora dispar* v. *speciosa* Alfken, *Senckenbergiana*, VIII, pp. 101, 123 (male and female).

MALE : Original description (from German) : Like *A. dispar* but thorax and segment I with long and nearly ferruginous, segment II with white, segments III-IV with short black, pilosity, segments V-VII with long white pilosity. Legs with long white hairs. Length 15 mm., width 6 mm. In the coloration very similar to *A. pretiosa* but apex of abdomen with whitish pilosity, and easily recognizable as belonging to *A. dispar* by the swollen metatarsus. 2 males, Ikingi, ii. 1912, ANDRES leg.

ALFKEN says that the thorax and the 1st tergite of the abdomen are in fresh specimens clothed with ferruginous pilosity that is sparingly mixed with black hairs. The 2nd tergite is on the whole disk covered with pale hairs the 3rd and 4th tergites are set with black, at the hind margin with long bristly white, hairs. The male remained unknown to me.

FEMALE : 16-16.5 mm. Black, face clothed with white, on the labrum somewhat yellowish, on the vertex, especially above at the orbits, with white and black hairs. Thorax covered with grey hairs, the white being mixed with few black hairs. Abdomen with raised white hairs, and loose posteromarginal fasciae of white hairs on tergites (I-) II-IV, about as in *dispar*; there are no or only single black hairs on tergite IV, the tergites look unicolorous throughout, only tergite V is medially set with black, but with white hairs at the sides. The hind margins of the sternites are fringed at the sides with white, in the middle with ferruginous, hairs. Hind tibiae and metatarsus III exteriorly with golden yellow to ferruginous, interiorly with black, pilosity. Tegulae brown, margins reddish.

Clypeus densely and coarsely punctured, with smooth median line, as in *A. dispar*. Antennal 3 very long, abruptly widened at tip, nearly five times as long as

thick and nearly as long as the five following joints combined. Genae well developed. Nervulus interstitial or scarcely postfurcal. Wings only slightly shaded, veins dark, pubescence only visible at the fore margins of the anterior cells.

HABITAT : Northern coast (Ikingi, Borg el Arab, Wardân) and Mansuriah (February - April).

This form is distinguished in both sexes by the coloration; in the male the thorax shows ferruginous, instead of dirty white or testaceous, hairs, tergite II bears white hairs all over the disk (in *dispar* only at the base), III and IV are more extensively white at the hind margins (in *dispar* either black or with few white hairs). From *A. lanata* Kl. the female differs by the conspicuous, though loose, white fasciae of the abdomen and the interstitial nervulus. — I saw FRIESE'S type specimen of *A. niveohirta*.

Anthophora disparilis Friese

1922. *Anthophora disparilis* Friese, Konowia, I, p. 60 (female).

1926. *Anthophora disparilis* Alfken, *Senckenbergiana*, VIII, pp. 101, 124 (male and female).

FRIESE'S original description runs as follows (from German) : "Allied to *dispar* but larger, abdomen with yet longer pilosity, scopa yellowish. Female black, with very long grey-yellowish pilosity, head and thorax punctured, somewhat shining, clypeus-labrum somewhat more coarsely punctured, genae conspicuous and red, longer than in *dispar*, antennae black, flagellar joint 2 very long, equalling the four following joints combined. Abdomen with slight bronze sheen, finely and partly densely punctured, shining, with very long grey hairs, segments I-IV with only single black hairs intermixed, V in the middle with black, laterally with red, VI with ferruginous hairs, anal plate narrow, blackbrown and margined. Ventral segments punctured, with long yellow fringe. Legs black with yellowish pilosity, tibiae I in front with black hairs, scopa with yellowish pilosity, penicillus black-brown, tarsi I and III interiorly with red pilosity, calcar yellowish. Wings shaded, veins black-brown, tegulae black, with long black hairs. — Length 17-18 mm., width 6 mm. — Palestine".

I saw a female specimen of this species from FRIESE'S collection (Mus. Berlin) labelled type (though from Syria, not Palestine) that fully agrees with the above description, showing the rather long and bristly pilosity of the abdomen, in which the grey hairs of the tergites from II onwards are profusely mixed with black hairs, and tergite V is laterally set with ferruginous to brown hairs, and exteriorly, like the hind tibiae, clothed with dirty yellow-grey hairs; the puncturation of the tergites is denser than in *dispar*, and they show, especially tergite II, a slight metallic bronze lustre; the sternites have a fringe of ferruginous hairs, the clypeus is in the middle narrowly smooth.

So far I did not come across this species, though ALFKEN records it from Egypt (no locality given), saying that the female (length 17.5 mm.) is characterized

by its broad, compact abdomen, and the pilosity of it which is rather even, long, white-grey and has *no black hairs at the base of tergites III and IV*. The white bands at the apices of tergites I-IV are narrower than in *A. speciosa* and are less conspicuous among the white-grey hairs; tergite V shows dense black pilosity. The plate of tergite VI is shorter and broader than in *A. speciosa*, the fine transverse sculpture is less distinct and there is a very fine and dense puncturation visible. The labrum has a dense ferruginous pile (in *A. speciosa* less densely greyish). ALFKEN also briefly described a male that he tentatively put to this species. It is structurally identical with *A. dispar* and *A. speciosa*, but has vertex, thorax and abdominal segment I clothed with ferruginous, the remaining tergites evenly clothed with grey-white, hairs, only on tergite V there are black hairs among the others. Length 16.5 mm.

ALFKEN'S statement that the Egyptian female specimen he examined had no black hairs on the tergites III and IV does not agree with the type specimen FRIESE'S I saw; ALFKEN'S specimen may be a variety or even another species.

***Anthophora niveiventris* Friese**

1916. *Anthophora agama* Storey (nec Rad.), Min. Agric., Techn. Bull. 5, p. 17.

1919. *Anthophora robusta* var. *niveiventris* Friese, *Deutsche Ent. Zeitschr.*, p. 279.

FEMALE : 16-17 mm. Black. Face and temples with moderately long white, vertex on the hind margin transversely with wholly black, pilosity. Thorax covered with grey hairs, i.e. white and black hairs mixed, at the base of the scutellum with a transverse row of black hairs. Propodeum clothed with white hairs. Abdomen covered with raised hairs which are on the tergite I grey-white, on II white and black mixed, on III and the following tergites increasingly and predominantly black; the tergites possess complete, sharply defined apical fasciae of white hairs, on tergite V the pilosity is white on the sides, black or blackish-brown in the broader middle. Head and thorax are clothed beneath with grey-white hairs. Fore legs with black to grey pilosity, apex of tibiae with small pale hair-spot, middle and hind tibiae exteriorly with silvery whitish-grey pilosity, the metatarsus II exteriorly shining, with decumbent black pilosity and with a few white hairs between, metatarsus III exteriorly for the major part with silvery whitish-grey, interiorly with black (along the middle somewhat brownish), pilosity. Tegulae dark brown, margins paler.

Clypeus rugosely punctured, with median line somewhat smoothed. Antennal joint 3 very long and fine, abruptly thickened at the apex, four to five times as long as broad, longer than the four following joints together, nearly as long as the 5 following joints. Wings slightly shaded, in the cells of the fore margin only anteriorly slightly pubescent, distinctly so only in cell r 1. Veins black. Nervulus interstitial.

Male unknown.

HABITAT : Mariout, Matrouh, in February and March.

Among the fasciated species having raised pilosity of the abdomen and a white scopa can this large one only be compared with *atricilla aegyptorum*; but in this species the pilosity of the tergites II and III is decumbent and pruinose, and also developed somewhat at the base of the 2nd tergite, the tergite IV has no white band in the middle of its margin, and the labrum and clypeus have a pale ground-colour. *A. senescens* is much smaller, has much less sharply defined fasciae of the abdomen, shorter antennal 3, a.s.o.

In the collection of the Ministry of Agriculture this species bore the name *agama* Rad., a species differing not only by the yellowish pilosity of the thorax and tergite II, but especially by the yellow labrum, and partly yellow clypeus and mandibles.

I was able to examine one of FRIESE'S type specimens, and thus to give a full description from this and a few other specimens of the local collections.

Anthophora mucida Gribodo

1873. *Anthophora mucida* Gribodo, *Bull. soc. ent. Ital.*, V, p. 80 (female).

1897. *Podalirius mucidus* Friese, *Bienen Europas*, III, p. 230 (male and female; fig.).

MALE : Length, 15-16 mm. Black, antennal joint 1 beneath, labrum and clypeus yellow, frontal area and sides of frons narrowly yellow, clypeus with two black spots that are obtusely angled interiorly. Mandibles black. Joint 5 of middle tarsi with a slight brush, metatarsi slender. Tarsal joints 2-4 and base of 5 yellow. The fasciae on tergites II and III weaker than in the female, otherwise the pilosity as in the female, though even tergite I having a row of black hairs across the hind margin.

Clypeus strongly protruding, with a slight median carina and a weak transverse carina on either side in front, the three very blunt elevations are joined in the middle behind the fore margin of the clypeus. Antennal 3 as long as the three following joints together. Tergite VII at the beginning conical, at the apex only somewhat parallel-sided and then truncate, without pointed angles.

FEMALE : 16-17 mm. Black. Frons predominantly clothed with whitish, vertex so with black, temples with white, hairs. Thorax covered with grey hairs strongly mixed with black hairs; underside with white, propodeum with grey-yellow raised hairs, as well as the tergites I and II, the latter mixed with black hairs, tergites IV and V with black, only at the sides with longer white hairs. Sternites with white fringe. Legs exteriorly with white, metatarsus III interiorly with blackish-brown pilosity, a fascia on the tergites (I-) II and III white.

Clypeus protruding, densely punctured, with (sometimes scarcely) smoothed median keel. Antennal joint 3 not much longer than the three, distinctly shorter than the four following joints combined. Genae developed. Wings pubescent in cell r1. Nervulus interstitial.

LOCALITY : I saw a single male specimen of this species in the Vienna Museum, collected by FRAUENFELD in Alexandria (1855). Hitherto no further Egyptian specimens are known.

Anthophora albosignata Friese

1886. *Podalirius albosignatus* Friese, *Termeszetr. Füzetek*, XIX, p. 265 (male and female).

1897. *Podalirius albosignatus* Friese, *Bienen Europas*, III, p. 233 (fig.).

1916. *Anthophora albosignata* Storey, *Min. Agric. Techn. Bull.*, 5, p. 17.

1926. *Anthophora albosignata* Alfken, *Senckenbergiana*, VIII, p. 102.

MALE : Length 12.5 - 13 mm. Black, antennal joint 1 beneath and face white, clypeus blackened at base in such a way that white narrowly triangular sides of the frons separate it from the orbits; fore margin of the clypeus narrowly black; mandibles black, labrum white. Pilosity of the face white with the exception of some black hairs above at the orbits; pilosity of the vertex, the thorax above and laterally, the tergites I and II ferruginous or yellow, raised, the following tergites with raised black pilosity. Tibiae for the major part clothed with black hairs, also the metatarsus III, the apical margin of which and the tarsal joints 2-4 exteriorly with whitish or grey hairs. Metatarsus II without fan, joint 5 with distinct hair-brush.

Genae developed. Antennal joint 3 more than four times as long as thick at the apex where it is abruptly widened; joint 3 being as long as the four following joints together. Puncturation of the tergites very fine. The anterior wing cells pubescent only near the fore margin. Nervulus interstitial. Tergite VII with slender, parallel-sided, terminal plate that is indistinctly excavated in a very flat triangle, at the apical margin.

FEMALE : 13-14 mm. Black. Pilosity of head, thorax and abdomen on tergites I and II ferruginous to yellow. Tergites usually only at the sides of II and III (exceptionally also on IV) with a fine, often indistinct white fringe of hairs, segments III and following like the sternites with raised black hairs. Legs clothed with black hairs, those on metatarsus III are rather long; at the extreme base of the posterior edge of the hind tibiae with a few paler hairs.

Clypeus with more or less conspicuous median keel. Antennal 3 abruptly thickened at tip, longer than the four following joints, almost five times as long as broad. Tegulae dark, wings somewhat shaded, pubescence as in the male. Apical tergite finely transversely aciculated.

HABITAT : *A. albosignata* was hitherto collected only at the northern coast (Mariout, Mersa Matrouh; March to May) where it is not rare.

The males and females agree with the description given by FRIESE (1897, l. c.) and the former also with the specimens in the collection of the Vienna Museum, identified by FRIESE. Some specimens of my collection were identified as *albosignata* by ALFKEN.

Anthophora tenuicilata Alfken

1926. *Anthophora tenuiciliata* Alfken, *Senckenbergiana*, VIII, p. 101, 118 (male and female).

ALFKEN gave the following description of this species (in German) :

"FEMALE 14-15 mm. long. Very closely allied to *A. caroli* Pér. and extremely similar to it. Labrum with white, in *A. caroli* with black pilosity. Face below antennae with grey-white, in *A. caroli* with yellowish pile, particularly distinctly at the cheeks. Pleurae towards the sternum with white or yellowish, in *A. caroli* with black, hairs. Tergite II of the abdomen with short and loose grey pilosity, like being covered with a light down, in *A. caroli* with black hairs. Tergites I and II with a very fine fringe-like fascia at the hind margin, in *A. caroli* without such a fascia. Tergites III and IV mostly punctured to the margin, in *A. caroli* smooth and unpunctured in the middle of the apical margin, though this character is inconstant".

"Male 14 mm. long. The yellowish-white labrum with very narrow black margin, in *A. caroli* broadly margined with black so that a trapezoidal yellow-white spot appears from the black. Spots at the base of the clypeus small, in *A. caroli* large. Ultimate tarsal joint of mid legs without brush, in *A. caroli* with distinct black brush. With regard to this character I could examine only 1 male of the species described, that was not in perfect condition".

"*A. tenuiciliata* agrees with *A. caroli* in almost all sculptural characters, the female particularly in the characteristic median keel on the clypeus, and in the red pilosity of the thoracic dorsum and the 1st abdominal tergite. But it is morphologically different so much so that it represents a proper species".

"J. PÉREZ erroneously sent a female of *A. tenuiciliata* under the name of his *A. caroli* to FRIESE. FRIESE gave the description of *A. caroli* in his key (Bienen Europas, III, p. 28) from this specimen. *A. caroli* Friese (sc. p. 28) is therefore a synonym of *A. tenuiciliata*, but not *A. caroli* Friese l. c. p. 98, the latter being a copy of the description given by PÉREZ. From SCHMIEDEKNECHT I received a female from Jericho".

Unfortunately, ALFKEN'S *A. tenuiciliata* remained a puzzle to me. I have not seen the types, but only a specimen (male) in ALFIERI'S collection bearing ALFKEN'S original label : "*A. tenuiciliata*". This specimen reveals the following characters :

MALE : Length 13 mm., width of thorax about 7 mm. Black, antennal joint 1 beneath, face and labrum pale yellow, clypeus at base and sides black so that the pale triangular sides of the frons are separated. Face with white, vertex, thorax and tergites I and II with raised rufiginose pilosity, the hairs on the thorax posteriorly, and on tergites I and II being longer; III and following tergites with black raised pilosity, hind margin of tergite II, and slightly also of III and IV with some marginal yellowish hairs between the black. Under side of femora with dirty-white, sternites at the sides with long white, hairs. Tibiae at the exterior margin and

specially at the apical margin with dirty yellow hairs, on the face of the tibiae the dark ground being visible everywhere. The slender posterior metatarsus shining, set with scattered brown hairs, exteriorly with longer black hairs, apex of metatarsus and the joints 2-4 with a brush of pale hairs. Wings slightly shaded, cells only near fore margin with fine pubescence; veins black.

Clypeus sparingly and shallowly punctured. Genae well developed. Antennal joint 3 clubbed at apex, more than three times as long as broad. The reddish apical joint of tarsi II with distinct brush, but its black hairs not much raised. Nervulus interstitial. Tergite VII representing a slender reddish plate that is exteriorly somewhat concave on each side and shows a very shallow excavation at the apical margin and has very short, pointed angles laterally.

HABITAT : Nouzha, 10. iii. 1919 (coll. ALFIERI) ; an identical male, Alexandria, 17. ii. 1918 (leg. CARNERI, coll. Min. Agric.).

The above described male is extremely similar to *A. albosignata* Fr. so much so that I cannot distinguish it from the latter except by the white hairs mixed with the black ones at the margins of the tergites III and IV, the white hair-stripe at the margin of the black scopa and by the slightly larger size. Since ALFKEN compares his *A. tenuiciliata* with *A. carcli* (and not with *A. albosignata*) we have to assume that *A. tenuiciliata* belongs like *A. caroli* in FRIESE'S subgenus *Amegilla*, i.e. that it has rudimentary genae, while the male specimen described above by me, identified by ALFKEN with *A. tenuiciliata*, has distinctly developed genae and is most closely allied to *A. albosignata*.

Moreover, under the name of *A. tenuiciliata*, possibly identified by ALFKEN, but not bearing his label, there is a female (in coll. Min. Agric.) exhibiting the following characters, and most likely belonging to the above male :

FEMALE : Length 13.5-14 mm. Black, pilosity of face white, of vertex yellow to ferruginous. Thorax and abdominal tergites I with short raised ferruginous, but without black, hairs; tergite II with very short raised grey hairs that are mixed posteriorly with dark hairs so that it does not contrast much from the following tergites which bear black hairs. Posterior margin of tergite I (little) and II with a very fine fringe of white hairs, the extreme sides of tergites IV and V showing a few white hairs. Sternites almost wholly clothed with dark hairs. Middle tibiae and metatarsi II exteriorly with dark hairs, mixed with some white hairs. *Hind tibiae exteriorly* with brown to ferruginous hairs, hind margin with dark hairs, metatarsus III with rubiginose hairs at base, rest with black hairs.

Genae developed. Labrum and clypeus densely and rugosely punctured, with a smooth median keel. Antennal 3 very long, nearly five times as long as broad, and nearly as long as the five following joints combined. Wings slightly shaded, cells close to fore margin of fore wing pubescent, a few hairs also in cell m 3. Nervulus interstitial.

HABITAT : 1 female, Alexandria, 21. iii. 1926, leg. A. ALFIERI, coll. Min. Agric.).

This female is very close to *A. albosignata*. If *A. tenuiciliata* is really a species closely allied to *A. caroli* the species described by me is yet unknown. This problem cannot be solved until ALFKEN's types of *A. tenuiciliata* will be examined.

Anthophora cinereiceps Alfken

1812. Unnamed. Savigny, Description d'Egypte, pl. I, fig. 4 (male).

1838. *Anthophora nigrilabris* Spinola, Ann. Soc. Ent. France, p. 546 (male).

1926. *Anthophora cinereiceps* Alfken. Senckenbergiana, VIII, pp. 102, 124.

MALE : 14-15 mm. Black, tarsal joints 2-5 reddish, also tibiae and metatarsi may be dark red transparent. Antennal joint 1 yellow below, clypeus with conical yellow median stripe, frontal area narrowly yellow, fore margin of clypeus brownish, labrum with more or less broad yellow median stripe that is narrowed towards apex and does usually not reach it; the sides of the face are therefore broadly black. Mandibles black. Pilosity : Clypeus with white, orbits above and vertex with more or less black, hairs, thorax and tergites I and II with raised grey, the remaining tergites with black, hairs, and some raised white hairs at the hind margins, but without fasciae. Sternites with mixed pilosity. Tibiae and metatarsi clothed exteriorly with semidetached dark, at the margins and at the apex with longer white and dark, hairs. Joint 5 of tarsi II with quite inconspicuous brush, i.e. with some black semi-erect hairs on both sides. Wings only slightly shaded, veins dark.

Clypeus finely punctured, shining in the middle, protruding; labrum only slightly transverse. Genae developed. Antennal joint 3 abruptly thickened at tip, scarcely three times as long as broad, somewhat shorter than the three following joints combined. Nervulus about interstitial. Tegulae pubescent. Tergite VII ending in a slender, parallel-sided plate that is only very slightly emarginated at the apex.

FEMALE : 16-17 mm. Black, hind femora and venter sometimes dark reddish. Pilosity of the labrum partly whitish, partly brownish, clypeus with mixed pilosity, brownish in the middle, whitish laterally and above, vertex with mixed pilosity. The grey pilosity of the thorax is strongly mixed with dark hairs, the sides of the propodeum and the tergites I and II show paler, the tergite III and the following tergites bear a black, raised, pilosity, the margins are finely and indistinctly fringed with white, but have no bands, only the sides of the tergites IV and V have some longer white hairs.

The sternites are laterally fringed with white. Hind tibiae and base of metatarsus III exteriorly clothed with more or less dark *ferruginous* hairs.

Clypeus medially with a punctured longitudinal callus. Nervulus interstitial. Tegulae shining, blackish. Antennal joint 3 more than four times as long as broad, as long as the four following joints combined.

HABITAT : The species was taken from November to April at Nawa, Giza, Meadi and Helouan.

Specimens of this species, described by ALFKEN in 1926, were about 10 years later identified by him with *orientalis* Mor. In the Vienna Museum I saw specimens of *orientalis* Mor. from Sicily and Corfu, identified by FRIESE. These represent, as the description given by MORAWITZ shows too, a smaller species (male 12 mm, female 12-13 mm) in which the female is clothed with yellow-grey hairs on the thorax and the tergites I and II; the hairs on the abdomen are longer and more strongly raised, the sternites show no pale hairs at the sides, the scopa is paler ferruginous. In the male of *orientalis* the clypeus is yellow with black angular basal spots that are fused with the black sides of the frons; the brush of the 5th midtarsal joint is stronger, the tergites show laterally at the hind margins no pale hairs, and the 3rd antennal is somewhat longer than the three following joints, although the whole antenna appears shorter than in *cinereiceps*.

In the collection of the Ministry of Agriculture there are specimens of *cinereiceps* labeled "*cinereiceps* Alfken. = *nigrilabris* Spin". Although this was correct, ALFKEN altered his opinion later on assuming that *nigrilabris* Spin. (1838, *Ann. Soc. Ent. France*, p. 546, male) was identical with *lanata* Klug (= *canescens* Alfken, nec Brullé). In SPINOLAS paper (l. c.) the name *nigrilabris* appears twice, having been used for two different species, thus *nigrilabris* (p. 546, male) is preoccupied by *nigrilabris* (p. 543, female). The latter species has to keep the name and cannot be renamed, as DALLA TORRE did (*saropodoides* DT.), the former, published on a later page is the one identical with *cinereiceps*, as can be seen from the description.

Anthophora lanata (Klug)

1845. *Megilla lanata* Klug, *Symb. phys.*, Dec. 5, Ins., pl. 49, fig. 4 (female).

1897. *Podalirius lanatus* Friese, *Bienen Europas*, III, p. 206.

1926. *Anthophora canescens* Alfken (nec. Brullé), *Senckenbergiana*, VIII, p. 101 (male).

1930. *Anthophora nigrilabris* Alfken (nec Spin.), *Stettiner Ent. Zeit.*, 91, p. 224 (male).

MALE : Length 14-15 mm. Black; labrum, clypeus in the middle, a narrow, transverse (not triangular) frontal area and antennal joint 1 beneath, yellow; sides of clypeus and its fine fore margin, 2 dots at base of labrum, black. Face clothed with long white, orbits with black, hairs. Vertex, thorax and abdomen with raised, whitish-grey pilosity, black hairs only sparingly present on the thorax; on the abdomen such black hairs are only from tergite III onwards more profusely intermixed. Under side and legs with long white hairs. Exterior face of tibiae and the metatarsi little densely set with whitish hairs, only the apices of the joints with denser pilosity.

Clypeus finely and densely punctured, the punctures of unequal size. Antennal 3 abruptly thickened at tip, about three times as long as broad, and as long as the three following joints combined. Tegulae blackish. Wings pale, only cell r 1 pubescent. Nervulus only very slightly prefurcal, nearly interstitial. Apical

segment of the middle tarsi thickened, with black hairs on both sides, though this brush is not very conspicuous. Metatarsi slender, parallel-sided, straight. Tergite VII somewhat conical, sides slightly concave, the face finely, somewhat rugosely punctured, at the apex above with a slight horse-shoe-shaped impression, or margin slightly reflexed, apex truncate, sides not pointed.

FEMALE : Length 17-18 mm. Black. The whole body with raised grey pilosity which is only on the thorax mixed with black hairs, hairs of the abdomen purely white-grey. Middle tibiae at the exterior margin, hind tibiae and metatarsus III exteriorly everywhere clothed with long *ferruginous* hairs. Tergite V in the middle with rust-brown to dark brown hairs.

Clypeus with smooth median keel. Genae developed. Antennal joint 3 slender, abruptly thickened at tip, at least four times as long as broad, well as long as the four following joints combined. Tegulae brown with yellowish margins. Wings nearly hyaline, only cell r1 pubescent. Nervulus as in the male.

HABITAT : Northern coast (Alexandria, Amriah, Borg-el-Arab, Mersa Matruh), February-March.

On account of the dense, grey-white pilosity of the abdomen, any apical fasciae are not noticeable, and by this character *lanata* may easily be distinguished from either *speciosa* or *dispar*.

ALFKEN originally held this species to be *canescens* Brullé, but corrected this error (l.c. 1930) in the opinion to have rediscovered SPINOLA's *nigrilabris*. However, this species agrees much better with *cinereiceps* Alfken.

Anthophora atriceps Pérez

1879. *Anthophora atriceps* Pérez, *Actes Soc. Linn. Bordeaux*, XXXIII, p. 139 (male).

1895. *Anthophora atriceps* Pérez, *Espèces nouvelles mellifères Barbarie*, Bordeaux, p. 3 (male and female).

1897. *Podalirius atriceps* Friese, *Bienen Europas*, III, p. 220 (fig.).

1916. *Anthophora atriceps* Storey, *Min. Agric., Techn. Bull.* 5, p. 18.

1926. *Anthophora atriceps* Alfken, *Senckenbergiana*, VIII, p. 101.

MALE : 11-12 mm. Body inclusive of face and antennae black, the intermediate tarsal joints yellowish, the margins of the tergites somewhat brownish. Pilosity of clypeus and labrum whitish-grey, of frons black (mixed with a few white hairs), thorax and tergites I and II clothed with long raised white hairs that are mixed on the scutellum with black hairs, the rest of the abdomen bears only black raised hairs. Tegulae blackish-brown. Wings hyaline, veins dark. The tibiae exteriorly clothed with black and few grey, the posterior and apical margin with white hairs; metatarsus III slender, with white hairs at the apex, otherwise dark; metatarsus II with fan that is weaker than in *A. sicheli* Rad., tarsal joint 5 only exteriorly with a series of black raised hairs, the brush, therefore, not full. Sides of thorax with

white, under side with black hairs. Tegulae blackish-brown, wings clear, slightly shaded towards apex.

Clypeus somewhat protruding but little convex, densely punctured. Antennal 3 thin, abruptly widened at tip and there rather broad so that it is not quite three times as long as broad, joint 4 transverse. Wing cells nearly bare, only in cell r1 a few microscopic hairs. Nervulus very little prefurcal. Tergite VII with slender conical plate which is truncate at the apex and scarcely emarginated, and the surface of which is dull, hardly punctured.

FEMALE : Length 11-12 mm. Black. Face, thorax, tergites I (and II) of the abdomen with raised white, the tergites I-V laterally at the posterior margins with very distinct semi-attached pilosity so that fasciae appear which are always broadly interrupted in the middle. Hind tibiae exteriorly clothed with long white, only at the upper (posterior) margin with brownish hairs. Metatarsi II and III with black hairs. The posterior sternites laterally with a white fringe.

Clypeus densely punctured, with indistinct median carina. Antennal 3 very slender, thickened at apex, about four times as long as broad, and as long as the four following joints together. Genae developed. Wings as in the male.

HABITAT : Northern coastal region (Alexandria, Dekheila, Mariout, Mersa Matrouh), fairly common (February-April).

This species may hardly be confused with any other one, with the exception of *sicheli* Rad. in the male sex, in which the pilosity of the frons is more extensively white and in which there are no black hairs among those of the scutellum. *A. sicheli* is not yet known from Egypt.

Anthophora arabica spec. nov.

MALE : 13.5-14 mm. Black, antennal joint 1 beneath, a narrow, transverse frontal area, the clypeus medially (broadly in front, narrowly behind), a fine short line at the orbits, *white*; the clypeus has therefore two large black spots united with the black sides of the frons; also the sides of the clypeus anteriorly and the *labrum* are *black*. Frons, clypeus and labrum densely clothed with long white hairs, the orbits with some black hairs, and the vertex profusely mixed with black hairs and therefore appearing grey, like the thorax. Tergites I and II with grey erect pilosity, II with very few, III and IV with more black hairs towards the hind margin, V only with black hairs on the disk, but the extreme sides with white raised hairs; loose postero-marginal bands of white colour are present on tergites I-IV. Under side with white-grey pilosity. Tibiae and tarsi at the hind margin with loose and raised long white hairs so that the dark ground becomes visible everywhere; tips of the hind tibiae and metatarsi III with short white pilosity, the interior face of the metatarsi with short black pilosity. Calcaria brown. Tegulae testaceous, darker within.

Genae developed. Sides of frons touching the mandibles. Clypeus strongly elevated, puncturation because of the dense pile not visible. Labrum little trans-

verse. Antennal joint 3 thin with club-like apex, more than three times as long as broad, about as long as the four following joints together. Pubescence of wings only in cell r 1 conspicuous. Nervulus nearly interstitial. Tergites between the raised pilosity shining, tergite II very finely and densely set with somewhat rough punctures. Margins of the tergites pale transparent. Plate of tergite VII slender, almost parallel-sided, with flat, almost triangular excision so that there appear at the angles two very short and small, somewhat rounded lobes. Hind tibiae somewhat convex exteriorly with a short, not very sharp tooth-like lobe at tip.

HABITAT : One specimen (holotype) ♂ discovered in the Wadi Umm Assaad (9. iv. 34) on *Stachys aegyptiaca*, another equal specimen (paratype) is in the collection of the Ministry of Agriculture, and was taken (21-25. iii. 35) in the Wadi Galala (leg. Farag). Both specimens are in perfect condition.

The holotype was identified by ALFKEN with *A. nigrilabris* Spin. I am, however, of the opinion that ALFKEN's species *cinereiceps* much better agrees with *nigrilabris* Spin. (sc. male. l.c., p. 546), since joint 5 of the middle tarsi has in this species a distinct black lateral pilosity (brush) which is not the case in both specimens of *arabica*. The male of *cinereiceps* differs from *arabica*, besides, by the lack of conspicuous abdominal fasciae on the tergites (I-) II-IV, the much more distinctly contrasting posterior abdominal segments, i.e. contrasting against segments I and II, the not so distinctly angular hind tibiae, the larger size and the much shorter antennal joint 3.

Anthophora desertorum spec. nov.

MALE : Length 11-11.5 mm. Black, tarsal joints 2-5 yellowish-brown at base; antennal joint 1 beneath, a narrow, transverse frontal area, clypeus, labrum (except the fine margins and 2 basal dots), yellow, sides of frons black but with small yellow line at the orbits; margin of clypeus towards the sides of the frons lined with black at base but *without black angular basal spots*. Mandibles black. Frons, sides of clypeus and labrum with long raised white, orbits with black, vertex with mixed, pilosity. Thorax clothed with long grey — and few black — hairs, tergites I and II with long grey-white raised hairs, tergites III-V with such black hairs; sides and especially posterior margins of the tergites with long white hairs, tergite VI at middle with nearly decumbent black pilosity. Under side of body with raised white pilosity or fringes, respectively. Middle and hind tibiae on a black ground clothed with little dense white, margins and apices of the hind tibiae and metatarsi with dense and somewhat decumbent white hairs; base of metatarsus III exteriorly with a few long white hairs, interior face with brownish hairs. Tarsal joint 5 of mid legs with a distinct brush of black semi-erect hairs. Wings hyaline, veins black, tegulae dark brown. Calcaria darkened.

Clypeus strongly protruding; convex, shining, laterally densely, medially less densely, punctured. Labrum little transverse. Antennal 3 abruptly thickened

at the apex, about three times as long as broad, and about just as long as the three following joints combined. Sides of frons reaching base of mandibles. Genae moderately well developed. Thorax and abdomen very finely punctured, the former dull, the latter shining. Wings only in cell r1 with a few setulae. Nervulus interstitial. Tergite VII produced into a narrow, nearly parallel-sided, plate the apical margin of which has a shallow, nearly triangular excavation so that distinct angles are formed.

FEMALE : Length 11.5-12 mm, width 4-4.3 mm. Black, tegulae dark. Face with raised white, vertex with mixed, thorax with grey-white and little black raised pilosity. Tergites I and II clothed with raised grey-white, tergite III with mixed, the following tergites mainly with black, hairs, and narrow, nearly decumbent postero-marginal fasciae on the tergites I-IV; tergite V with black to brown pilosity, only at the sides with white hairs. Under side grey-white, sternites fringed with white hairs at the sides, somewhat darker ones in the middle. Hind tibiae exteriorly with bristly white pilosity, like the posterior metatarsus on which the dark ground is not quite covered by the hairs; the interior face of the metatarsus shows a dense reddish-brown pile. Wings as in the male or margins darker, cell r1 with conspicuous, cells m1 and sc with indistinct pubescence.

Clypeus with dense, rugosely granulated puncturation, and with a fine, smooth, median keel. Antennal joint 3 thin, abruptly thickened at tip, well four times as long as broad, and about as long as the four following joints combined. Thorax dull, abdomen shining.

HABITAT : Valleys of the Eastern Desert (Wadi Umm-Assad, Wadi Hof, Wadi Rasheed, Wadi Garawi, Wadi Abu Gufân, Wadi Abu Zoleiga), March-April.

The male of this species was identified with *A. orientalis* Mor., by ALFKEN. However, I could examine male specimens of *orientalis* in the collection of the Vienna Museum, identified by FRIESE. In these, the posterior tergites do not show any pale hairs, the 3rd antennal is longer than the three following joints combined, the clypeus has black basal spots and the apical margin of the VIIth tergite is rounded. Females of our new species were in the 20'ies named *calcarata* Lep., by ALFKEN, though he corrected this identification in giving to specimens of the same insect, collected later by myself in the Wadi Umm Assad, the two tentative names : *rogenhoferi* Mor. and *cinerea* Friese, indicating herewith that he could not make up his mind on the identity of this insect. Specimens of *A. rogenhoferi* Mor. (in coll. Mus. Vienna) show that this species differs from *desertorum* by its larger size (12-13 mm), purely black pilosity on tergite III, the white marginal bands being conspicuous only on tergite II, but very fine on the posterior tergites, in having wholly black hairs on the sternites and no keel on the clypeus. *A. cinerea* Friese is not identical either, as I could see from original specimens (Sarepta, det. FRIESE). It is a larger species too (12-13 mm, width of thorax 5-5.5 mm) and the abdominal fasciae of the female are more distinctly raised. The new species has as to the female sex also to be compared with *calcarata* Lep., but the presence of black hairs on

the tergites I and II in the latter species which has, though recorded, not yet been found in Egypt, and the not carinated clypeus easily distinguish it from *desertorum*.

Anthophora facialis spec. nov.

MALE : Length 11-12 mm. Black. The whole face densely covered with black, vertex with grey, its sides and the temples with black hairs. Pilosity of the thorax grey (or perhaps also yellowish-grey), that of the tergites I-III of the same colour, without black hairs, of tergite IV at base predominantly grey, distally black, of V and VI black; hairs of abdomen long, raised. The whole under side with raised black pilosity. All legs covered with black hairs, this pilosity becoming denser towards the end of the middle and hind tibiae. Tegulae dark. Wings hyaline, veins black.

Genae developed, moderately long. Clypeus finely rugosely punctured. Antennal joint 3 more than three times as long as broad, rather abruptly widened at the tip. All wing cells bare. Nervulus interstitial. Joint 5 of mid tarsi with some semi-erect black hairs at the sides, though not with a very distinct brush. Tergite VII without carina but with a fine sulcus about in basal half, apically ending in two reddish tips that are separated by a comparatively narrow triangular excision.

FEMALE : Length 13-14 mm. Black. Head clothed in front with black, vertex with grey, thorax and tergites I and II with short raised grey hairs, tergite III and following tergites with short, raised black pilosity. The whole under side and the legs set with black hairs. Tergite VI (of the unique specimen) reddish at base, at the sides with short reddish hairs. Tegulae dark. Wings as in the male, cell r1 with a few microsetae.

Clypeus with dense and fine rugose puncturation, dull, with sharp median carina. Puncturation of the tergites extremely fine. Tergite VI narrow, sides slightly concave, face very finely transversely chagreened. Antennal joint 3 as long as the four following joints together.

HABITAT : One male and one female (18. iii. 35 and 9. iv. 34, respectively), Wadi Umm Assad, leg. H. PRIESNER.

ALFKEN examined the two specimens but did not name the male; the female he labeled : “ ? *romandi* Lep. or spec. nov. ”, suspecting already the new species. *A. romandi* Lep. which I saw in the Vienna Museum (det. FRIESE) is a larger and broader species, its antennal joint 3 is somewhat shorter than the 4 following joints combined, and the head and sides of the sternites are distinctly set with *white* hairs.

Anthophora scopipes Spin.

1838. *Anthophora scopipes* Spinola, *Ann. soc. ent. France*, VII, p. 545 (male).

1897. *Podalirius fulvitaris* var. *scopipes* Friese, *Bienen Europas*, III, p. 171.

1926. *Anthophora scopipes* Alfken, *Senckenbergiana*, VIII, p. 101, 121 (male and female).

MALE : Length 15.5-16 mm. Black, tibiae somewhat reddish transparent or brown, middle and hind metatarsi distinctly ferruginous, tarsal joints 2-4 and

base of 5 ferruginous, the margins of the abdominal tergites and sternites pale, transparent, particularly tergite II. Antennal joint 1 beneath, the whole face, a transverse frontal area and the mandibles (with darkened tips), *white*. Labrum with two dark basal dots. Pilosity of face and temples dirty white and raised, of vertex, thorax and tergites I and II pale yellow or ochrous; on thorax and abdominal segments I and II the hairs are short. Tergites III-VI with short and inbetween some longer black hairs, tergites VII with ferruginous hairs. Tergite II shows a very delicate white apical fringe of short white hairs. Pilosity of the legs yellow to ferruginous, at the margins raised. Tegulae yellow to ferruginous. Wings almost hyaline, veins dark. Margins of sternites II and III with a yellow fringe at the sides.

Clypeus strongly protruding, with sparse and shallow puncturation. Labrum with fore margin rounded, somewhat transverse. The triangle of the sides of the frons reaches the base of the mandibles. Antennal 3 abruptly thickend at apex, moderately long, not quite three times as long as broad. The raised hairs on the 2nd tergite are distinctly plumose. Metatarsi very slender, joint 5 of middle tarsi with a disk-like black brush. Tergite VII with slender ferruginous plate that is truncate at the apex, scarcely emarginated, its apical angles are not acute, the face is finely carinated longitudinally. Wings only in cell r1 distinctly pubescent. Nervulus very slightly prefurcal.

FEMALE : Length 16-17 mm. Much broader. Black, with brown or dark ferruginous clypeus and labrum, and reddish middle of the mandibles; the antennal joints 1 and 2 may also be brownish. Legs dark ferruginous. Pilosity of the body dull yellow, vertex with a few black hairs. Thorax with short raised grey-yellow to ferruginous pilosity, and not very strongly mixed with black hairs. Tergite I clothed with raised yellowish hairs, tergite II as well, but the hairs of it short, plumose and more grey than yellow; tergite II with a fine, whitish, marginal hair-line, and in front of this with somewhat decumbent black pilosity; tergite III with very short black hairs, IV as well, but with longer raised black hairs in addition; tergite V with dense, velvety black pilosity, hind margin with reddish, sides with longer such hairs. Margins of the sternites at the sides fringed with white-yellow, in the middle with ferruginous, hairs.

Labrum coarsely and rugosely, clypeus moderately coarsely and densely punctured, with smooth median line. Antennal 3 almost four times as long as broad, as long as the four following joints together.

HABITAT : Wadi Digla, Wadi Umm Assad, Wadi Hof, Wadi Rasheed, Wadi Galala, (March-April).

This species forms together with the following two species (*spinolana* and *flabellata*) a special sub-group. It was erroneously placed as a variety to *A. fulvitaris* Brullé, by FRIESE. This author had obviously never seen Egyptian specimens, but based his opinion only upon the description given by SPINOLA.

ALFKEN (*Senckenbergiana*, VIII, p. 120, 1926) correctly recognized the species, or better, the species-group since it appeared that there exists not only one, but that there are three similar but distinct species of one group.

The question arises now which of the three species represents the true *scopipes* of SPINOLA, and which of them agrees with the one more fully described by ALFKEN (l. c.). One of the three species has the face yellow and can, therefore, neither be SPINOLA'S nor ALFKEN'S *scopipes*, because both authors describe the face as white. For the yellow-faced one, which is obviously a new species, I suggest the name *flabellata* sp. n. The female of this species was labeled "aff. *agama* Rad." by ALFKEN — who received it singly, i.e. without males — and this tentative identification shows his uncertainty about this form, the female of which actually differing much from the two other species.

I assume that SPINOLA'S *scopipes* is identical with the one of the two white-faced species which has yet recognizable fine white bands on the posterior margins of the tergites, since SPINOLA compares his species with the figure given by SAVIGNY (Descr. d'Egypte, pl. I, fig. 3) : "Mais celui-ci est plus grand; les bandes blanches de son abdomen sont mieux prononcées". This probably means that in SPINOLA'S species there were abdominal fasciae, though narrow, yet recognizable. SPINOLA'S *scopipes* cannot be therefore the one of my species having no bands at all, and which I am describing below under the name of *spinolana* sp. n. I should like to remark, however, that SAVIGNY'S figure 3 does not at all refer to a species of the *scopipes* group, but most likely to *A. aegyptiaca* DT. et Fr., since the metatarsus of the mid leg of the species illustrated shows a brush of hairs while in all species of the *scopipes*-group such a fan is entirely absent.

A. scopipes, as described by ALFKEN, is most likely identical with that of SPINOLA, especially on considering the description of the male (white face, transparent posterior margins of the tergites). It is also certain, however, that the specimens of ALFIERI'S and my own collection, as far as they were examined by ALFKEN, comprise all three species; they were all labeled "*scopipes*" by ALFKEN who obviously regarded the grey colour of *spinolana* as having faded out, although these specimens are quite fresh ones.

ALFKEN'S *scopipes* is, therefore, identical partly with *scopipes* Spinola (male and female), *flabellata* (male) in sched. and *spinolana* (male and female) in sched.

Anthophora spinolana spec. nov.

MALE : 14-15 mm. Black, apical margins of the abdominal tergites not transparent; tips of fore tibiae, the hind tibiae and metatarsi often reddish transparent, tarsal joints 2-4 and base of 5 ferruginous. Face, a spot at the base of the mandibles and the 1st antennal joint beneath, white. Head with white, thorax and abdominal tergites I and II with short, raised, grey-white pilosity, without

intermixed black hairs; pile of tergite I somewhat longer than on the remaining segments; tergites III-VI with raised black pilosity which strongly contrasts against the greyish colour of head, thorax and tergites I and II, the greyish hairs on tergites I and II are plumose for the major part, at the apical margin, however, they are nearly decumbent and paler, but there are no fasciae present. Sternites, especially at the sides, slightly fringed with white hairs, thorax beneath with whitish hairs. Legs, inclusive of coxae, clothed with ferruginous hairs which are rather long at the hind margins. Joint 5 of middle tarsi not thickened, but, like in *scopipes*, with a large, disk-like, black hair-brush. Tegulae testaceous, sometimes darker interiorly. Wings hyaline, veins black.

Clypeus little protruding, densely punctured, little shining. Labrum transverse, coarsely rugose, shining. Genae developed. Sides of face ending on the same level as the sides of the clypeus. Antennal 3 somewhat knobbed at tip, not quite three times as long as broad. Wings only in cell r1 distinctly pubescent. Nervulus interstitial. Metatarsi slender. Tergite VII apically forming a rather broad plate which is truncate and slightly undulated at the apical margin, and the hind angles of which protrude only very slightly so that there appears no distinct tooth; the surface is pubescent and finely carinated longitudinally.

FEMALE : Length 14-15.5. mm. Apart from the secondary sexual characters it is very similar to the male. Face and antennae black. Antennal 3 more than 4 times as long as broad, as long as the four following joints combined. Pilosity of the body as in the male, at the end of the abdomen segment VI shows, besides the black ones, some red hairs. Margins of the sternites with white fringe, posteriorly in the middle with ferruginous fringe. The legs are in their ground colour mostly darker than those of the male.

HABITAT : This species was collected at the northern coast as well as in Middle Egypt (Kerdasa, Abu Rowash, Manshiet-el-Bakri, Giza Pyramids, Helouan). December-March. (Types in my collection, paratypes in coll. Min. Agric. and ALFIERI).

Though similar to *A. scopipes* Spin. it is at once distinguished by the greyish colour of the pilosity of the anterior body, the lack of fasciae of white hairs on the tergites, the uniformly coloured i.e. not apically transparent segments; in the male it differs, besides, by the structure of segment VII of the abdomen.

***Anthophora flabellata* spec. nov.**

MALE : Length 13-15 mm. Black, middle and hind tibiae more or less dark brown, tarsi reddish brown to ferruginous, ultimate joints darkened towards their apices. Margins of sternites and tergites broadly pale transparent, tergite VII almost wholly ferruginous. Antennal joint 1. beneath, frontal area, sides of face, clypeus and labrum, yellow, mandibles reddish-brown with yellow basal spot; suture between clypeus and sides of frons lined with black; the yellow sides of the frons

have a black spot at the base so that they appear emarginated there. Head clothed with white, vertex at the sides with some black hairs; thorax with yellowish-grey hairs, moderately mixed with black hairs, tergite I with long, tergite II with short (plumose) yellowish-grey hairs; tergites II and III (and laterally also IV) with very fine white marginal fascia of decumbent hairs, tergites III-V with raised black hairs, VI and VII at the margins with ferruginous hairs. Tegulae testaceous to ferruginous. Wings hyaline, veins dark brown. Legs clothed with decumbent and erect ferruginous hairs, joint 5 of the middle tarsi like in *scopipes*. Calcaria yellow.

Clypeus protruding, rugosely punctured, shining; labrum very little transverse, strongly shining. Genae developed, moderately long. Antennal 3 much thickened at the apex, scarcely three times as long as broad. Metatarsi very slender. Terminal plate of tergite VII rectangular, with dark median carina, the apical margin almost straight, scarcely noticeably excavated. Tergites and sternites strongly shining, the former moderately densely punctured, the latter very finely chagreed, very indistinctly punctured. Nervulus very slightly prefurcal.

FEMALE: 13-14.5 mm. Black, middle of mandibles and labrum brown, all legs reddish-brown, sometimes the fore legs darkened, tergites and sternites of the abdomen broadly pale transparent at the margins. Frons and temples clothed with raised whitish, vertex with mixed, and thorax with (moderately long) yellowish-white and black hairs. Tergite I with raised grey-ferruginous, tergite II with short raised such pilosity, tergite III on the disk with very short raised black hairs. Very fine white fasciae are present on tergites I-IV, which are full on II and III, medially interrupted on IV; tergite V posteriorly with broadly reddish or ferruginous, tergite VI at the base with black, at the sides with reddish-brown, pilosity. Sternites fringed with ferruginous hairs, with a few white hairs laterally. Legs bristly clothed with ferruginous hairs. Wings slightly shaded, with pubescence in cell r1.

Clypeus densely and rugosely punctured, with fine, smooth median keel. Antennal 3 abruptly thickened at tip, well four times as long as broad and about as long as the four following joints together. Apical tergite slender, finely margined. Nervulus interstitial or slightly prefurcal.

HABITAT: Wadi Umm Assad, Wadi Hof, Wadi Gerawi, Wadi Hussein. March and April. (Holo- and Allotype, from Wadi Umm Assad and Wadi Gerawi, respectively, in the author's collection; paratypes in the collections of the Ministry of Agriculture and ALFIERI'S).

The male of this species differs from *scopipes* and *spinolana* by the yellow (instead of white) face, the fine line of white hairs on tergites I-III (-IV); from the latter, besides, by the transparent posterior margins of the tergites, and the slender apical plate of tergite VII. The female is distinguished from *scopipes* by the fine white-haired hind margin of the tergites II and III, and the patch of ferruginous hairs on tergite V, from *spinolana* by the yellowish-grey pilosity of the thorax, the presence of narrow white bands on the abdomen and the transparent hind margins of the tergites.

***Anthophora hispanica* (F.)**

1787. *Apis hispanica* Fabricius, Mant. Ins., I, p. 300.
 1897. *Podalirius hispanicus* Friese, Bienen Europas, III, p. 193, fig. (male and female); further references.
 1916. *Anthophora hispanica* Storey, Min. Agric., Techn. Bull. 5, p. 18.
 1926. *Anthophora hispanica* Alfken, *Senckenbergiana*, VIII, p. 101.

MALE: Length 18-21 mm. Black, face yellow with two black basal spots that are fused with the sides of the frons, the orbits narrowly triangularly yellow; fore margin of clypeus lined with black; labrum with two black basal dots. Mandibles black. Antennal joint 1 yellow below. Face with raised yellowish pilosity, a few black hairs at the insertion of the antennae and on the vertex which is clothed with ferruginous hairs. Thorax and tergites I and II clothed with reddish-brown to ferruginous short raised hairs; tergites III and the following tergites, as well as the venter clothed with black, the legs mainly with black, the posterior margin of the hind tibiae also with some paler and *longer*, hairs. Middle tibiae behind with long, loose fringe, metatarsus II with a curled fan having the shape of a triangle. Metatarsus III at base of the hind margin with long and not dense hairs. Sides of the thorax with brown to ferruginous hairs, femora beneath with paler or grey-white pilosity. Calcaria brown. Tegulae pale brown to ferruginous. Wings almost hyaline, veins black.

Clypeus strongly protruding, finely, little densely punctured; labrum shining, very finely, sparingly punctured, almost as long as broad. Genae well developed. Antennal 3 knobbed at the apex, about 4 times as long as broad. Only r1 of the wing cells distinctly pubescent. Tergite VII narrowed towards apex where it is truncate, and above at the apex with two shallow foveolae.

FEMALE: 19-20 mm. Very similar, the whole underside and the legs, as well as the tergites from III onwards with black, frons with mixed, yellowish-grey and black pilosity, the black one near the base of the antennae and on the vertex.

Clypeus with coarse and dense puncturation, and smooth median line. Antennal 3 about five times as long as broad, about as long as the five following joints combined. Nervulus interstitial.

HABITAT: Northern belt (Borg-el-Arab, Ikingi; February-April).

By the large, triangular hair-fan of the middle metatarsus this species is very characteristic in the male, the female, however, being very similar to *A. alferii*, differing by somewhat larger size, thicker metatarsi, more distinctly raised pilosity of the legs, and the greater number of pale hairs on the head.

***Anthophora alferii* Alfken**

1942. *Anthophora alferii* Alfken, *Veröff. dtsch. Kolon. Mus. Berlin*, p. 209.

MALE: Length 16.5-17 mm. Black. Face clothed with black, vertex partly with black, partly with red hairs, thorax and tergites I and II with short ferruginous

to yellow, tergites III-VI with black pilosity; on tergite II there are longer black hairs intermixed posteriorly; although the whole abdomen shows raised pilosity, the hairs are short, only those on the tergites IV-VI are longer. Legs and under side of body clothed with black hairs.

Clypeus somewhat flattened in front, in the shape of a low triangle, somewhat transversely rugosely punctured, shining. Labrum with two basal lateral calli. Genae well developed. Antennal 3 fine, abruptly thickened at tip, more than four times as long as broad, almost as long as the four following joints together. Tegulae testaceous. Wings pale, veins dark, only cell r 1 pubescent. Nervulus interstitial. Legs slender, metatarsi long and thin, exteriorly sparingly set with long black hairs. Tergite VII with narrow, slightly conical terminal plate that is slightly sinuated at the sides near the apex so that it becomes slightly broader again at the apex, the apical margin being truncate; the dorsal face is more finely punctured, nearly smooth, and shining towards the apex.

FEMALE : Length and pilosity as in the male, the pale parts also varying from ferruginous to yellow. Clypeus somewhat smoother in the middle than at the sides but without median keel. In fresh specimens there is a very fine white hair-line visible at the margin of tergite II, which is pale ferruginous on tergite I. All legs and under side with black pile.

HABITAT : Suez Road, Meadi, Wadi Umm Assad, Wadi Hof, Wadi Rished, Wadi Gerawi, Wadi Hussein, Wadi Abu Handal, Wadi Zoleiga, Wadi Rishrash; Oasis Baharia; Sinai.

The female comes very close to *hispanica*, chiefly differing by somewhat smaller size, slenderer, less bristly haired legs and, as a rule, paler pilosity of the head. The male differs by the slenderer legs, the lack of the metatarsal fan, and smaller size.

The species is extremely close to *A. cyrenaica* Gribodo (*Boll. Mus. Zool. Torino*, XXXIX, p. 5, 1925), the male of which being represented by *A. caelebs* Grib. (l.c., p. 6), and is probably identical with it. However, the identity could only be confirmed by direct comparison. ALFKEN has obviously overlooked the description of *A. cyrenaica*, or else he would have referred to the great similarity of the two forms.

Group III (*wegelini*)

Anthophora wegelini Friese

1914. *Anthophora wegelini* Friese, *Stett. Ent. Zeitg.*, LXXV, p. 218.

1916. *Anthophora* sp. Storey, *Min. Agric., Techn. Bull.* 5, p. 18.

1926. *Anthophora ambigua* Alfken (nec Pérez), *Senckenbergiana*, VIII, p. 101.

MALE : 10.5-11.5 mm. Black; margins of the tergites (in rubbed specimens) whitish-yellow transparent; antennal joint 1 beneath, clypeus in front and in the

middle to base, frontal area transversely, sides of frons narrowly (V-shaped), yellow; mandibles with yellow dot or short line; labrum yellow with two black basal dots and dark fore margin. Wings hyaline, veins black. Head with dense white raised pilosity so that the ground is nearly wholly covered; vertex laterally near the orbits with only a few black hairs. Thorax and abdomen with raised white pilosity, without black hairs on the thorax or with single such hairs at the scutellar base; abdomen always without black hairs, apical bands moderately broad, conspicuous, in the middle somewhat broader than at the sides. Legs with decumbent and raised white pilosity, metatarsus III exteriorly thinly set with white hairs so that the dark ground is visible everywhere, only the apex more densely white. Tegulae dark brown to black. Calcaria yellow.

Clypeus protruding. Antennal 3 about 2.5 times as long as broad, as long as or scarcely longer than joints 4 and 5 combined, abruptly thickened at tip. Wings little pubescent at the fore margins of cells m1 and sc, distinctly so in cell r1. Tergite, VII with two conspicuous fine teeth that are separated by a semi-circular excision without carina.

FEMALE : Length 9-10.5 mm. Black. Pilosity as in the male, only the thorax with a few black hairs, especially some at the scutellar base. Abdomen without black hairs on segments I-V, only in the middle of V with a cushion of black hairs. Hind tibiae and metatarsi clothed with coarse slightly raised hairs, sternites with white fringe, only in the middle with more or less darker fringe.

Clypeus convex, with fine to moderately coarse puncturation. Antennal joint 3 thin, abruptly thickened at tip, about four times as long as broad and about as long as the four following joints together. Tegulae yellow-brown to brown. Tergite VI without carina, dull.

HABITAT : The species is common all over Egypt, also in the oases, and it is one of the first species to appear, i.e. it starts to fly after the first rains about the middle of December, and continues until March. It is commonly seen hovering about *Zilla spinosa* (6).

The females had been confused with other similar species, e.g. *A. priesneri*; this species can be distinguished by the yellowish tinge of the white pilosity, the more densely punctured, less shining clypeus and the intermixed black hairs on the tergites III-IV.

ALFKEN referred this species (*wegelini*) to *ambigua* Pér. I cannot agree to this synonymy, since PEREZ indicates that *ambigua* has black hairs on the disk of the abdominal tergites, and tergite V shows at least at the sides black hairs. *A. wegelini* comes in its pilosity much closer to *rivolettii* Pér., also an Algerian species, which PEREZ compares with *ambigua*, stating that the fasciae of the abdomen of *rivolettii* are in the middle broader than at the sides, tergite V at base with white hairs (not black as in *ambigua*). *A. rivolettii* differs from *wegelini* in the female by

(6) Not *Scilla* (cf. ALFKEN, *Senckenbergiana*, VIII, p. 101; 1926.

the distinctly carinated clypeus, and the extraordinarily elevated pygidium that ends in a sharp carina (cf. PEREZ, Esp. nouv. Mellif. Barbarie, Bordeaux, 1895, p.2).

My specimens of *wegelini* are identical with specimens in the Vienna Museum, labeled "types" by FRIESE. Similar to *wegelini* is *A. cucicularia* Friese (*Stettiner Ent. Zeitg.*, LXXV, p. 219; 1914) from Biskra. However, this species is somewhat larger, the white bands of the tergites are somewhat narrower than in *wegelini*, and all across of about equal breadth, the clypeus is rugosely punctured, not shining in front, the thorax has some black hairs in its white pilosity, on tergite IV there is at base a transverse row of black hairs, segment V is in the middle more profusely clothed with black hairs, the cushion being therefore larger, and this segment is only at the sides white; the sternites show, besides the loose white marginal fringe, distinctly some brown hairs in the middle. The male of *cucicularia* has only a few black hairs on the thorax, but such hairs are distinctly intermixed in the white pile of the tergites III and IV; in general, the pilosity is somewhat longer, especially on the thorax, and has a slightly yellowish tinge; the posterior metatarsus is slightly curved. I have examined the types in the collection of the Berlin Museum (male, 27. i. 1894, female 16. ii. 1894).

Anthophora extricata spec. nov.

MALE : Length 9.5-11.5 mm. Black; antennal joint 1 beneath, labrum (with 2 black basal dots), clypeus in front and in the middle to base, frontal area, sides of frons (V-shaped as in *moricei*) and, as a rule, a small dot on the mandibles, yellow. Clypeus shining, in front sparingly set with coarse and fine punctures. Pilosity of the face long white, on the vertex with a yellow tinge, on orbits and vertex mixed with black hairs. Pilosity of the thorax long raised greyish-yellow, on account of the many black hairs among the white-yellow ones. Tergite I only with raised pale hairs, tergite II besides, with a transverse row of black hairs before apical margin, tergites III-V with more black than pale hairs. The white bands of the tergites are narrower than in *wegelini*, and are not distinctly broader in the middle than at the sides; the pale yellow apical margin of the segments is only on V visible, because on the anterior segments the margins are covered by the fasciae, as in *wegelini*. Femora with long raised hairs, hind tibiae with decumbent white hairs, becoming denser at the apex, interior face of the hind tibiae with mixed, vertically erect, hairs. Wings hyaline, veins black; cells little pubescent, only indistinctly so at the anterior margin of the wing. Nervulus about interstitial. Under side of the body clothed with white hairs. Antennal 3 fine, rather abruptly thickened at the apex, about three times as long as broad, longer than the two following, but distinctly shorter than the three following segments combined. Calcaria yellow. Tergite VII with two fine yellow teeth that are separated by a round excavation; the teeth are as slender as in *moricei*, finer and sharper than in *wegelini*.

Larger male specimens (f. *clavatipes* nov.) have somewhat more strongly enlarged hind femora and tibiae, but do not differ in any other character, so that I am not inclined to regard them as a separate species.

FEMALE : Length 9-10 mm. Black, tarsal joints more or less paler. Pilosity in general yellowish-grey, on the under side of the body and the abdominal fasciae more whitish. The pale hairs of frons, sides of frons and vertex, and of the thorax too are profusely mixed with black hairs. On all abdominal tergites are black hairs visible among the white, though only few on tergite I; tergite V has white hairs only at the sides. The white or slightly yellowish-white bands of the tergites I-IV are narrow, narrower than in *wegelini*. Legs exteriorly greyish-yellow-white. Wings scarcely shaded, veins black, pubescence as in the male. Clypeus finely punctured and somewhat shining, as in *wegelini*. Antennal 3 fine, abruptly thickened at tip, well four times as long as broad, longer than the three, but somewhat shorter than the four following joints together. Tergite VI narrowly conical, somewhat shining, slightly convex in the middle, finely margined, not carinated.

HABITAT : I know more than a dozen specimens of this species which I collected (February-April) in the Wadi Digla. There is a male specimen from Kosseir (February) in the coll. Ain Shams University, and one from Wadi Hof (March) in the collection of the Ministry of Agriculture.

In the male, this species differs from *A. wegelini* by the slenderer 3rd antennal joint, the partly dark pilosity along the whole orbits, the presence of black hairs in numbers on the thorax and the tergites, the narrower, evenly wide fasciae of the tergites, and the slight yellowish tinge of the hairs on thorax and abdomen. The female can be distinguished from that of *wegelini* by the narrower transverse bands of the abdomen, especially the yellowish tinge of the pilosity and in that the 3rd antennal joint is distinctly more slender; in the nuance of the coloration it equals *A. priesneri* which has, however, the clypeus dull, very densely and rugosely punctured and with a slight median carina, and has longer pilosity of the abdomen. *A. cunicularia* Fr. (from Biskra) is larger (11-12 mm.), its pilosity is grey (not yellowish-grey), the clypeus is densely rugosely punctured, it does not possess any black hairs on the tergites II and III, only IV showing near base a transverse row of long black hairs, antennal 3 is little longer than the three following joints together; only the venter is in the middle similarly set with black hairs, and only the marginal fringe being pale.

Anthophora moricei Friese

1899. *Anthophora moricei* Friese, *Ent. Nachrichten*, XXV, p. 322, (male and female).
1926. *Anthophora moricei* Alfken, *Senckenbergiana*, VIII, p. 101.

MALE : Length 8-9 mm. Black, face pale yellow, blackenings much as in *wegelini*, the sides of the frons anteriorly somewhat more yellow and the mandibles black, seldom with the trace of a yellow dot. Pilosity as in *wegelini*, i.e. thorax and

vertex with only very few black hairs, and the abdomen in the typical form dorsally and ventrally without black hairs. The pale marginal fasciae of the tergites narrower than in *wegelini*. Calcaria yellow.

Antennal 3 much shorter than in *wegelini* or *extricata*, scarcely more than twice as long as broad. Puncturation of the tergites little dense but fine. The small teeth of the tergite VII are comparatively somewhat longer and more widely separated, by a rather *straight* interval.

FEMALE : Length 8-9.5 mm. Black with whitish pilosity below and above, on the vertex there are some black hairs also in the middle, and the thorax shows more black hairs than in *wegelini*. Abdomen with raised and decumbent white hairs, on tergite IV there are only a few black hairs intermixed, on V they are numerous. Tegulae testaceous to brown, margin paler.

Antennal 3 not quite three times as long as broad. Clypeus rather coarsely punctured, shining, medially convex lengthwise, but without keel, or a keel is indicated only in basal half. Nervulus almost interstitial. Cells m1, r1 and sc distinctly pubescent, at least at the fore margins.

I know specimens (from Wadi Digla, Kosseir) in which the tergites II and III too possess some black hairs between the normal white ones in front of the white fasciae. There is no other difference to be seen, especially the antennae are the same as in the many other specimens of the species I could examine. I think it advisable to give this form a name : var. *nigripilis* nov.

HABITAT : Common in the desert valleys and at the borders of the Arabian desert. X-IV. Also in Upper Egypt and in the Elba mountains.

A. moricei differs from all the species of this group by its smaller size and the considerably shorter, i.e. less elongate, antennal joint 3.

***Anthophora priesneri* Alfken**

1916. *Anthophora* spec. near *calcarata* Storey, Min. Agric., Techn. Bull. 5, p. 18.

1932. *Anthophora priesneri* Alfken, *Mitteil. Dtsch. Ent. Ges.*, III, no. 8, pp. 122-124.

MALE : Length 9-11 mm. Black, tarsal joints 2-5 yellowish. Antennal joint 1 beneath, frons broadly V-shaped, frontal area, clypeus, labrum (with 2 dark basal spots) and mostly a dot on the mandibles, whitish; sides of the clypeus at the frontal suture to the mandibles with black line. Head covered with raised yellowish-white pilosity that is grey on the vertex, mixed with black hairs. Thorax clothed with raised yellowish-grey pilosity mixed with black hairs. Hairs on tergites I and II of the same colour but black hairs are only present on II towards the hind margin, while tergites III-VI bear chiefly black hairs; the hind margins show narrow adpressed dirty-white bands. Venter with long raised whitish-yellow hairs. Sides of body, femora and tibiae with raised pale pilosity too, on the hind tibiae it is decumbent and only at the hind margin towards apex somewhat denser and semi-erect. Calcaria yellow. Tegulae testaceous.

Genae short. Clypeus somewhat protruding, its puncturation fine and dense. Labrum very moderately transverse. Antennal joint 3 about three times as long as broad. The almost hyaline wings are distinctly pubescent at the fore margins of cells *mi*, *rl* and *sc*. Veins black. Trochanters of hind legs with a hump, femora strongly enlarged, at the base with a broad blunt tooth, in the middle with a longitudinal carina that is convex in profile; hind tibiae much widened towards apex, with two sharp inferior edges, one of them ending in a long, pointed often pale tooth, the inner edge with a short small tooth at the apex. Lower face of the tibiae between the edges shining, sparingly punctured and setose. Tergite VII with two very short small pale teeth which are separated by a broad, straight interval.

FEMALE : Length 10.5-11 mm. Black, tarsal joints 2-5 ferruginous to brown. Pilosity of the body dirty-yellow-white, vertex and thorax with mixed pilosity, as in the male; tergite I with pale pilosity, tergite II mixed with longer black hairs, the pale hairs are somewhat plumose. Tergite V with black velvety cushion in the middle, VI not carinated, only finely margined along the sides, fasciae of the tergites are somewhat narrower than in *wegelini*. Hind tibiae and posterior metatarsus moderately densely set with rather long, semi-erect whitish-yellow hairs, venter at the sides with a loose white fringe, in the middle with shorter, ferruginous hairs. Calcaria yellow.

Clypeus dull, extremely densely rugosely punctured, median carina mostly visible, fine. Antennal 3 four times as long as broad, thickened at the apex, almost as long as the four following joints together. Pubescence of wing cells as in the male. Nervulus interstitial.

HABITAT : In the valleys of the Eastern Desert (Wadi Umm Assad, Wadi Digla, Wadi Hof, Wadi Rasheed, Wadi Abu Zoleiga, Wadi Gerawi; Sinai; Gebel Elba (October, January-April), probably during the whole winter). I found it hovering over *Stachys aegyptiaca*.

The female of the species differs at first sight from *wegelini* and *borgensis* by the not white or white-grey but yellowish-white-grey pilosity; from the former species, moreover, by the black hairs that are mixed with the pale ones, on the tergites, from the latter also by the denser pilosity of the tergites, and the adpressed pilosity of the fasciae which are loose and raised in *borgensis* which has black hairs on the sternites too and is a bit larger. The males cannot be confused with any other species on account of the structure of the hind legs. *A. moricei* (female) is much smaller, has considerably shorter antennal 3, and has shining clypeus.

***Anthophora zanoni* Grib. var. *borgensis* nov.**

1925. cf. *Anthophora zanoni* Gribodo, *Boll. Mus. zool. Torino*, XXXIX, N.S. XVI, p. 15 (male).
 1926. cf. *Anthophora zanoni* Gribodo, in Zanon, *Mem. Acc. Nuovi Lincei* (2) 8, p. 71.
 1932. *Anthophora calcarata* Alfken (partim), *Mitt. Deutsche Ent. Ges.*, III, no. 8, p. 124.

MALE : 10.5-11.5 mm. Black, clypeus, labrum, antennal joint I beneath yellow; clypeus dark at base and the sides so that there remains a broad yellow

median stripe and yellow fore margin, with a black line against the labrum; sides of frons with an upright flat yellow triangle, and frontal area narrowly transversely yellow; labrum yellow with large dark basal spots. Mandibles black. Face clothed with long white, laterally with black hairs, vertex with grey, i.e. mixed pilosity, like the thorax. Tergites I and II with grey-white raised hairs, III and following tergites with white and black hairs, under side with white hairs. Legs not very densely clothed with partly raised hairs, on the tibiae and metatarsi the dark ground remaining distinctly visible, hind margins and apices of tibiae and metatarsi with denser white pilosity, femora with white hairs. Tergites without pale fasciae. Calcaria yellow to brown, margined with black. Wings slightly shaded, veins black. Tegulae dark brown.

Antennal joint 3 thin, abruptly thickened at tip, well three times as long as broad, and about as long as the three following joints together. Hind femora enlarged, with a pointed tooth at base and a blunt flattened hump in the middle of the lower margin; hind tibiae inferiorly excavated lengthwise, shining, the exterior edge produced in a long very sharp tooth, the interior edge with a somewhat shorter tooth. Metatarsi slender, with reddish pilosity within. Wings distinctly pubescent in the cells m1, r1 and sc. Nervulus interstitial. Tergite VII with two short small teeth which are separated by a broad interval. Genae short, but visible.

FEMALE : Black. Face in the middle with grey-white, laterally with black hairs, also thorax and abdomen as in the male whereby tergites I and IV possess almost only white, the other tergites mixed, hairs. The raised pilosity of the abdomen is denser at the hind margins, but these hairs are not wholly attached, like in *desertorum*, but slightly raised. Tergite V with black hairs in the middle. The sternites show reddish hairs in the middle of or near the hind margins. Metatarsi exteriorly with somewhat raised whitish hairs.

Clypeus with coarse and rugose puncturation, *without* median carina. Antennal 3 rather abruptly thickened at tip, almost four times as long as broad, and about as long as the four following joints combined. Wings as in the male.

HABITAT : This species is known only from the northern coast (Alexandria, Dekheila, Borg-el-Arab), from February to March.

The male of *zanoni* is rather similar to *A. calcarata* Lep. which latter species has narrow fasciae of *decumbent* hairs on the tergites II - V, and in which the tergites II and following are predominantly black in their pubescence; the sides of the face are more distinctly V-shaped yellow, the basal femoral tooth is longer and the hump at the middle less conspicuous, in *calcarata*. The pilosity of the abdomen looks much less bristly, in *calcarata*. The female of *calcarata* is characterized by *decumbent* fasciae, and its clypeus is much more rugose in its puncturation than in *zanoni*. In *calcarata* all abdominal tergites are in front of the bands profusely clothed with black hairs, while in *zanoni* the 1st tergite shows no black hairs, the tergites II-IV much less black hairs, only those of tergite V being black. I had examined specimens of *A. calcarata* (from Algeria and Tunisia) identified by FRIESE. The

females of *A. desertorum* m. which had also been confused with *zanoni*, differ in having a medially smoothened clypeus, distinct fasciae of white decumbent hairs on the tergites and bare cell ml of the fore wing; the pilosity of the tergites II and III is much shorter than in *zanoni*.

Our Egyptian form comes no doubt very close to *A. zanoni*, as described by GRIBODO (l.c.) from Libya, and is perhaps a race of it; it only differs by the white pile in the middle of the face, on the under side of the anterior body, and on the femora; according to GRIBODO, the head and the under side of *zanoni* are clothed with grey, the femora with black hairs. In the armature of the hind legs *borgensis* seems to agree with *zanoni*.

Group IV (blanda)

Anthophora blanda Pérez

1812. Unnamed, Savigny, Descr. Egypte, pl. I, fig. 10 (female).

1895. *Anthophora blanda* Pérez, Espèces nouvelles mellifères Barbarie, Bordeaux, p. 1 (male and female).

1897. *Podalirius blandus* Friese, Bienen Europas, III, p. 163.

1899. *Podalirius spinipes* Friese, Ent. Nachrichten, XXV, p. 321 (male and female).

MALE : Length 13-13.5 mm. Black, antennal joint 1 beneath, clypeus, sides of frons, frontal area, yellow; clypeus with dark median basal spot, besides, the base of the suture between clypeus and sides of frons blackened. Flagellum dark brown. Face with yellow, vertex, thorax and abdominal tergite I with raised ferruginous or yellow pilosity, without black hairs; tergites II-V with very narrow postero-marginal band of decumbent yellowish hairs, on the disk with *short* raised black hairs. Middle tibiae and metatarsus exteriorly with adpressed, at the margins with raised, white-yellow hairs, hind tibiae and metatarsus III exteriorly with decumbent and not very dense greyish-yellow hairs. Margins of the sternites with dense, semierect whitish pilosity.

Genae linear. Clypeus strongly protruding, labrum only moderately transverse, straight in front. Clypeus with fine dense, in the middle somewhat scarcer, puncturation. Antennal 3 rather abruptly thickened at tip, about three times as long as broad or a little more. Metatarsus II very slender. Trochanter III shortly triangularly produced, hind femora strongly enlarged, hind tibiae as well, the latter inferiorly with two longitudinal edges, the inner of which forming a blunt angle before apex and being excavated from this spot to the apex; the outer edge ending convex. Calcar short. Metatarsus III double-edged too, the inner edge straight and ending in a pointed tooth, that is separated from the tip of the metatarsus by a deep emargination. Terminal tarsal joint long. Tergite VII convex, with two converging carinae

towards apex, each of which terminating in a short point; the two points are separated by a roundish interval. Tegulae dark. Wings slightly shaded. Nervulus interstitial, cells with pubescence only at the fore margins of m1, r1 and sc.

FEMALE : Length 11-12 mm. Wholly black. Pilosity of head and thorax as in the male, sides of thorax and sternites whitish. The thorax has many black hairs between the pale ones. Tergite I clothed with white hairs at the sides, the white bands at the margins of the tergites II-IV narrow, but broadening towards the sides; tergite V only laterally with white hairs. Hind tibiae and metatarsi exteriorly with rather coarse, white to yellow-white pilosity. The tergites show on the disks (of II and following) a *very short* raised black pilosity.

Clypeus convex, slightly protruding, with dense, somewhat rugose puncturation, without distinct median keel. Antennal 3 somewhat more than three times as long as broad, almost as long as the four following joints together, its apex not so abruptly thickened.

HABITAT : Uncommon; Cairo, Marg, Kafr el-Dems, Assiout. March-April.

The types of FRIESE'S *A. spinipes* (male, Cairo, 13. iii. 1899; female, Cairo, 4. iv. 1899) of the Berlin Museum are exactly identical with the specimens of our collections, of *A. blanda* Pér., identified by ALFKEN.

Group V (*lutulenta*)

Anthophora lutulenta (Klug)

1845. *Saropoda lutulenta* Klug, Symb. phys., Dec. 5, Ins., pl. 50, fig. 5 (female).

1897. *Podalirius lutulentus* Friese, Bienen Europas, III, p. 107.

1926. *Anthophora tenella* Alfken (nec Klug), *Senckenbergiana*, VIII, p. 101.

MALE : Length 8.5-9.5 mm. Black, fore tarsi brown, joints 2-4 and base of 5 of the middle and hind tarsi yellow. Antennal joint 1 beneath and face very pale yellow (but not white), tips of mandibles reddish. Flagellum brown below. Face clothed with raised white, head below with long white, thorax with raised white, hairs, having a yellowish tinge, as well as the 1st tergite of the abdomen; the following tergites are black at base and have narrow, yellowish - white or dirty-white bands; the tergites II-IV show in front of the bands laterally slightly raised pale hairs, and, besides, tergite II possesses some pale raised hairs on the disk. Sternites with whitish fringe, sternite IV in the middle broadly velvety ferruginous. Tibiae and tarsi exteriorly clothed with adpressed whitish hairs, below with longer white hairs; on the metatarsus III the ground is visible under the pilosity, and there are, in addition, single slightly raised hairs present; *interiorly* the metatarsus is clothed with *ferruginous* hairs. Joint 5 of the middle tarsi shows a distinct brush of black hairs. Wings as in the female. Calcaria yellow.

Labrum almost as long as broad, clypeus slightly protruding, in the middle with a slight about triangular callosity but without keels, puncturation weak, shallow. Antennal 3 about 1.5 times as long as broad, 4 transverse, much shorter than 5. Tergite VII yellowish, carinated lengthwise, produced into two broad triangles that are separated by an irregular arch or a distinct angular excision.

FEMALE : 9-9.5 mm. Width of head 3.6-3.8 mm. Black, tarsal joints 2-4 and base of 5 testaceous to brown. Flagellum of antennae beneath ferruginous to brown. Face whitish-yellow, i.e. labrum, mandibles (tips brown), clypeus and frontal area; sides of frons black; clypeus either with only very small basal spots or with slightly larger spots which are angular within, though they never occupy more than half of the length of the clypeus. Head with short white raised pilosity, thorax as well but with a slight yellowish tinge; black hairs are wanting or only singly present about the scutellar base. Tergite I with raised and attached grey-yellowish-white hairs, the following tergites similar in colour but II and III without, raised hairs; however, there is a fine black transverse band (sometimes also on tergite I) present across the middle of these segments; slightly raised hairs are scarce, especially on the penultimate tergites; the apical margin of the Vth tergite shows a slight velvety cushion of ferruginous to brown hairs in the middle, and not a transverse row of hairs, as in *fayoumensis*. Sternites, particularly the apical ones, with white fringe and hairs. Middle tibiae predominantly with decumbent, hind tibiae and metatarsus III exteriorly with slightly raised, whitish hairs, interiorly with yellowish to ferruginous hairs. Tegulae yellow. Wings hyaline, veins yellow at base, brown towards apex (about from stigma onwards).

Labrum somewhat transverse, coarsely sculptured, with indistinct median carina. Clypeus finely and densely punctured, but in some cases the puncturation fused to longitudinal wrinkles; there is no smooth keel visible but a slight convexity along the middle. Antennal 3 about twice as long as broad or slightly less, 4 and 5 transverse, 3 somewhat shorter than the three following joints together. Cells of wing very indistinctly pubescent near fore margin of cells m1 and r1. Nervulus interstitial.

HABITAT : Not rare (Borgash, El-Mallah, Mansuriah, Kerdasa, Abu Rowash, Wadi Umm Assad, Wadi El-Tih, El-Saff), February-May.

A certain variability noticeable in this species might indicate that we have to deal with different very similar species; especially the form having somewhat longitudinally rugose clypeus and some black hairs on the thorax. Perhaps the female of *A. helouanensis* is hidden among the others. But all these doubts can only be dispersed when more material will be available. In any case, *A. lutulenta* is an interesting subject for further investigations.

ALFKEN held this species to be *A. tenella* Klug. However, if one compares with the two figures given by KLUG : *lutulenta* (fig. 5) and *tenella* (fig. 6) it becomes clear that only the species having a distinct dark transverse line on the tergites II (and III) and having an interstitial nervulus agrees with *lutulenta*. KLUG gives the

sizes as being equal in both species (9 mm.), but from the illustration it appears that the head of *tenella* is smaller than that of *lutulenta*. The examination of Klug's type, which I owe to the courtesy of Dr. STEINBACH of the Berlin Museum, shows that the species described above is the true *lutulenta*, and is not *tenella* (q.v.).

Anthophora helouanensis spec. nov.

MALE : Length 9 mm. Width of head 3.6 mm. Black, tarsal joints 2-4 and base of 5 ferruginous, flagellum beneath brown, not ferruginous; antennal 1 beneath, the whole face (labrum, mandibles, clypeus, frontal area and sides of frons) pale yellow, tips of mandibles reddish. Wings hyaline, veins brown except those on extreme base which are testaceous; cell m1 distinctly pubescent at the fore margin, r1 and sc scarcely so. The short raised pilosity of the face whitish, of the vertex yellow-white, of the thorax and tergite I raised and yellowish-grey, without black hairs; the following tergites with black pilosity, and I-VI with narrow white postero-marginal bands on yellowish segmental margins; tergite II distinctly loosely set with raised white hairs, the following tergites sparingly set with short such hairs. Middle and hind tibiae exteriorly with decumbent whitish hairs, below with raised such hairs; metatarsus III exteriorly little densely, at the margins more densely, clothed with decumbent whitish hairs, with some semierect pale hairs, *interiorly with yellowish-white pilosity*. Calcaria yellow. Sternites III and IV transversely in the middle with a yellowish velvety tomentum, fringed at the margins, VI emarginated in the middle. Tegulae ferruginous.

Genae not developed. Labrum slightly transverse, anteriorly somewhat broader than at base, i.e. slightly trapezoidal, shining, with moderately coarse, shallow puncturation. Clypeus not protruding, with slight dorsal convexity and medially rather dense, laterally less dense, puncturation, shining. Antennal 3 short, nearly 1.5 times as long as broad, 4 little transverse, 5 and following joints somewhat longer than broad. Puncturation of the abdominal tergites very dense, the punctures like being pricked in from behind. Tarsal joint 5 of mid legs distinctly enlarged but without black hairs, bare. Nervulus interstitial or slightly postfurcal. Tergite VII dark, above with grey-white pilosity, broadly conical in shape and with median carina; at the apex with bluntly triangular broad teeth that are separated by an obtusely angled excision.

HABITAT : 1 male, Helouan (1. iv. 1938), leg. H. PRIESNER.

This male is similar to that of *lutulenta*, but lacks the brush hairs on tarsal joint 5 of the mid legs, has a white (not ferruginous) pilosity of the inner face of the 3rd metatarsus, and has by an obtuse excision more widely separated, blunt teeth of tergite VII. It is possible that the yet unknown female of this species is one of those questionable varieties of *lutulenta*.

***Anthophora elbana* spec. nov.**

MALE : Length 8.5-9.5 mm. Black, joints 2-4 and base of 5 of middle and hind tarsi ochrous. Antennal joint 1 beneath, the whole face (frontal area, sides of frons, clypeus, labrum and mandibles), ivory-white (not yellow). Flagellum dark. Wings hyaline, costa and veins at base ochrous. Clypeus and sides of face densely clothed with white hairs so that the ground is almost covered. Thorax with raised white, and tergite I laterally with such pilosity, tergites I-IV with narrow white postero-marginal bands upon yellowish transparent margins; in front of the fasciae, i.e. on the disk, the tergites are clothed with black but also with grey decumbent hairs almost everywhere, though tergite II shows a few long raised white hairs too. Middle and hind tibiae and middle tarsi exteriorly with decumbent white hairs, the posterior metatarsus *exteriorly and interiorly with black* pilosity. Joint 5 of middle tarsi with a conspicuous disk-like brush of black hairs. Tegulae ochrous.

Labrum transverse. Clypeus distinctly somewhat protruding, finely and densely punctured, the puncturation, though, almost covered by the pile. Antennal joint 3 short, scarcely longer than broad, although the antennae appear to be long. Nervulus indistinctly prefurcal, practically interstitial. Hind legs without any special characters. Tergite VII with a sharp median carina, clothed with white hairs, teeth very short, slightly triangularly protruding, the excision little deep, about of the shape of a brace.

FEMALE unknown.

HABITAT : 2 males, Gebel Elba, Wadi Aideb (February-March). Holotype in the collection of the Ministry of Agriculture, paratype in the author's collection.

Among the small species having a conspicuous tarsal brush in the male sex this species differs from *fayoumensis* by the strongly protruding non-carinated clypeus the more whitish pilosity, the coloration of the hairs on the 3rd metatarsus, the shape of the apical margin of tergite VII and also by its larger size. *A. alfkenella* is similar too, but differs in having *white* face, much less transverse labrum and yellowish pile of the thorax.

***Anthophora fayoumensis* spec. nov.**

MALE : Length 7.5-8.5 mm. Black, the whole face yellow, only the tips of the mandibles brownish, antennal 1 yellow beneath, dark above, joints 2 and 3 brown, flagellum ferruginous. Tarsal joints 2-4 and base of 5 testaceous. Hind margins of tergites yellowish transparent beneath the pilosity. Wings hyaline with for the major part yellowish veins. Pilosity of the body yellow to ferruginous, the thorax without black hairs. Abdomen with decumbent posteromarginal fasciae on tergites I-VI of pale yellow to ferruginous colour; these bands do not contrast much, since the tergites show a yellowish adpressed, not very dense, pilosity in front of the bands too; only tergite II bears a few raised pale hairs which can be seen in

profile. Middle and hind tibiae exteriorly clothed with decumbent yellow hairs, metatarsi at the margins with densely, on the face with sparingly, set pale hairs; interiorly the metatarsi bear ferruginous to reddish hairs. Calcaria yellow.

Labrum and clypeus shining, sparingly and shallowly punctured, the former with fore margin raised and with a smooth median carina so that on both sides of the disk a shallow fovea is formed. The sides of the clypeus are separated from the base of the mandibles by the sides of the frons. Antennal joint 3 short, little longer than broad. Tegulae testaceous. Wing cells of fore margin with some pubescence in front; nervulus interstitial. Puncturation of the tergites dense and somewhat rough. Tergite VII produced into two yellow broad teeth that are separated by a triangular excision; dorsum carinated lengthwise. Apical joint of middle tarsi somewhat enlarged, with some black hairs but without a distinct brush. Hind tibiae pubescent at the inferior face too, not smooth and shining (cf. *concinna*), and without tooth at the lower apex.

FEMALE : Length 8-8.5 mm. Width of head at most 3.5 mm. — Black, face yellow as in the male but sides of frons and a *small* spot at the sides attached to the clypeal suture, black; the clypeus is therefore at base as broadly yellow as the width of the frontal area. Antennae black, flagellum from joint 4, beneath or partly also above, ferruginous. Pilosity of the face white, not very dense, of vertex, thorax and abdomen more yellowish-white, on the vertex raised, on the thorax and the base of the 1st tergite of the abdomen short and raised; rest of tergite I and following tergites with *very dense* decumbent pubescence so that the marginal bands are not at all contrasting from the disk, but appear somewhat yellow owing to the yellow apical margins; in some cases the 2nd tergite shows an indistinct fine transverse dark line, though this is never so conspicuous as in *concinna* or *lutulenta*; the middle of the 5th tergite bears ferruginous hairs at the hind margin which are, however, not raised cushion-like, as in *lutulenta*. Calcaria yellow. Hind tibiae and tarsi exteriorly not quite densely clothed with whitish hairs, middle tibiae with such decumbent hairs: posterior metatarsus interiorly with yellow or ferruginous (not dark) hairs. Wings as in the male. Margins of sternites yellowish transparent, with yellowish fringe.

Clypeus and labrum densely punctured, dull to slightly shining, the callosities of the male wanting or faintly indicated. Antennal 3 about twice as long as broad.

HABITAT : Everywhere in Middle and Upper Egypt (Cairo, Maassara, Helouan, Beni Suef, Assiout; Wadi Nama (South eastern desert); Siwa. March-May. Types in coll. Min. Agric. (Cairo).

This common species is in the female sex rather similar to *lutulenta*, but easily distinguished by the smaller size, the nearly uniformly greyish pubescence of the tergites, and the invariably ferruginous colour of the marginal fringe of tergite V in the middle. The male is characterized by the greyish-yellow colour of the pile, the clypeal foveae and the distinctly *yellow* face. The species comes nearest to *mellina* sp. n., but possesses a brush of hairs on tarsal joint 5 of the mid legs, the pale pubescence on the disk of the segments, not the marginal bands only, and the more strongly

transverse labrum which is not produced in the middle of the fore margin, as this is the case in *mellina*. Male specimens from the Oasis Kharga are somewhat larger than those of the Nile valley or the Eastern Desert, so that the head reaches almost a width of 3.5 mm, and the hairs of the hind tibiae are a little longer. However, I cannot find any specific differences. Females were confused by Alfken with *humilis* Alfken = *tenella* Klug (q.v.).

Anthophora shagrensis spec. nov.

FEMALE : 8.5-9 mm. Width of head 3.5-3.6 mm. - Black, legs usually dark brown, hind margins of the sternites reddish; antennae ferruginous beneath, from segment 4 onwards; labrum and mandibles (tips dark), frontal area (narrow, transverse) and clypeus yellow; the latter with large black spots that are fused at base with the sides of the frons and occupy about half of the clypeus' length, leaving a yellow median line that is slightly widened at the base, and occupies about one-sixth of the width of the frons; the design is about the same as in the male of *A. pipiens*. Pilosity of the frons not very dense, whitish, short and raised; vertex with yellow hairs, mixed with black ones, thorax yellowish-grey with black, propodeum at the sides more whitish. Tergite I in front rather sparingly set with whitish hairs, the following tergites densely clothed with grey-yellow decumbent hairs; on tergite II (or also I) a transverse ill-defined black stripe about as in *lutulenta*; middle of tergite V with dark brown cushion; marginal bands are not distinctly separated, only noticeable because they lie on the paler hind margins of the tergites, like in *lutulenta*. Sternites with yellowish fringe only. Middle tibiae and metatarsus II with decumbent yellowish-white, hind tibiae and metatarsus III with slightly raised coarser whitish, hairs; the hind femora show an apical hair-spot of adpressed pilosity; metatarsus III interiorly with ferruginous to rusty hairs. Tegulae shining, ferruginous. Wings hyaline, slightly pubescent only in cell r₁; veins brown, paler at base, costa testaceous. Nervulus interstitial.

Clypeus shining, densely punctured, with fine somewhat smoothed median line and fore margin. Labrum slightly transverse. Antennal 3 scarcely twice as long as broad, about as long as the three following joints together, or slightly shorter.

MALE unknown.

HABITAT : I know 3 females from the Wadi Shagra (types) and 1 female from the Wadi Assiouti (April, August), collected by Moh. KASSIM (coll. Min. Agric.); M. TEWFIK found 2 females of this species in the Wadi El-Lega (Sinai).

The species comes closest to *lutulenta*, is scarcely smaller, has somewhat larger dark spots of the clypeus which is smoothed along the middle and in front, and has a considerable quantity of black hairs on the vertex and the thorax, between the yellowish hairs, and the flagellum is pale ferruginous. The yet unknown male has most likely also bicoloured pilosity of the thorax and a pale flagellum.

Anthophora tenella (Klug)

1845. *Saropoda tenella* Klug, Symb. phys., pl. 50, fig. 6 (female).

Anthophora humilis Alfken (in schedis) nec Spin.

FEMALE : Length 7.5-8.5 mm. Width of head somewhat less than 3.5 mm. Black, tarsal joints (2-) 3-5 brownish or testaceous, flagellum ferruginous beneath. Labrum, base of mandibles (tips brownish or reddish) and clypeus in front *pale* yellow; the dark basal portion of the clypeus occupies half or slightly more of its length; sides of face dark, clypeus with pale fine median line, and mostly also the frontal area as a fine pale transverse line. Head and thorax with dense whitish pilosity (or on the latter with slight yellowish tinge) but without black hairs or only single such hairs in front of the scutellum. Tergite I with raised, the following tergites with decumbent grey hairs, tergite II with a few pale raised hairs which are on the following tergites much shorter and semi-erect. Tergite V in the middle with a velvety black cushion of short hairs. Under side of thorax and sternites at the sides with whitish, the latter in the middle with more ferruginous hairs. Hind tibiae and metatarsi exteriorly with loose white or yellowish-white, metatarsus III interiorly with ferruginous to pale brown hairs. Tegulae yellow. Wings hyaline, veins yellow at base, becoming brownish towards tip of wing. Calcaria yellow.

Labrum transverse, but less so than in *nivosella*. Puncturation of the clypeus dense and fine, somewhat longitudinally rugose; without carina. Antennal 3 short, about 2.5 times as long as broad, somewhat shorter than the three following joints together, joints 4 and 5 transverse. Nervulus only very slightly prefurcal, less so than in *nivosella*.

MALE : Length 6.7-7 mm. Black, tarsal joints 2-4 and base of 5 ferruginous to brown, flagellum of antennae ferruginous beneath; antennal 1 beneath, the whole face and the mandibles, whitish. Face clothed with very dense and long slightly raised silvery-white hairs; vertex, thorax and tergite I with raised pale grey-white pilosity, without black hairs; tergite II and following segments with rather dense decumbent pilosity and with (profile) long raised white hairs that become scarcer on tergites III and IV. The white pilosity is at the margins somewhat denser so that ill-limited bands appear, in rubbed specimens the margins of the tergites are pale. Under side and legs with long white pilosity, the sternites with short white fringe. Hind tibiae and tarsi exteriorly with adpressed white hairs, the metatarsi bear interiorly testaceous hairs. Calcaria yellow. Veins of fore wing yellowish about in basal half.

Clypeus protruding, puncturation not visible. Labrum moderately transverse, almost smooth. Genae indistinct. Antennae rather long, but joint 3 only as long as broad, 4 square, joints 9-11 distinctly longer than broad. Wings without noticeable pubescence, nervulus interstitial or slightly prefurcal, as in the female. Terminal joint of middle tarsi slightly thickened, without black hairs. Tergite VII with white

pubescence above, with a fine median keel, at the apex with two rather broad small teeth that are separated by an arched or slightly wavy emargination; between the teeth one notices on each side of the keel 2 small black tubercles, in obliquely dorsal view.

HABITAT : Original locality is Sakkara ; I saw specimens from Mansuriah, El-Mallah, Borgash, Kafr Hakeem, Nahia, Abu Rowash, Cairo, Wadi Digla, Wadi Umm-Assad, Meadi and Helouan (March-May).

Specimens of this species were identified by ALFKEN with *humilis* Spin.: ALFKEN's *tenella* is identical with *lutulenta* Klug. SPINOLA'S *A. humilis* cannot be identical with *tenella* Kl. as it has black antennae and wing veins. Through the kindness of Dr. STEINBACK of the Berlin Museum I was able to examine KLUG'S type specimen which I found fully agreeing with the species described above. The specimen has a length of 8 mm. (not 9 mm. as given by KLUG) because the head is in an unnaturally horizontal position in the unique mount.

Anthophora humilis (Spinola) (?)

1838. *Saropoda humilis* Spinola, *Ann. soc. ent. France*, VII, p. 544 (female).

FEMALE : Length 8-8.5 mm., width of head 3.2-3.3 mm. - Black, tarsal joints 2-4 and base of 5 ferruginous. Flagellum of antennae dark. Labrum, base of mandibles, fore margin and a very fine median line of the clypeus, the latter sometimes slightly widened at base, whitish-yellow; the black base of the clypeus is emarginated on both sides of its fore margin; frontal area dark. Face clothed with moderately long grey-white hairs, about as in *shagrensis*, less dense than in *tridentella*. Thorax with grey pilosity, mixed with black hairs, but less strongly so than in *shagrensis*. Tergite I with raised whitish, tergite II with few raised white hairs, this and the following tergites otherwise with dense decumbent mouse-grey pilosity; the margins of the segments are not yellowish transparent, only very narrowly brownish; tergite V at the middle with black velvety cushion. Sternites laterally with some grey, otherwise with grey-brownish fringe, sternite V with somewhat longer white-grey, horizontal hairs. Tibiae and metatarsi exteriorly clothed with not quite decumbent whitish, metatarsus III interiorly with dark brown hairs. Wings hyaline, veins dark, somewhat pubescent only in cell m 1 near fore margin and in cell r 1. Tegulae testaceous.

Labrum transverse, coarsely rugosely punctured. Clypeus very densely punctured, the fine yellow median line slightly raised, smooth. Antennal 3 about twice as long as broad, 4 strongly, 5 less transverse, 6-11 about square. Puncturation of the thorax dense and rasp-like. Nervulus interstitial,

HABITAT : 1 female, Abukeer, 10. iv. 55, coll. Ain Shams University; 1 female, Mamoura, 9. iv. 31, coll. Min. Agric.

This is one of the uniformly coloured small species and is, by the pattern of the clypeus and the interstitial nervulus, coming closest to *tridentella*, *shagrensis* and *selecta*; *A. tridentella* differs by the strongly transverse labrum, the denser pilosity of the face, the not quite evenly grey pilosity of the abdomen and the pale wing veins; *shagrensis* by the latter character, the great number of black hairs on the thorax, the pale flagellum and yellow frontal area, the broader median line of the clypeus, the dark transverse line on tergite II and the interiorly ferruginous pilosity of the metatarsus III; *selecta* has the white-yellow colour of the clypeus confined to a narrow fore margin, and the clypeus finely punctured everywhere, also in the middle. All these species are, besides, specifically different by the pale transparent margins of the tergites. The species seems to be confined to the northern coast and is certainly not common. — Male unknown.

It is the only species known to me that agrees with the description given by SPINOLA.

Anthophora selecta spec. nov.

FEMALE : Length 8-8.5 mm., width of head 3.3-3.4 mm. - Black, tarsal joints 2-5 ferruginous. Antennae dark, flagellum beneath slightly reddish towards apex. Labrum, a basal spot of the mandibles (which are brownish, tip dark) and the fore margin of the clypeus, yellow; this yellow fore margin is narrow in the middle and abruptly widened at the sides; frontal area and sides of frons black. Face with not very long and dense, laterally almost decumbent, medially somewhat raised whitish pilosity. Vertex and thorax clothed with whitish-yellow pilosity, thorax with many black hairs among the pale ones. Tergite I with moderately long hairs like the thorax, but with only quite few black hairs; the following tergites densely clothed with decumbent grey hairs, and with only very few short pale raised hairs on tergite II and semi-erect pale hairs on the penultimate tergites, as this is the case in other species of this group. The pilosity is upon the fine yellowish transparent posterior margins of the tergites somewhat denser so that fine and indistinct bands appear; tergite V with a black velvet-cushion in the middle. Sides of thorax and underside with whitish, sternites of the abdomen with a poor whitefringe at the sides and ferruginous hairs in the middle. Tibiae and metatarsi exteriorly with semi-adpressed whitish hairs, metatarsus III interiorly with brown hairs. Tegulae yellowish. Wing veins testaceous in basal half, dark about in apical half. Some microsetulae can be noticed in cells r 1 and sc. Calcaria yellow.

Labrum transverse, dull. Clypeus with dense fine somewhat rugose puncturation. Antennal 3 short, well 2-2.5 times as long as broad, almost as long as the three following joints together, 4 and 5 distinctly transverse. Puncturation of the thorax very dense, granulose, of the tergites extremely fine and dense, somewhat transversely rugose. Nervulus interstitial.

HABITAT : 1 female (holotype), Borgash, 18. iv. 1934 (Min. Agric.).

Of the small species having an interstitial nervulus, *A. alfenella* differs especially by its sharply defined fasciae of the abdomen and the white (not yellow) face; *A. shagrensis* by the medially yellow clypeus, the ferruginous flagellum, and the interiorly pale ferruginous pilosity of the 3rd metatarsus; *A. tridentella* by the dense white pile of the face, the yellow-white median stripe of the clypeus and the uniformly grey-white thorax; *A. humilis* has no yellowish tint of the hair-covering, a yellow line of the clypeus, dark veins and dark hairs on the interior face of the 3rd metatarsus.

Anthophora fallaciosa spec. nov.

MALE : Length 7.6-8 mm. Width of head not quite 3 mm. Black, tarsal joints 2-5 testaceous, tip of 5 darkened. Flagellum ferruginous below. Antennal joint 1 below and the whole face yellow (now white-yellow), without dark markings, tips of mandibles reddish. Veins of the hyaline wing testaceous in basal half, dark in apical half of wing. Tergite VII at the margin, i.e. its triangular tips, testaceous. Frons clothed with little dense yellowish-white, vertex, thorax and abdominal tergite I with raised yellow (perhaps even ferruginous), hairs, tergites II-VI with short, semi-erect, black hairs, tergite II in addition with single raised whitish hairs, visible in profile; tergites I-VI with very narrow whitish posteromarginal fasciae of decumbent hairs. Tibiae with adpressed dirty-white, at the hind margin and apex with raised white hairs; metatarsus III exteriorly with scattered decumbent whitish hairs so that the dark ground remains visible throughout; interiorly is the metatarsus III clothed with blackbrown, in certain directions appearing dark red-brown, hairs. Joint 5 of middle tarsi thickened, at the sides with semiattached black hairs. Wings with pubescence noticeable only in cell r 1. Nervulus interstitial. Calcaria yellow. Tegulae yellow.

Labrum slightly transverse, fore margin forming a very flat blunt angle, surface shining, very scarcely punctured. Clypeus distinctly convex in the middle but without keel, puncturation fine, moderately dense. Antennal joint 3 short, about 1.5 times as long as broad, 4 about square, the following joints somewhat longer than broad. Puncturation of the head within the upper angles of the eyes very fine and dense, dull. Thorax very densely punctured, dull. Tergites of the abdomen densely punctured, slightly shining. Tergite VII carinate medially, posteriorly with two broad triangular ferruginous teeth that are separated by a triangular incision, the sides of this incision being very slightly concave.

HABITAT : 1 male, Amriah in April (leg. and coll. H. PRIESNER).

This species comes close to *A. perlustrata*, but the latter has shorter antennal joint 3, distinctly transverse joint 4, dark clypeal basal spots, darker tergite VII with slenderer teeth, interiorly paler pilosity of the 3rd metatarsus and broader fasciae of the tergites; *A. mellina* is at once distinguished by the carinated clypeus,

somewhat broader fasciae and broader head; *alfkenella* has a white face, black tergite VII and blunter, smaller triangular teeth, dark antennae and veins, and some raised black pilosity of tergite II.

***Anthophora perlustrata* spec. nov.**

MALE : Length 8 mm. Width of head 3.2-3.3 mm. Black, tarsal joints 2-4 and base of 5 yellowish; mandibles red-brown with large pale yellow basal spot and blackish base; face pale yellow, i.e. clypeus, labrum, sides of frons and frontal area; suture between sides of frons and clypeus with a small black longitudinal spot; antennal 1 yellow beneath, flagellum brownish not ferruginous. Face clothed with long yellow-white, vertex with yellow, thorax above and at the sides and tergite I with yellow to ferruginous raised hairs, without black hairs. Tergites II-IV (-V) with single raised pale hairs, else with black decumbent hairs on the disk; postero-marginal bands narrow, on the anterior tergites grey-yellow, otherwise grey. Legs exteriorly clothed with grey-white adpressed hairs, metatarsus III interiorly with ferruginous to brown hairs. Under side of anterior body with raised grey-white hairs, sternites only at the sides with horizontal white fringe, in the middle nearly bare, sternites IV and V dull on account of a velvety dark brown tomentum. Tegulae testaceous. Wings hyaline, veins at base testaceous, distally dark. Cells scarcely pubescent. Nervulus interstitial. Calcaria yellow.

Labrum transverse, slightly arched in front. Clypeus shining too, without calli, puncturation owing to the dense pile not visible. Antennal 3 short, very little longer than broad, 4 much shorter than 5 or 6. Middle tarsi with a distinct but not very long brush of black hairs. Tergite VII with median keel, at the sides apically with two short teeth that are separated by an almost *straight* interval which bears at the hind margin 2 very small tubercles (cf. *tenella*).

HABITAT : 1 male (holotype), Taloun, 18.iv.1927 (coll. ALFIERI).

In spite of the differently formed VIIth tergite this species comes in the *lutulenta* group, since it agrees in many other characters with the other species of this group. *A. lutulenta* and *elbana* are larger, grey species, having triangular teeth separated by an angular excision, or by a brace-shaped one, respectively, and both show some grey pilosity in front of the fasciae; *A. alfkenella* differs by its white face and the coloration of the hind legs, etc.

***Anthophora tridentella* spec. nov.**

MALE : Length 7.5-8 mm. Width of head 3.3-3.4 mm. Black, base of tarsal joints 2-5 pale yellow. Margins of tergites yellowish transparent. Antennal joint 1 beneath and the whole face whitish yellow, mandibles with brown tips. Flagellum scarcely paler below, never ferruginous. Face with long snow-white, vertex, thorax

and tergite I with raised grey-white pilosity, without black hairs. The tergites show narrow bands of decumbent white hairs, and they bear also in front of the bands whitish but less densely set hairs; raised white hairs are present but very short, only on tergite II somewhat longer; the decumbent pilosity of the disks of the tergites becomes somewhat denser towards the apex of the abdomen. Under side of anterior body with raised white hairs, the sternites only at the sides with a pale fringe, in the middle with fine ferruginous tomentum, sternite V more broadly with very fine black-brown tomentum. Femora with long raised hairs, middle and hind tibiae with decumbent white pilosity, metatarsi exteriorly with scarce (ground visible), at the hind margin with denser, white pilosity, the metatarsus III interiorly with paler or darker brown hairs. Calcaria yellow. Tegulae testaceous. Wings hyaline, veins yellow, only distally somewhat brownish.

Labrum *strongly transverse*, almost straight in front, smooth, almost without puncturation. Clypeus very finely and densely punctured, without keels. Antennal 3 not longer than broad. Nervulus slightly prefurcal. Tergite VII with a median keel and *three small apical teeth* the central of which representing the tip of the median carina, and being sometimes shorter and blunter than the lateral teeth.

FEMALE : Length 7.5-8 mm. Width of head less than 3.5 mm. Black, tarsi brownish. Face black, only labrum, mandibles (with red tips) and the fore margin of the clypeus, yellowish-white; the pale margin of the clypeus occupies at most half of its length, usually less, and a fine median line never reaches the base or is absent. Antennae black, flagellum beneath at most brownish, never ferruginous. Pilosity of the face rather dense, whitish to whitish-yellow; the body above clothed with whitish-grey-yellow, thorax without or with only very few dark, hairs. Abdomen clothed with adpressed grey hairs, and the posteromarginal bands do not contrast much, only by the fact that the margins have the chitin transparent; a very scarce raised pilosity is only noticeable on tergite II in profile. Tergite V with a black cushion in the middle. Sides of the sternites slightly fringed with whitish-yellow, in the middle with red-brown hairs. Hind tibiae and metatarsus III with slightly raised white-yellow pilosity, the latter interiorly with dark brown hairs.

Sculpture of labrum and clypeus not well visible owing to the dense pilosity. Antennal 3 about only twice as long as broad, somewhat longer than the two following joints together, joint 4 strongly transverse.

HABITAT : There is a series of specimens in the collection of the Ministry of Agriculture, from the Wadi Assiouti (2. iv. 1917); a male from the Suez Road (iii); 2 females from Siwa (iv) and 1 female in the collection of the Ain Shams University, from Kom Osheem (iv).

In the male sex this species is easily distinguished from all small species by the three small teeth of the VIIth tergite. The female was confused with *tenella* Kl. (*humilis* Alfken); however, the dark antennae, the darker clypeus, the yet visible abdominal fasciae, the dark pilosity of the inner face of the hind metatarsus and the darker pilosity of the middle of the sternites, readily distinguish *tridentella* from

tenella. *A. fayoumensis* has a yellow face and frontal area, the former with only very small basal spots of the clypeus, pale flagellum, pale hairs interiorly on the hind metatarsus and less strongly transverse labrum.

***Anthophora mellina* spec. nov.**

MALE : 8-9.5 mm. Black, tarsal joints 2-4 and base of 5 ochrous. Antennal joint 1 beneath and the whole face lemon-yellow, joint 2 and base of 3 dark, rest of flagellum ferruginous below. Face with white-yellow, vertex, thorax and tergite I of abdomen with raised ferruginous (in older specimens yellow), pilosity; the postero-marginal bands of the tergites narrow, consisting of adpressed ferruginous hairs; in front of the bands there are no adpressed pale hairs, i.e. the disks are dark except for some single raised pale hairs on tergite II. Wings hyaline, veins dark, yellow towards base. Under side of body with yellowish pilosity. Tibiae and tarsi with decumbent ferruginous pilosity.

Labrum scarcely transverse, slightly produced in front at middle, but without foveola, very little punctured, shining. Clypeus not protruding, not very densely punctured, with fore margin and median line raised, and therefore with broad, shallow foveae as in *fayoumensis*. Antennal 3 short, though somewhat longer than broad, the penultimate joints almost twice as long as broad. Thorax with very dense and rough, abdomen with fine, puncturation. Tergite VII with a fine sharp median carina and ending in two yellow triangular teeth which are separated by a triangular excision. Hind tibiae on the under side smooth and shining at base only, whereas more than the apical half is punctured and pilose; the inferior angle shows a very short, usually under the pile completely concealed, dark small tooth which is easily overlooked. Calcaria yellow. Apical joint of tarsi II only slightly thickened, and only with decumbent short dark hairs, without brush. Tegulae ochrous to ferruginous. Wings only in the cells of the fore margin slightly pubescent. Nervulus interstitial or very little postfurcal.

FEMALE : 8-8.5 mm. Black, tarsal joints 2-4 (-5) and flagellum of antennae from joints 4 or 5 onwards, ferruginous. Base of clypeus for about half of its length black, rest and a narrow frontal area and a median line, yellow; margin of the black base of the clypeus bisinuate. Face little dense whitish-yellow, thorax and abdomen with pale yellowish-grey pilosity, thorax without black hairs; abdomen only on tergite I with long, on the remaining tergites with evenly decumbent, pilosity; tergite V in the middle of the hind margin with ferruginous hairs; tibiae clothed with adpressed and tarsi with semidecumbent whitish hairs, exteriorly. Sternites very finely and not very densely punctured, shining, fringe hairs short, pale, margins of segments yellowish transparent. Wings hyaline, veins pale at base, darkened towards apex.

Labrum broader than long, coarsely rugosely punctured. Clypeus finely and rather densely punctured. Antennal 3 about twice as long as broad, 4 transverse,

5 about square; 3 somewhat longer than the two, shorter than the three, following joints combined. Nervulus very slightly postfurcal.

HABITAT : I took this species at Meadi, Wadi Digla and Wadi Hof (v, vi); in the collection of the Ministry of Agriculture there is a male from the Bahr-el-Ghazâl (v).

By the keels and foveae of the clypeus the male is similar to *A. fayoumensis* but has no brush on the 5th tarsal joint of the mid legs, and the disks of the tergites are dark, without pale decumbent hairs in front of the fasciae; *A. concinna* also possesses a brush, like *fayoumensis*, and differs from *mellina* by its simple clypeus, shorter antennae, broader abdominal fasciae, a conspicuous pale tooth at the apex of the hind tibiae which are triangular in cross-section, a.s.o. The female comes nearest to *fayoumensis* but is readily distinguished by the large black clypeal spots that occupy at least the basal half; *A. tenella* has large spots too, but they are rounded interiorly, not angular, and the pale colour of the fore margin is ivory-white, the 5th tergite has a black cushion, and the nervulus is slightly prefurcal rather than postfurcal; in *A. tridentella* the pilosity of the face is very dense white and the abdomen shows slightly indicated marginal fasciae, the flagellum is not ferruginous, the frontal area is dark and the middle of tergite V bears a black cushion; *A. shagrensis* is larger, has mixed pilosity of the thorax, bears a dark cross-line on tergite II, a.s.o.

ALFKEN identified the *mellina* males of my collection with *concinna* Klug, though the description and figure given by KLUG are against this interpretation.

Anthophora concinna (Klug)

1845. *Megilla concinna* Klug, Symb. phys., Dec. 5, Ins. pl. 49, fig. 11 (male).

1897. *Podalirius concinnus* Friese, Bienen Europas, III, p. 104.

1899. *Podalirius tridentatus* Friese, Ent. Nachrichten, XXV, p. 322 (male).

MALE : Length 6-8 mm. Black, tarsal joints 2-4 yellowish. Face, antennal joint I beneath, mandibles (tips dark) and labrum pale yellow; flagellum ferruginous below. Pilosity of face whitish to yellow, not dense, of thorax yellowish-brown to ferruginous, raised, like that of base of tergite I; no black hairs on the thorax. The tergites show only dark hairs in front of the fasciae, the latter being broad, ferruginous, and reaching at the sides almost to fore margin; the hairs of the under side of head and thorax are whitish to grey. Middle and hind tibiae and metatarsus II exteriorly clothed with decumbent golden-yellow hairs, the posterior metatarsus exteriorly and interiorly with dark, nearly black hairs, only at the extreme base and apical margin with reddish-brown hairs. Wings hyaline, veins at base testaceous.

Clypeus, in lateral aspect, little protruding, shining, the surface without keels, the puncturation of the sides not dense, the fore margin shows two small foveae so that three blunt indistinct teeth are formed. Labrum transverse, shining. Antennae

comparatively short (flagellum length 2.5 mm.), joint 3 short, scarcely longer than broad. Tegulae ferruginous. Wing cells very little pubescent near fore margin of wing. Nervulus practically interstitial, though very slightly prefurcal. Joint 5 of middle tarsi distinctly thickened with a conspicuous brush of black hairs. Hind tibiae widened towards apex, about triangular in cross-section, with its inner surface smooth and shining, and a short pale tooth at the apex. Calcaria of middle tibiae dark, of hind tibiae at least margined with brown. Tergite VII conical, sides straight, apical margin triangularly incised so that 2 triangular teeth are formed; the tergite is longitudinally carinated too.

FEMALE : Length 8-8.5 mm. Black, face yellow, i.e. labrum, mandibles (with dark tips), a transverse frontal area and the clypeus; the latter usually wholly yellow or shows a quite indistinct lateral dot; sides of frons dark. Flagellum ferruginous below. Pilosity of the thorax as in the male, only at the scutellar base there may be a few black hairs. Abdomen with *ochrous* decumbent pilosity, tergites I-III (or only one or two of them) on disk with a more or less fine transverse black line; tergite V in the middle of the hind margin with brown to black-brown hairs; margins of the sternites with whitish fringe. Pilosity of the legs as in the male, posterior metatarsus exteriorly with grey-yellow, interiorly with brown hairs. On the spots where the hairs of the abdomen are rubbed off the margins of the segments are yellowish transparent.

HABITAT : Not rare, from the following localities; Abu Roash, Kerdasa El-Mallah, Pyramids of Giza, Cairo, Meadi, Helouan; Assiout, Assouan. (March June).

In the collection of the Ministry of Agriculture there are specimens from Hedjas (Jedda, February, 1937, leg. M. KASSIM) in which the male has the calcaria entirely yellow, and the metatarsus III exteriorly some pale hairs at base; the female shows none or only on tergite II a fine black transverse line, and its tergite V has pale brown to ferruginous hairs at the hind margin : var. (ssp. ?) *hegasica* nov.

A. concinna could only be confused in the female sex with *A. fayoumensis*; this species has, however, the nervulus clearly interstitial or slightly postfurcal, the 3rd metatarsus with pale brown or ferruginous hairs interiorly, grey (not yellow) pilosity of the abdomen without black cross-lines, and no black hairs on the thorax; tergite V has pale brown to ferruginous hairs at the hind margin, and the calcaria are all yellow. The males of *fayoumensis* cannot be confused, as their hind tibiae have the inner face not smooth and shining and have no apical tooth, and the tergites II and III always bear some pale hairs in front of the marginal fasciae too. *A. fayoumensis* and *A. mellina* have in the male, as against *concinna*, a distinctly sculptured clypeus, i.e. smooth and raised fore-margin and median keel; the female of *mellina* is uniformly clothed with yellow-grey hairs on the abdomen and has large dark spots on the clypeus.

A. lutulenta Alfken (*Senckenbergiana*, VIII, p. 101; 1926), nec *lutulenta* Klug, might be identical with *concinna*.

Anthophora alfenella spec. nov.

MALE : 8-9 mm. Black, middle and hind tarsi but sometimes only basal half of joint 5, ferruginous. The whole face *white*, only the tips of the mandibles and 2 small dots at the base of the labrum dark. Antennal joint 1 white beneath. Face with raised white to yellow-white, vertex, thorax and abdominal tergite I with raised yellow to ferruginous hairs, without black hairs; tergites I-VI with *narrow* white apical fasciae of decumbent hairs, tergite II, besides, with some raised pale hairs, tergites III-V with shorter raised black hairs, visible in profile. Head and thorax beneath clothed with white or grey, abdominal sternites at the sides with white, in the middle with black, hairs, some of them having white tips. Middle and hind tibiae with adpressed white hairs that do not wholly cover the dark ground, the margins and tips with some longer white hairs; metatarsus III exteriorly and interiorly clothed with black hairs, exteriorly with single white hairs, at the apex, exteriorly with a small white hair-spot. Joint 5 of middle tarsi with conspicuous black brush.

Clypeus not protruding, shining, with a slight convexity in the middle where it is densely punctured, while the sides are less densely and more strongly punctured. Labrum transverse. The apex of the sides of the frons does not reach the mandibles. Antennal joint 3 short, little longer than broad. Tegulae testaceous. Wings hyaline, cells m 1 and sc at the fore margin, and cell r 1 pubescent. Nervulus interstitial or slightly postfurcal. Tergite VII carinated lengthwise, at the apex with two broad triangular teeth that are separated by an angular excision.

FEMALE : Length 9-9.5 mm. Width of head 3.6-3.7 mm. Body, inclusive of antennae and tarsi, black. Face *white*, i.e. anterior half of clypeus, a fine median line and, connected with it, a transverse frontal area (forming a white T), the labrum and mandibles, the latter with dark tips. Pilosity as in the male but the vertex somewhat, the thorax profusely, mixed with black hairs; tergite I almost only with pale pilosity; the single raised hairs on tergite II yet shorter than in the male; the tergites II and III show at the base, not only at the hind margin, some greyish decumbent pilosity so that a black cross-band appears; tergite V in the middle with black hairs only. Hind tibiae and metatarsus III exteriorly with somewhat loose dirty-white, interiorly with black, hairs. Sternites largely fringed with black, only laterally with a few white, hairs. Calcaria yellow.

Clypeus strongly punctured with fine smooth median line. Antennae comparatively short. Antennal 3 short, gradually widened towards apex, about 2.5 times as long as broad and about as long as the three following joints together.

HABITAT : Mex, Abukeer (iv). Types in the collection of the Ain Shams University.

Because of the structure of tergite VII of the male and its tarsal brush of the middle legs this species comes in the *lutulenta*-group and is characterized by the black inside of the tibiae and tarsi, the dark antennae, the black pile of the sternites

and the white face: *A. elbana* has longer, decumbent pilosity of the face, more strongly transverse labrum, yellow face and much less excavated tergite VII. The female is from the species around *albigena* at once distinguished by the interstitial nervulus. from *lutulenta* by the large clypeus-spots, and the dark hairs of the metatarsus and the sternites. The abdomen of *alfkenella* is more flattened than in the other species of the *lutulenta*-group; habitually it reminds somewhat of *A. fulvodimidiata* but differs by its much smaller size, the white face and the paler pile of the outer face of the hind tibiae.

Anthophora fulvodimidiata Dours

1869. *Anthophora fulvodimidiata* Dours. Mon. icon. Anthoph., p. 181 (male).

1879. *Anthophora nigripes* Pérez, Actes soc. Linn. Bordeaux, XXXIII, p. 142 (female); teste FRIESE.

1897. *Podalirius fulvodimidiatus* Friese, Bienen Europas, III, p. 97.

MALE : Length 9-10 mm. Black; clypeus, frontal area, sides of frons, labrum, a large basal spot of the mandibles and antennal joint I beneath, yellowish-white, Flagellum somewhat brownish below. Face with not very dense white, vertex with more yellowish, pilosity, like the thorax and tergite I in front. Abdomen with moderately broad fasciae of yellowish white colour, on tergites I-VI, and only a few white decumbent hairs in front of the bands; the disks otherwise with decumbent and extremely short raised black pilosity. Tibiae exteriorly and interiorly with black, only at the exterior edge and the apical margins with whitish-grey, hairs; metatarsus II only at base with white hairs, metatarsus III wholly black. Calcaria dark.

Clypeus slightly protruding, slightly shining, its puncturation dense in the middle, less so at the sides. Apices of sides of frons (triangles) not reaching base of mandibles. Labrum transverse. Antennae comparatively short, joint 3 not quite twice as long as broad. Wings very slightly shaded, veins black, pubescence noticeable in cells m 1, r 1 and sc, near fore margin. Tarsi II on joint 5 with a weak brush of black hairs. Hind tibiae widened towards apex, with two lower edges, the space between them smooth and bare, strongly shining; at the apex of the lower edge there is a black pointed tooth. Puncturation of the tergites very dense, rough, nearly granulated. Tergite VII with two almost triangular teeth which are reddish at tips and separated by a triangular incision.

FEMALE : Length 10.5-11 mm. Black, face ivory-yellow, clypeus with two basal spots that are emarginated in front and therefore pointed at the interior fore angle; the pale median line is broad, the frontal area linear, not triangular; sides of frons dark, mandibles at base and labrum pale. Face with short yellowish, vertex and thorax with short yellow-brown, raised pilosity, mixed with black hairs especially at the base of the scutellum and before. The bands of the tergites mostly yellowish, wholly decumbent, tergite II though chiefly black, with some fine pruinose pale hairs across base, too; fascia of tergite IV white, pilosity of tergite V black. Sternites fringed with black hairs, only the sides of tergite IV show some white fringe hairs.

Wings as in the male. Hind tibiae and tarsi clothed with black hairs, only at the exterior margin of the former sometimes some white hairs. Antennal 3 only 2.5 times as long as broad.

HABITAT : In numbers in July-September, Mersa Matrouh, leg. Dr. T. SAYED (coll. Ain Shams University); Mariout.

Anthophora galalensis spec. nov.

FEMALE : Length 11-11.5 mm. Width of thorax about 4.6 mm. Black, legs black-brown, tarsal joints 2-5 testaceous to pale brown. Clypeus in front and labrum yellow, the former with 2 moderately large dark basal spots that are fused with the black sides of the frons. Mandibles yellow, tips dark. Wings hyaline, veins dark. Flagellum ferruginous beneath. Pilosity of clypeus rather dense whitish, on vertex, thorax whitish with slightly yellowish tinge, and very few black hairs, particularly at the scutellar base. The abdomen is covered with *very dense wholly decumbent grey hairs*, only on tergite I at the sides with somewhat raised and longer ones than elsewhere; the middle of the Vth tergite possesses a black pilose transverse cushion spot. Under side everywhere with pale hairs, the sternites with fairly short white fringe. Middle tibiae densely clothed with white decumbent, metatarsi all along with slightly raised, white hairs; hind tibiae and metatarsus III with semi-erect white hairs so that the ground becomes visible, interiorly with brown hairs. Calcaria pale yellow. Tegulae pale ochrous.

Clypeus slightly protruding, puncturation owing to the dense pile not visible, labrum coarsely rugose. Genae not developed. Antennal joint 3 about three times as long as broad and about as long as the three following joints together. Nervulus decidedly interstitial. Wing cells practically bare.

MALE unknown.

HABITAT : Of this characteristic species I only know one perfect female from the Wadi El-Gararyat, North Galala, 21-25. iii. 1935 (leg. FARAG, coll. Ministry of Agriculture).

Among the species having wholly, evenly and densely grey pubescence of the abdomen, *galalensis* is characterised by the size, the yellow calcaria and the interstitial nervulus and cannot be mistaken with any other one described herein.

Group VI (incl. *tyta*)

Anthophora semirufa (Friese)

1898. *Podalirius semirufus* Friese, *Termesz. Füzetek*, XXI, p. 308.

1930. *Anthophora fulviscopa* Alfken, *Stettiner Ent. Zeig.*, XCI, p. 226 (female).

MALE : Length 13-14 mm. Black, only the margins of the tergites slightly reddish transparent. Face pale yellow, clypeus without black suture lines. Mandibles

with large pale basal spot, antennal joint 1 pale yellow beneath. Flagellum dark. Pilosity of face short, white, of vertex, thorax and abdominal tergite I, short, more or less dark ferruginous, without black hairs. Under side of thorax somewhat paler, with pale yellow to white hairs; tergites II-III of abdomen with short, nearly decumbent, the following tergites with short, raised black hairs. Middle and hind tibiae clothed with black hairs, the middle tibiae exteriorly also with some ferruginous hairs.

Clypeus densely punctured. Genae not developed. Antennal joint 3 three to four times as long as broad, distinctly widened at the apex, about as long as the three following joints combined. Tegulae ferruginous. Wings distinctly shaded, cells distinctly pubescent. Nervulus interstitial. Metatarsus III laterally flattened, curved, with a curved groove at the inferior margin and a preapical rounded bulge or hump at the inferior margin; distinctly set with black hairs at the base, but bare at the lower margin towards apex. Tergite VII in the middle of the apex rounded, at the sides with two acute reddish teeth so that, as a whole, three projections are visible, the median of which being broad and rounded. Margins of sternites with dark raised pilosity.

FEMALE: Length 14-15 mm. Black, clypeus in front with short brown, vertex, frons, thorax and abdominal tergite I, as well as the sides of the hind tibiae and 3rd metatarsus, with ferruginous pilosity, that of the thorax short. Tergites II and III clothed with short decumbent, the following tergites with short raised black pilosity. The whole under side and the fore and mid legs clothed with black hairs.

Clypeus coarsely and rugosely punctured, with median carina. Antennal joint 3 gradually thickened towards tip, three to three and a half times as long as broad, and about as long as the three following joints together. Wings distinctly infumated.

HABITAT: I saw the species from the following localities: Helouan, Wadi Digla, Wadi Hof, Wadi Rasheed, Wadi Abu Handal, Wadi Hussein (April-July).

Anthophora oraniensis Lep.

1841. *Anthophora oraniensis* Lepeletier, Hist. nat. Ins. Hym., II, p. 39 (female)

1846. *Anthophora oraniensis* Lucas, Expl. sci. Algérie, Zool. III, p. 143, pl. 1, fig. 1.

1897. *Podalirius oraniensis* Friese, Bienen Europas, III, p. 96.

FEMALE: Length 15-16 mm. Black, the whole face and the temples with white, vertex, thorax and abdominal tergite I with short-cut red pilosity; tergites II-VI with short, adpressed and scarcer raised, *black* pilosity; tergites II-IV each with a full, snow-white, very narrow fascia of adpressed hairs, tergite V at the sides like IV with some longer white hairs. Under side and legs clothed with black hairs, sides of sternites with white hairs. Fore and middle tibiae exteriorly with some white decumbent hairs, *hind tibiae with a triangular longitudinal spot of white hairs*. Meta-

tarsus III with black hairs only. Tegulae brown to black-brown, finely punctured. Wings somewhat infumated, veins black.

Clypeus strongly convex but without carina, very finely and rugosely punctured. Antennal joint 3 slender, abruptly thickened at tip, about three times as long as broad, little longer than the three following joints together. Posterior metatarsus comparatively broad and short. Pubescence of wing cells in m 1 and r 1 conspicuous, in sc only in the basal corner. Puncturation of the tergites very fine. Plate of tergite VI dull. Genae linear.

MALE : Unknown to me; but according to LEPELETIER characterized in having antennal joint 1 whitish yellow in front, and sides of frons, clypeus and mandibles of the same colour. Thorax clothed with whitish hairs below, as well as the tibiae and tarsi above. Segment V like the preceding ones, segment VI like V of female. Everything else as in the female.

HABITAT : I only know two specimens from Egypt : 1 female, Dekheila, 18. ii. 1919 (coll. ALFIERI); 1 female, Mex, 19. ii. 1919, leg. C.B. WILLIAMS (coll. Min. Agric.).

Anthophora inclyta Walker

1871. *Anthophora inclyta* Walker, List Hym. Egypt, p. 98 (female).

1897. *Podalirius inclytus* Friese, Bienen Europas, III, p. 298.

MALE : 16-17 mm. Black, legs black, antennal joint 1 beneath and the whole face yellow, mandibles dark in apical half. Frons and vertex mostly with pale yellow, the whole remaining body ferruginous or yellow to dirty yellow (old specimens) pilosity. Hairs of the abdomen decumbent. Tibiac exteriorly clothed with adpressed yellow to testaceous hairs, the metatarsus III exteriorly much less densely, at the margins and apex more densely pilose. Under side with white or grey hairs.

Clypeus rather flattened, finely and densely punctured, labrum large, broader in front than at base, slightly transverse, with more scattered and shallow punctures, shining. Antennal joint 3 more than three times as long as broad. Wings distinctly shaded with dark nervures; pubescent in cells m1, m3, r1-r3 and sc. Nervulus interstitial. Metatarsus III with an obtusely angled widening below. Median plate of tergite VII narrowed towards apex and rounded there where it is ferruginous, at the sides it shows two yellowish teeth situated at a lower level than the median portion which is more strongly protruding.

FEMALE : Length 16-17 mm. Black, the legs and sternites may be red-brown. The whole body clothed with ferruginous pilosity, on the sides of the face it may be paler. The hairs of the thorax and abdominal tergite I are shortly cut, on the remaining tergites the ferruginous pilosity is dense and adpressed, tergite IV showing in addition some raised ferruginous hairs, tergite V a ferruginous median cushion, and at the sides longer hairs of the same colour. Fringe of sternites ferruginous, too.

Tibiae and tarsi evenly clothed with ferruginous hairs, the interior faces with dark-brown to blackish hairs. Tegulae pale. Wings as in the male.

Frons and clypeus flattened, very finely rugosely punctured. Labrum transverse. Genae extremely short. Antennal 3 gradually thickened towards tip, about four times as long as broad, longer than the three but somewhat shorter than the four following joints together. Thorax not punctured but with a very dense shallow granulation. Tergites very finely and shallowly punctured. Hind tibiae and metatarsus III broad.

HABITAT : A southern species. Red Sea coast, Wadi Ambaga (near Kosseir); Gebel Elba (Wadi Aideb, W. Kansisrob); Sinai (iii-v).

NOTE : *Anthophora fulvitecta* Kirby (*Bull. Liverpool Mus.*, III, p. 22) is most likely identical with *inclita* Walker.

Anthophora alternans (Klug)

1845. *Megilla alternans* Klug, *Symb. phys.*, Dec. 5, Ins. pl. 50, fig. 3 (female).

1897. *Podalirius alternans* Friese, *Bienen Europas*, III, p. 65.

1899. *Podalirius wegeneri* Friese, *Ent. Nachrichten*, XXV, p. 321 (male and female).

1926. *Anthophora alternans* (*wagneri*) Alfken *Senckenbergiana*, VIII, p. 114.

MALE : Length 12-15 mm. Black, face white, without black markings, with large almost hexagonal white frontal area and a white antennal joint 1, beneath; flagellum reddish below. Face with short, white, thorax with white-grey to yellowish-grey hairs, with some intermixed black hairs. Tergite I clothed with pale raised hairs, tergites II-V on the disk with decumbent black pilosity, and only a few semi-erect short black hairs between, and each segment with a fairly broad white apical band. Middle tibiae at the hind margin with a comb of long white hairs, metatarsus II with scattered, at the hind margin with longer, white hairs; hind tibiae exteriorly with only adpressed densely set hairs, like the metatarsus III and the joints 2-4. Tegulae testaceous. Wings with veins somewhat brownish at base, cells nearly bare, only r l a little pubescent. Nervulus interstitial.

Clypeus somewhat protruding, convex, dull, scarcely punctured; the whitish frontal triangles (between eye and apex of clypeus) produced in a fine tip, and therefore attaining extreme apex of clypeus. Labrum transverse, emarginated in front. Genae not developed. Antennal 3 short, not quite twice as long as broad. Tergite VII tridentate, the median tooth bluntly triangular, the lateral teeth slender, pointed, the apices of these three productions are about on the same level. Hind tibiae curved, with vertically raised black hairs at the anterior margin, which only occupy the basal two-thirds or three-fourths of its length.

FEMALE : Length 13.5-15 mm. Black, face dull white, densely and finely punctured, with two black basal spots fused with the sides of the frons, the spots being not angular within but *evenly rounded*, i.e. the white median stripe of the clypeus

being concave on both sides. Frontal area little white. Face with short white, vertex with yellowish, thorax with grey-yellow to nearly ferruginous, hairs; black hairs are present among the pale ones about the middle of the thorax. Tergite I clothed with moderately long but densely set white to yellow hairs, tergites II-IV at the hind margin with adpressed white hairs forming broad fasciae (broader at the sides), bases of the tergites narrowly black; tergite V only with black hairs; raised pale and dark hairs are sparingly present on tergite IV. Tibiae and tarsi almost or wholly with adpressed grey-white hairs, the parallel-sided metatarsus III exteriorly also almost for all its length (or three-fourths) clothed with grey-white hairs. Head and thorax beneath with grey, abdominal sternites with dark hairs.

Antennal joint 3 about 2.5 times as long as broad, gradually thickened towards apex, and about as long as the three following joints together. Veins dark, pubescence as in the male.

HABITAT : Uncommon (Taloun, Borgash, Sakkara, Fayoum), April, May.

The female of this species, rightly recognized by ALFKEN, is at first sight rather similar to *klugi* (q.v.), but at once distinguished by the rounded clypeal spots which are angular in *klugi*, by the broader fasciae, the wholly black tergite V and the interstitial nervulus. The male is from exteriorly similar forms of group VII easily separated by the structure of tergite VII and the curved hind tibiae. *A. boops* has narrower frons, inferiorly dentate metatarsus III, and the lateral teeth of tergite VII slightly pushed towards base in comparison with the blunter median tooth.

Of 5 specimens in the Vienna Museum labeled "wegeneri Typus" by FRIESE, one belongs to *alternans*, the remaining 4 are *klugi* (*farinosa* Alfken nec Klug). A male specimen in the same collection, identified with *alternans* by FRIESE, is *crocea* Klug (sic !), a female (from Luxor) is *mucorea* Kl. True specimens (males and females) are in the accessions of the above collection (from Fayoum, leg. SCHMIEDEKNECHT), unidentified.

ALFKEN puts *A. wagneri* Friese as a synonym to *alternans*. It is to be assumed that *A. wagneri* is a "lapsus mentis aut calami" ALFKEN's and in this case the synonymy is correct.

Anthophora boops Alfken

1926. *Anthophora boops* Alfken, *Senckenbergiana*, VIII, pp. 100, 115 (male).

MALE : Length 13.5-15.5 mm. Black, flagellum black, face white, without dark spots or stripes, frontal area forming a high (not flat) triangle, antennal joint 1 white beneath. Face with shorter, vertex with longer, grey-white hairs, thorax with very short grey-white pilosity, without black hairs. Tergites of the abdomen with white marginal fasciae that are complete on tergites I-IV, narrow and linear in the middle on V, and broadly interrupted in the middle on VI. Tergite VII clothed with

black hairs. Under side of head and thorax with white, abdominal sternites with black hairs. Tibiae and metatarsi clothed exteriorly with decumbent white hairs, middle tibiae with a row of long raised white hairs posteriorly; metatarsus III for the major part with black hairs but also with white adpressed hairs at the exterior edge.

Clypeus not protruding, densely and finely punctured, shining. Face comparatively narrow, much narrower than in either *alternans* or *klugi*, eyes large. Labrum almost as long as broad. Frontal triangles terminating far from apex of clypeus. Antennal joint 3 about three times as long as broad. Tegulae punctured and pubescent, brownish. Wings hyaline, veins dark, costa paler, cells scarcely pubescent, only r 1 somewhat so. Nervulus interstitial. Metatarsus III beneath produced in a blunt angle, the lower edge of the metatarsus from base to tooth straight, from tooth to apex concave. Tergite VII, as a whole, tripartite, having a median lobe representing the median tooth of *A. alternans* but being broader, and flanked by a lateral small triangular tooth on either side; the median lobe surpassing the lateral teeth.

FEMALE : unknown (see my remarks sub *A. vidua*).

HABITAT : Mansuriah, Kafr Hakeem, Kerdasa, Abu Rowash, Giza, Samalout and Wadi Gerawi (April-June).

Anthophora vidua (Klug)

1845. *Megilla vidua* Klug, Symb. phys., Dec. 5, Ins. pl. 49, fig. 10 (female).

1897. *Podalirius bicinctus viduus* Friese, Bienen Europas, III, p. 101.

1916. *Anthophora bicincta* var. *vidua* Storey, Min. Agr., Techn. Bull., 5, p. 18.

FEMALE : Length 16-18 mm. Black, sternites mostly dark reddish brown. The whole body with black pilosity except a full white fascia on hind margin of tergite I and sometimes a broadly interrupted one on II, composed of easily rubbed off decumbent hairs; the remaining tergites with adpressed black pilosity, only the apical tergites with slightly raised black hairs. Thorax with short raised black hairs. All legs with black hairs. Genae wanting. Clypeus rather finely and densely punctured, somewhat rugose, with a fine smooth median line. Frons comparatively narrow, much less than twice as broad as one eye, the inner orbits evenly rounded (in most *Anthophora* spp. the eyes above on the vertex more strongly convex than below where they touch the mandibles). Antennal joint 3 gradually thickened towards tip, about 3.5 times as long as broad. Wings slightly, in old specimens strongly, shaded with brown, only with cells near fore margin of wing somewhat pubescent. Nervulus interstitial.

HABITAT : Mansuriah, Kafr Hakeem, Kerdasa, Giza Pyramids, Dashour; Marg, Wadi Gerawi, Samalout; Ikingi (Mariout).

Although this species is represented in numbers in the local collections (Min. Agric., Ent. Soc., ALFIERI) there are only females present. The labels show that

they were collected at least on three occasions together with *A. boops* of which the above collections contain males only. *A. vidua* and *A. boops* were found together on 6. v. 1914 near the Giza Pyramids, on 27. v. 1918 at Samalout and on 10. v. 1927 in the Wadi Gerawi. At the Pyramids and at Samalout no other *Anthophora* spp. were collected on the days concerned. I am of the opinion that the two forms are the sexes of *one* species, though the differences between them are quite unusual for this genus (7). The two insects have rather little in common, but they belong in one group and their comparatively narrow frons is also a common character. Up to the present there is no definite proof yet for their specific identity.

Anthophora concolor Alfken

1926. *Anthophora concolor* Alfken, *Senckenbergiana*, VIII, p. 119 (female).

Following a translation of the description (in German) given by ALFKEN: "Female : 14 mm. Black. Mandibles in the middle somewhat reddish transparent. Genae not noticeable. Labrum very coarsely rugose and with raised black pilosity, the punctures here and there, particularly along the median line, fused to longitudinal wrinkles, the extreme fore margin being smooth. Frontal area rather coarsely punctured. Frons evenly finely and densely punctured, like sides and vertex with raised black pilosity. Antennal 3 somewhat longer than the three following joints together. Mesonotum dull, evenly and rather strongly punctured. Scutellum slightly shining, with somewhat scarcer puncturation than the mesonotum. Postscutellum with long raised pilosity. Median area of the propodeum dull with deep median sulcus; in the middle of basal half without sculpture or pile, at the sides coarsely punctured and with raised pilosity. Tergites of the abdomen without raised hairs, evenly and finely punctured, tergite V red-brown transparent, with velvet-black cushion at the posterior margin. Plate of tergite VI long and slender, shallowly margined at tip, grey shining, microscopically punctured and chagreened. Sternites irregularly punctured, with densely set fringe hairs at the hind margin, here and there red-brown transparent, sternite VI with apex somewhat shining. Legs black, the terminal tarsal joints red-brown. Scopa of tibiae and pedicellus black, calcar of hind tibiae red-brown at tip. Wings slightly shaded, veins black, tegulae black".

"A uniformly black species being, on superficial examination, similar to the black forms of *A. retusa* L. and *A. acervorum* L. but differing by the lack of the pilosity on the tergites, the black tibial scopa and the different puncturation. From *A. fumipennis*, being uniformly black too, it may easily be distinguished by the little shaded and not metallic blue fore wings".

HABITAT : 1 female, Egypt (no locality mentioned), leg. A. ANDRES.

(7) Extraordinary dimorphism of sex is known in other Apidae (e.g. *Xylocopa aestuans* L., *Bombus argillaceus* Scop., *Dasygaster argentata* Panz., *Chalicodoma* spp., a.o.).

***Anthophora maculigera* spec. nov.**

1812. Unnamed, Savigny, Descr. d'Egypte, pl. I, fig. 11 (male).

MALE : 13.5-16 mm. Ground colour black; the whole face, antennal joint 1 beneath and base of mandibles, white; flagellum dark. Face with only short and not dense white pilosity. Thorax and abdominal tergite I with short-cut yellowish grey hairs which are more white at the sides of the propodeum and the hind margin of tergite I; the remaining tergites are black, II and III with wholly decumbent, the other tergites with very short raised black hairs; the sides of the tergites II-III(-IV) show at the hind margin narrow white fasciae of adpressed hairs, which are *broadly* interrupted in the middle. Exterior faces of the middle and hind tibiae and tarsi clothed with decumbent silvery-grey or grey hairs. Pubescence of the sternites short, not white. Fore tarsi exteriorly with long white hairs; middle and hind tibiae interiorly with raised hairs. Head, thorax and femora below with grey-white hairs.

Clypeus densely, at the sides more coarsely, punctured. Genae not developed. Antennal joint 3 gradually widened towards apex, somewhat more than twice as long as broad. Tegulae blackish, finely punctured and partly pubescent. Wings only in front of the cells near the fore margin and in the r cells somewhat pubescent, discal cells bare. Nervulus interstitial. Metatarsus III with a blunt tooth behind middle that is narrower than in *A. semirufa*. Tergite VII similarly formed as in *semirufa*, median plate slender, conical, without distinct impression or marginal sulcus, rounded at the apex, and on each side of the shorter lateral teeth separated by a circular excision.

FEMALE unknown.

HABITAT : Hitherto from the northern coast only: Dabaa, Hammam (May); on 20.v.1928, 16 specimens were collected by FERRANTE (coll. Ent. Soc. Egypt).

This is another species the female of which is supposed to be an entirely black one (cf. *concolor* Alfken), though we have to compare also with *A. festae* Grib. (Cyrenaica), another *Paramegilla*-like form of which the female only is known. In this species the 1st and 2nd tergites are clothed with grey hairs, and the sternites have a white lateral fringe of white hairs; it is smaller too, on an average (12-14 mm.), and we have to expect its male to be distinctly smaller than *A. maculigera*. For these reasons I cannot hold *A. maculigera* to be the male of *A. festae*.

***Anthophora nubica* Lep.**

1841. *Anthophora nubica* Lepeletier, Hist. nat. Ins. Hym., II, p. 33 (male).

1845. *Megilla nubica* Klug, Symb. phys. Dec. 5, Ins., pl. 49, fig. 8 (male) and 9 (female).

1869. *Anthophora nubica* Dours, Mon. icon. Anthophora, p. 85.

1897. *Podalirius nubicus* Friese, Bienen Europas, III, p. 100 (male, female).

Original description (from Latin) : "Male : 16-17 mm. - Black; antennae below ferruginous from joint 4 to tip, labrum (a dot at the sides of the base black),

clypeus (a nearly semicircular spot at the sides of the base and the basal margin black), sides of face. a triangular spot above the clypeus" (= frontal area) "and the broad base of the mandibles white: vertex and thoracic dorsum with white pilosity and intermixed black hairs; sides and under side with white pilosity. Abdomen on segments I-III nearly bare, sparingly black pilose, IV-VI with dense decumbent white fasciae at the sides, the two ultimate segments and the sides of the anus with raised black hairs; sternites at the sides with white, in the middle hardly with black, fringe. Legs with black hairs, fore legs above with white hairs, on the mid legs the tibiae only above with white hairs, on the hind legs above only with a white spot at the base of the tibiae, the metatarsus with long black pilosity. Wings somewhat shaded, veins dark, margin blackish".

FEMALE : Length 17-18.5 mm. Black; labrum, clypeus at the fore margin and an anteriorly somewhat widened narrow median line, then a triangular frontal area, white. Clypeus coarsely but unevenly set with larger and smaller punctures. Flagellum brownish below. 3rd antennal fairly evenly widened towards apex, 3.5 to 4 times as long as broad. Head in front with white pilosity that is mixed with black hairs on the vertex. Thorax with short, nearly grey-blue pilosity, white hairs being largely mixed with black ones. Propodeum and under side more or less long and densely clothed with snow-white hairs. Tergites with adpressed black pilosity, tergite IV wholly, V at the sides, with snow-white decumbent pilosity. Sternites at the sides with adpressed white tufts of hairs. Fore tibiae and tarsi, middle tibiae exteriorly, with white, hind tibiae and tarsi with raised black pilosity, hind tibiae at the base with a white hair-spot. Wings strongly infuscated, the cells everywhere densely pubescent. Nervulus prefurcal.

Described after 1 female, Gebel Elba, Wadi Aideb, February (leg. H. PRIESNER, coll. Min. Agric.).

Anthophora fumipennis Alfken

1926. *Anthophora fumipennis* Alfken, *Senckenbergiana*, VIII, p. 120 (female).

Following a translation of the description given by ALFKEN :

FEMALE : Length 19 mm. Genae linear, ferruginous. Labrum with decumbent black, in the middle and at base bristly, exteriorly all around with velvety, pilosity. Mandibles with testaceous spot at tip. Clypeus with rather dense, coarsely rugose puncturation, with slight median keel and narrowly smooth fore margin. Frontal area with somewhat scarcer puncturation, smooth in front. Frons and its sides with rather even dense puncturation and velvety pilosity. Vertex and temples with raised black pilosity. Antennae black-brown below, joint 3 somewhat longer than the three following joints together. Mesonotum little shining, exteriorly with dense black pilosity, somewhat impressed in the middle, with irregular, in the middle

denser and finer, beside scarcer and coarser, exteriorly again denser and finer puncturation, the intervals of the punctures very finely rugosely granulated. Scutellum rather evenly densely and strongly punctured and, besides, with dense raised black pilosity. Postscutellum at the base with grey felt-cover, at the apex with raised black pilosity. Median area of the propodeum deepened in the middle and with a slight short median keel, apical half and middle of basal half smooth and shining, very finely and densely punctured, apical half at the margin more strongly shining and smooth, basal half at the sides with dense and coarse puncturation and, besides, with fine raised black hairs, the lateral areas of the propodeum as well as the side of the basal half of the central area, punctured and pilose. Abdomen only at the base of tergite I with fine raised, else with dense decumbent, black pilosity, the tergites I-IV at the base irregularly and rather strongly, at the apex evenly and more finely punctured, tergite V at base with rather dense and file-like puncturation, and with sparing adpressed pilosity, at the apex with dense velvet-black apical fringe. Tergite VI (pygidium) parallel-sided, rounded at tip, finely margined at the sides, surface almost without sculpture, the dense lateral pilosity covered with single white hairs. Sternites, particularly the anterior, of here and there at base and apex red brown colour, the puncturation uneven, denser and finer at base, scarcer and stronger at apex, the posterior margins with black fringe hairs. Legs clothed with black hairs, scopa of tibiae with scarce pale hairs between. Calcar of hind tibiae black, slightly reddish transparent. Fore wings black-brown with bluish sheen, hind wings little darkened. Tegulae black".

HABITAT : 1 female, Egypt (no locality mentioned), leg. A. ANDRES; 1 female, Dabaa (May), coll. Ministry of Agriculture.

This species I have tentatively placed in this group, the male being still unknown.

Anthophora armata Fr. var. *tetra* Fr.

1905. cf. *Anthophora armata* Friese, *Zeitschr. Hym. Dipt.*, V, p. 234.

1922. *Anthophora armata* v. *tetra* Friese, *Zool. Jahrb., Syst.*, 46, p. 10.

FEMALE : 19.5-22 mm. Black. Pilosity of the head, the whole legs and under side of body, and the tergites II-VI black of which tergites II and III are covered with very short, semi-erect dark hairs, IV and V with more distinctly raised such hairs, especially at the sides; thorax and abdominal tergite I everywhere, the former also at the sides, covered with short raised yellow to ferruginous pilosity. Tegulae ferruginous. Wings *strongly* shaded with dark brown and, besides, with distinct pubescence in the cells. The black pilosity of the fore and middle femora long beneath, of the hind femora short; hind tibiae and metatarsus III with long and coarse black hairs. Calcaria dark.

Genae not developed. Clypeus finely and densely punctured, without median carina. Antennal 3 at the apex gradually, not abruptly, thickened, about 3.5 times as long as broad, scarcely as long as the four following joints combined. Tergites shining, the ground chagreened and finely, densely punctured, more finely yet towards the posterior margins of the tergites. Nervulus interstitial.

HABITAT : 1 female, Gebel Elba, Wadi Aideb, February, 1933 (leg. H. PRIESNER, coll. Min. Agric.), identified by ALFKEN.

The male remained unknown to me. The male of the typical form is, according to FRIESE, characterized by the metatarsus III which bears at the base beneath a large pointed tooth. The clypeus is usually spotted with black, otherwise like the labrum yellow. Thorax with yellow or ferruginous hairs, coloration about as in *A. semirufa*, the under side of the body with black pilosity. Tergite I is only at the base covered with yellow hairs. Length 18 mm.

The typical form is obviously only ethiopic.

Group VII (quadrifasciata)

Anthophora carnea Gribodo

1894. *Anthophora carnea* Gribodo, *Bull. soc. ent. Ital.*, XXVI, p. 277 (female).

1897. *Podalirius carneus* Friese, *Bienen Europas*, III, p. 290.

1916. *Anthophora erubescens* Storey, *Min. Agric., Techn. Bull.* 5, p. 18.

1926. *Anthophora erubescens* Alfken (nec F. Mor.), *Senckenbergiana*, VIII, p. 100.

MALE : 14-15 mm. Body and legs ferruginous, thorax above and below blackened. Antennae dark. joint 1 yellow beneath. Face yellow, tips of mandibles brownish. Tergites (III-) IV-V sometimes blackened at base, and also the sternites IV-VI darkened at base. Pilosity of face not very long, whitish to pale yellow. Thorax with very short yellowish-white to ferruginous pilosity, without black hairs. Propodeum at the sides with long white pile. Tergites clothed with short adpressed hairs, tergite I only at base with some short raised hairs, rest with decumbent hairs. Tergites I-V with white marginal fasciae which are somewhat broader in the middle than at the sides; tergite VI at the sides with white hairs. Tibiae and metatarsi exteriorly clothed with whitish, interiorly with reddish, hairs. Calcaria yellow.

Clypeus little protruding, densely and finely punctured. Labrum transverse, slightly emarginated in front. Antennal 3 about twice as long as broad. Wings hyaline, veins ferruginous, pubescence noticeable only in cell r1. Nervulus slightly prefurcal. Tergite VII produced in a transparent, yellow, parallel-sided plate that is quite indistinctly excavated (almost straight) at the apical margin; median line carinated. Joint 5 of middle tarsi slender, without brush-hairs. Metatarsi slender.

FEMALE : Length 15-18 mm. Somewhat darker ferruginous. Face ferruginous, clypeus slightly brownish towards base, vertex and thorax dark on the ground;

abdomen dark yellowish-brown or ferruginous, legs ferruginous, with pilosity of the same colour. Antennal 1 ferruginous, paler below. Tegulae testaceous or ferruginous. Wings distinctly shaded. Anterior body with short reddish pilosity, the hairs being longer only on the vertex. Tergite I with dense, almost decumbent ferruginous hairs, tergites II-IV without longer, not even adpressed hairs, the lateral angles of tergites II and III with a small spot of short, adpressed, silky white, hairs. Hind margins of tergites II and III showing a very fine quite indistinct line of white hairs. Apex of tergite V clothed with somewhat longer, reddish hairs, like the sides of tergite VI. Tibiae and tarsi exteriorly with long ferruginous hairs.

Clypeus densely punctured, with fine smooth median keel. Genae not developed. Antennal 3 gradually thickened towards apex, scarcely three times as long as broad and about as long as the three following joints combined. Metatarsus III slender. Calcaria long, yellow. Venter with reddish marginal fringe of segments.

HABITAT : Uncommon; from the following localities : Mansuriah, Kerdasa, Abu Rowash, Pyramids of Giza, Cairo, Meadi, Wadi Digla, Helouan, Wadi Rash-eed, Wadi Hussein (April-June).

ALFKEN has already hinted to the possibility that the specimen identified by him with *A. erubescens* F. Mor. actually belonged to *carnea* Grib. I have not seen the Transcaspian *A. erubescens*, but very much doubt that our Egyptian species (*carnea*) could be identical with it.

Anthophora crocea (Klug)

1845. *Megilla crocea* Klug, Symb. phys., Dec. 5, Ins., pl. 50, fig. 1 (male and female).

1897. *Podalirius croceus* Friese, Bienen Europas, III, p. 105 (erroneously as synonym of *A. concinna*).

1926. *Anthophora crocea* Alfken, *Senckenbergiana*, VIII, p. 100.

MALE : Length 9-11 mm. Black, femora and some sternites mostly reddish or brown. Antennae reddish below or brownish, joint 1 yellow below. Face yellow, only fronto-clypeal suture with black line. Margins of tergites broadly yellowish transparent. Labrum with short, face and vertex with longer, reddish pilosity. Hairs of the thorax reddish too, but, like the vertex, mixed with some black ones. Tegulae ferruginous, almost dull. Wings shaded with pale brown, *all cells distinctly pubescent*; nervulus distinctly prefurcal. Abdomen with marginal bands of decumbent ferruginous hairs, but the tergites in front of the fasciae, though less densely, covered with decumbent ferruginous or yellow hairs. Anal segment with black hairs and two small reddish teeth that are almost covered by the black hairs. Calcaria black. Tibiae with reddish or ferruginous pile, metatarsus III on both sides black-haired, only at base with a few pale hairs.

Antennal joint 3 less than 1.5 times as long as broad, about as long as joint 5. *Scutellum shining at base and sparingly punctured.*

FEMALE : Length 10.5-13 mm. Like the male, but posterior metatarsus exteriorly at base with a ferruginous hair-spot. Antennal I testaceous. Tergite I often red on the ground. Clypeus yellow, with 2 large brownish-black spots leaving a parallelsided yellow line between them. Frontal area forming a flat yellow triangle. Antennal 3 almost three times as long as broad, somewhat shorter than joints 4-6 combined.

HABITAT : A southern species. Kom Ombo, Assouan, Mersa Halaib, Gebei Elba; Arabia (El-Minawarah).

Though varying in ground-colour from ferruginous to dark brown, the species is unmistakable.

***Anthophora klugi* nom. nov.**

1926. *Anthophora farinosa* Alfken, (nec Klug), *Senckenbergiana*, VIII, p. 100.

MALE : Length 11-13 mm. Black. Antennae, except joint 1 which is whitish beneath, always dark. Face ivory-white, clypeus only at base towards the sides of the frons with dark line, without spots. Pilosity as described for the female, but tergite I of the abdomen only with pale hairs, no black hairs present, only the dark ground is somewhat visible across middle. Tergites with four complete and one incomplete, medially interrupted, *white* fasciae. Metatarsi I and II exteriorly clothed with white hairs, metatarsus III with black hairs only, or with very few white hairs at base.

Clypeus moderately strongly protruding, the sides of the frons not quite reaching the anterior lateral angles of the clypeus. Antennal 3 not quite twice as long as broad, joint 4 somewhat transverse. The excavation between the two small teeth of tergite VII is straight for some distance.

FEMALE : Length 13-15 mm. Ground colour black, antennae wholly black. Face very pale yellow, sides and large spot on the clypeus black, the spots being interiorly comparatively widely separated (cf. *quadrifasciata*), the pale interval being distally not quite twice as broad as the width of the flagellum; the spots are anteriorly somewhat emarginated but less so than in *quadrifasciata*, and the pale median line is nearly always slightly conical, somewhat narrowed towards base. Labrum somewhat broader than long. Head clothed with white, *thorax with greyish-yellow hairs*, vertex and thorax having black hairs intermixed; under side with white hairs. Tergite I with raised white hairs, but across the middle also with black hairs (in the male only with white hairs). Fasciae of the tergites broad, white, on I-IV complete, on V only laterally developed; the sternites are from II-V laterally fringed with white hairs. Tibiae exteriorly densely set with decumbent white hairs, metatarsus II at the exterior margin with white, metatarsus III on both faces with black, hairs. Tegulae testaceous, dull.

Antennal joint 3 well three times as long as broad. Genae wanting. Wings slightly shaded and distinctly pubescent in the cells. Nervulus prefurcal. Posterior metatarsus rather broad and appearing conical on account of the marginal black hairs becoming shorter towards apex.

HABITAT: The species is rather common and widely distributed (April-December).

A. klugi comes closest to *quadrifasciata* Vill. and differs in the female by its larger size, on an average, the broader pale median stripe of the clypeus, the paler colour of the pile, especially also the pure-white fasciae which are a little broader than in *quadrifasciata*; the male is more difficult to distinguish, except for the colour of the thorax which shows a grey or whitish yellow pilosity, instead of ferruginous as in *quadrifasciata*; the excavation between the teeth of tergite VII is straight for some distance, instead of rounded, the antennae are straight as to their segments whilst they are often indistinctly wavy, in *quadrifasciata*; the fasciae of the tergites are slightly broader.

Our species was considered to be identical with *A. farinosa* Klug (from Arabia), by ALFKEN. Although the two species are rather similar to each other in many respects, they are not identical, as I could see from the examination of the types of *A. farinosa*. In the latter species thorax and abdominal tergite I of the female show uniformly pale hairs, while in all specimens of *klugi* black hairs can be seen among the pale ones. The pale spots of the clypeus are yet shorter in *farinosa*, than in *klugi*; the antennae have the flagellum brown below, in *klugi* always black; the pygidial area is transversely chagreened having in the middle a very narrow smooth longitudinal line, in *klugi* the face of the VIth tergite is quite evenly chagreened. The male type of *farinosa* is in the pilosity of the abdomen much more similar to *A. savignyi* than to *klugi*; the teeth of tergite VII are much closer together, and separated by a round excavation; the fasciae are relatively broader and have a short white median line, and the fascia on tergite V is complete, as in *savignyi*; head and thorax are clothed with yellow-grey hairs, without black hairs between; the flagellum is ferruginous beneath; the posterior metatarsus is much more slender than in *klugi*. ALFKEN, who also examined the types, attached a label to the pin of the male specimen: "Dürfte nicht das Männchen von *farinosa* sein". However, the specimen — though only 11 mm. long — may well belong to the female type, as it shows the same coloration of the pilosity, and agrees with the female in the pale flagellum. In any case, neither male nor female of *farinosa* are identical with the Egyptian species.

I had to give a new name because FRIESE's *A. wegneri*, which I for some time held to be identical with *klugi*, is a synonym of *A. alternans* Kl., since the description given by FRIESE, as well as the type (seen by ALFKEN) prove this synonymy. FRIESE had obviously mixed up the two species, since of the four specimens (in the Vienna Museum) labelled "*wegneri* type" three are *klugi* and one is *alternans* (q.v.).

Anthophora quadrifasciata Vill.

1790. *Apis quadrifasciata* Villers, C. Linnaei Entom., III, p. 319.
 1812. Unnamed, Savigny, Descr. d'Egypte, pl. I, fig. 14 (female).
 1916. *Anthophora quadrifasciata* Storey, Min. Agric., Techn. Bull. 5, p. 18 (pro parte).
 1926. *Anthophora quadrifasciata* Alfken, *Senckenbergiana*, VIII, p. 100.

MALE : Length 13-14.5 mm. Extremely similar to the male of *klugi*, but in the Egyptian race differing in having slightly narrower bands of the abdomen, and very slightly slenderer metatarsus III, rounded interval between the teeth of tergite VII, the possession of a few black hairs on tergite I, and sometimes not absolutely straight flagellar joints. The pile of the thorax is in fresh specimens ferruginous, and the basal fasciae are usually yellowish, not pure-white.

FEMALE : Length 12-14 mm. From *klugi* differing by the following characters: The black spots of the clypeus are in the middle somewhat less broadly separated so that the yellow median stripe is only a little broader than the flagellum, and is parallel-sided, not or scarcely narrowed towards base; the pale fore margin of the clypeus is narrower and the distal excavation of the black spots on either side is stronger, and their fore margin therefore more oblique on both sides. The pilosity of the thorax is ferruginous (in the Egyptian form of the species), in *klugi* yellowish-grey; the pale fasciae of the abdomen, at least of the tergites I-II (-III) show a yellowish tinge and are a little narrower than in *klugi*.

HABITAT : The species is widely distributed but obviously somewhat less common in this country than *klugi*; it was found in Middle Egypt (e.g. Meadi, Turrah) as well as at the northern coast (from Damiette to Mersa Matrouh). March-December.

A. quadrifasciata is at first sight somewhat similar to *magnilabris* Fedt.; but in this species the clypeus protrudes more strongly, the labrum is square, the flagellum ferruginous beneath, and the sides of the frons attain nearly the base of the mandibles, their tips reaching the level of the fore angles of the clypeus.

Anthophora magnilabris Fedtsch.

1875. *Anthophora magnilabris* Fedtschenko, Turkestan. Apid., I, p. 22 (male and female).
 1897. *Podalirius magnilabris* Friese, Bienen Europas, III, p. 90.

MALE : Length 11 mm. Ground colour black, face pale yellow; frontal area triangularly pale yellow. Flagellum ferruginous below, joint 1 of antennae yellow below. Face with little dense white pilosity. Thorax clothed with pale yellowish-grey hairs, without black hairs. Tergites I-IV with fasciae of white decumbent hairs that are about as broad as in *A. quadrifasciata*, tergite V with broadly interrupted white fascia or entirely black. Tibiae and metatarsus II exteriorly clothed with adpressed white hairs, metatarsus III on both faces with black hairs, only exteriorly

at base with very few white hairs. Pilosity of the metatarsus not long, and therefore the metatarsus appearing slender. Tarsi and calcaria black. Posterior margins of the sternites and posterior femora not fringed with white hairs.

Clypeus very strongly protruding, labrum square, appearing slightly elongate. Sides of frons broad, their tips almost reaching the mandibles. Genae wanting. Antennal 3 about 1.5 times as long as broad, 4 slightly transverse. Tegulae testaceous, pubescent. Wing cells distinctly pubescent. Tergite VII with two small teeth that appear black owing to their pilosity, and are separated by an arched interval.

The female is unknown to me, and, since the species was confused with others by FRIESE and ALFKEN, I can only refer to FEDTSCHENKO's description : with yellow pilosity above, segments I-IV with white marginal fasciae. Flagellum ferruginous below. Face yellow or pale pink, clypeus densely punctured, with angular black basal markings. Labrum almost rugose. Antennal joint 3 shorter than the three following joints combined. Tibiae exteriorly with white hairs. The labrum is also in the female very long. Sides of frons yellow.

I only know 2 males from Egypt (Borg, March, coll. PRIESNER; Mamoura, coll. Min. Agric.); these fully agree with a male of *magnilabris* Fedt. (from Transcaspia) labeled by FRIESE (in coll. Mus. Vienna). Another specimen in the same collection (from Syria) is *A. savignyi* Lep., a species that is easily distinguished from *magnilabris* in having a full fascia on tergite V, slightly transverse labrum, intermixed black hairs at the clypeo-frontal suture, on the vertex and thorax, narrower abdominal fasciae and a small white hairspot exteriorly at the base of the metatarsus III. Another male of my collection (from Wadi Gerawi, November) was identified by ALFKEN with *magnilabris* but is nothing else than a rubbed specimen of *savignyi*, too.

Anthophora litorana spec. nov.

MALE : 11-12.5 mm. Black, antennal joint 1 beneath and face, i.e. sides of frons, mandibles, labrum, clypeus and frontal area (in the shape of a flat triangle or brace), ivory-white; an elongate fine marking at the clypeo-frontal suture black. Flagellum black. Wings hyaline, veins brown. Face with little densely set white hairs. Thorax with yellow-grey hairs, not mixed with black hairs. Abdominal tergite I with raised whitish-yellow pilosity, the tergites I-V with narrow fasciae of decumbent white hairs at the hind margins; on tergite V the fascia is interrupted in the middle and replaced there by dark brownish hairs; this interruption is in all specimens broader than in *A. klugi*. Head and thorax beneath with grey, sternites of the abdomen with short, almost adpressed brown hairs, without white fringe. The tergites are in front of the fasciae clothed with decumbent brown-black hairs, and with a few semierect dark hairs. Middle tibiae and tarsi exteriorly, like the hind tibiae, with decumbent white hairs, the hind tarsi, however, on both faces with black hairs; metatarsus III at the extreme base with only a few white hairs.

Clypeus distinctly protruding, with scattered, shallow puncturation. Labrum little broader than long. Sides of frons reaching with their tips the base of the mandibles. Antennal joint 3 short, not quite 1.5 times as long as broad. Genae wanting. Tegulae testaceous. Wings distinctly pubescent in the cells, also m 2 and m 3 with some microsetae. Nervulus somewhat prefurcal. Tergite VII with very short and small teeth that are separated by an almost straight interval; pilosity about the teeth short. Metatarsi of middle and hind legs *slender*, the whole hind tarsi slenderer than in *A. klugi*, the difference particularly noticeable in joint 2. Ultimate joint of middle tarsi slender, without black hairs. — Female unknown, but most likely differing from *A. klugi* by the narrower fasciae of the abdomen.

HABITAT : The types are from Mersa Matrouh, 20.viii.1955 (coll. Ain Shams Univ.); in the collection of the Ministry of Agriculture there is 1 male from Sinai (Wadi Feiran — St. Katherine, 28.v.1935, leg. M. KASSIM).

Belonging to the *quadrifasciata*-group this species differs from the similarly coloured *A. klugi* by the slightly yellowish tinge of the whitish face parts, the narrower fasciae of the tergites, the shorter teeth of tergite VII, the broader interruption of the white band of tergite V and by the slenderer tarsi. Although the clypeus is strongly protruding, it is yet less convex than in *A. magnilabris* which has, besides, narrower labrum, narrower face, broader metatarsi and has the flagellum ferruginous below.

I should have held this to be a littoral subspecies of *klugi*, if the latter species would not occur at the costal area, too.

***Anthophora andresi* Friese**

1914. *Anthophora andresi* Friese, *Stettiner Ent. Zeitg.*, LXXV, p. 220 (male and female).

1926. *Anthophora glauca* Aifken, *Senckenbergiana*, VIII, p. 118 (male and female).

MALE : Length 9-10 mm. Ground colour black, antennae wholly black, also joint 1. Face white, but the clypeus only in the middle broadly triangularly white, like the labrum and the mandibles. Sides of frons black. Face with very short white pilosity. Thorax above clothed with white hairs, mixed with many black ones. Tergite I without black hairs, tergites I-IV with moderately broad marginal fasciae of adpressed hairs, tergites V-VII with dull dark brown, in other specimens with black tomentum. Tibiae exteriorly with white hairs, metatarsus II only at base or upper margin at base with white hairs; the hind tarsi only with black hairs. Sternites without white hairs.

Clypeus with very fine and dense puncturation. Antennal 3 scarcely 1.5 times as long as broad, 4 little transverse. The antennae are comparatively long, the intermediate flagellar joints not quite twice as long as broad. Tegulae pale brown or testaceous. Nervures of wing, except costa, dark, the cells without pubescence. Nervulus prefurcal. Metatarsi slender. Tergite VII with distinct but small reddish teeth which are separated by a semicircular interval and not surrounded by longer hairs.

FEMALE : Length 8.5-12.5 mm. Black, mandibles, labrum, fore margin of clypeus and a *wedge-shaped* median line of it, white, frontal area often wholly dark, never *broadly* white. Colour of pilosity as in the male; vertex much mixed with black hairs. Abdominal fasciae broader, full on tergites I-IV, *tergite V only at the sides with white hairs*, in the middle with velvet-black hairs. Sides of the sternites at the hind margins with white hairs.

Clypeus without median keel, with moderately dense, shallow puncturation. Antennal joint 3 scarcely three times as long as broad, gradually thickened towards tip, shorter than the three following joints together. Metatarsus III appearing conical, on account of the decreasing length of the marginal hairs. Wings as in the male without cell-pubesence.

HABITAT : Widely distributed and locally common, recorded from the following localities : Mersa Matrouh, Amriah; Kerdasa, Giza Pyramids, Gebel Asfar, Wadi Digla, Meadi, Helouar, Wadi Hof; Fayed. (April-November).

The type (male) of FRIESE'S *A. andresi* bears two labels (Mariout, 20.ix.07 and Ikingi, 11.ii.12) the latter one obviously a specimen collected by A. ANDRES, as mentioned in the description by FRIESE (l.c.), the former label perhaps formerly belonging to another specimen having been lost. In any case is this specimen identical with others identified by Alfken as *A. glauca*. A female type (from Cairo) must have been examined by ALFKEN, since it bears the additional label in ALFKEN'S handwriting: "*A. leucomelaena* D.T. = (*melaleuca* Walk.); this specimen, too, is identical with *glauca*. The specimens of *glauca* (det. ALFKEN in ALFIERI'S collection are again the same. Whether WALKER'S *melaleuca* is the same as *andresi* (*glauca*) or perhaps the species described below, we shall never be able to decide, since WALKER'S types are destroyed. ALFKEN'S *A. leucomelaena* (*Ent. Mitt.*, XVI, p. 151; 1927) from Port Sudan is another species, not identical with *A. andresi*.

Anthophora omissa spec. nov.

FEMALE : 9.5-10.5 mm. Black. Face pale yellow (i.e. labrum except 2 dark basal points, mandibles with the exception of the brown tips, fore margin and a mostly conical median stripe of the clypeus, and the frontal area (a flat triangle); the black sides and base of the clypeus occupy well two-thirds of the length of it. Face with not very dense whitish pilosity, vertex, besides, with a few black hairs; thorax with grey pilosity, i.e. many black among the white hairs. Abdominal tergite I with white, without black hairs, tergites I-IV with full, rather broad, sharply defined marginal fasciae of adpressed white hairs, tergites II-IV in front of the fasciae with black decumbent hairs; *tergite V and the whole end of the abdomen only with black hairs, tergite V at the sides without any white hairs*; tergite IV also with a few semi-erect black hairs. Middle and hind tibiae exteriorly with white hairs, metatarsus II only at the basal margin above with single white hairs, metatarsus III on either face

with black hairs. Under side of thorax with white, sternites of the abdomen with black hairs only. Calcaria dark.

Labrum only slightly transverse, rugosely punctured; clypeus coarsely punctured. Antennal joint 3 not quite three times but somewhat more than 2.5 times as long as broad, gradually thickened towards tip. Tegulae brown with paler margins, pubescent. Wings hyaline, veins dark, cells m 1, r 1 and sc distinctly pubescent. Nervulus decidedly prefurcal.

MALE unknown.

HABITAT : I collected 4 specimens of this species in April at Mersa Matrouh.

Closely related to *A. andresi*, this species differs by the black pilosity of the whole Vth tergite, the lack of white hairs at the margins of the sternites, the pubescent anterior wing cells, and distinctly pale yellow, not ivory-white, colour of the face, and is certainly specifically different.

Anthophora savignyi Lep.

1841. *Anthophora savignyi* Lepeletier, Hist. nat. Ins. Hym., II, p. 47 (female).

1897. *Podalirius savignyi* Friese, Bienen Europas, III, p. 308.

1926. *Anthophora savignyi* Alfken, *Senckenbergiana*, VIII, pp. 100, 117 (male and female).

MALE : 9-12 mm. Black, antennal joint 1 beneath, frontal area (angular above), sides of frons, clypeus, labrum and mandibles (tips darker), yellow; suture between clypeus and labrum, 2 basal dots of the latter and a comma-shaped spot between clypeus and basal sides of frons, black. Flagellum not or scarcely paler beneath. Frons with short raised pale yellow and black mixed pilosity. Vertex and thorax clothed with ferruginous to yellow-grey hairs, with many black hairs between, and tergite I of abdomen with the same kind of clothing. Tergites I-V with white, comparatively narrow fasciae, disk in front of them black; there is also a *short* raised black pilosity present in front of the bands, that becomes somewhat longer on tergite V. Middle tibiae and tarsi exteriorly with yellow-grey to whitish hairs, of the tarsi at least the whole metatarsus and joint 2 with white hairs. Hind tibiae with the same pilosity but metatarsus III only at the extreme base with a white hair-spot that often occupies one-third of its length but may be much shorter. Sternites somewhat reddish transparent, the apical margins with whitish fringe. Calcaria dark.

Clypeus dull, with scattered shallow puncturation, distinctly protruding. Antennal 3 not quite twice as long as broad. Tegulae ferruginous, pubescent. Puncturation of the tergites moderately dense. Tergite VII with 2 dark well developed small teeth which are separated by a straight interval. Wings almost hyaline, fore wings pubescent in almost all cells (m1, m2, m3, r1, r2, r3, sc). There exist smaller males in which antennal 3 is only little longer than broad, tergite I has only very few black hairs, the metatarsus III at base only few white hairs, and the thoracic

pilosity is a little paler. In agreement with ALFKEN I consider these to be only small specimens of *savignyi*, and not another form.

FEMALE : 10.5-12 mm. Black. Frontal area (triangular), clypeus, labrum, mandibles (with dark apices) and sides of frons yellow; clypeus with two large elongate spots which are angular exteriorly (laterally). Antennae black, but flagellum sometimes reddish beneath. The basal sternites mostly reddish. Pilosity and fasciae of the abdomen as in the male, tergite V all across with white hairs, and with black median velvet-spot posteriorly. The fasciae are usually slightly produced in the middle in a fine short line of white hairs. Pubescence of wing as in the male.

Antennal 3 long, thickened at the apex, well three times as long as broad, longer than the three but shorter than the four following joints together. Nervulus prefurcal.

HABITAT : Common everywhere and distributed all over Egypt, also collected in Sinai and Mersa Halaib (Gebel Elba). The whole year round.

Anthophora punctifrons Walker

1871. *Anthophora punctifrons* Walker, List Hym. Egypt, p. 57 (female).

1897. *Podalirius punctifrons* Friese, Bienen Europas, III, p. 305.

1899. *Podalirius albigenus* var. *flaviceps* Friese. Ent. Nachrichten, XV, p. 322 (male and female).

1926. *Anthophora punctifrons* Alfken, Senckenbergiana, VIII, pp. 100, 117 (male and female).

MALE : Length 8.5-9.5 mm. Black, terminal tarsal joint or its tip sometimes reddish, basal abdominal sternites often reddish-brown. Antennal joint 1 beneath and the whole face yellow; frontal area distinctly triangular in shape; clypeus only with black dot or comma at its suture towards sides of frons; flagellum ferruginous, somewhat brownish above, antennal 3 mostly wholly ferruginous. Face with short whitish, thorax and tergite I of the abdomen with longer whitish-yellow hairs, well mixed with black hairs; tergites I-V with moderately broad white fasciae of decumbent hairs, and black decumbent pilosity in front of the fasciae; only tergite IV with a few short semi-erect black hairs. Middle tibiae and metatarsus II (but not joints 2-5) and the hind tibiae with decumbent white pilosity, metatarsus III on both faces with black hairs, at most at the extreme base exteriorly with single white hairs but without hair-spot. Calcaria dark. Head and thorax beneath with white hairs, the sternites with dark hairs, only laterally at the hind margin with a few white fringe hairs.

Labrum and clypeus dull, shallowly punctured, labrum square, clypeus little protruding. Antennal joint 3 short, little longer than broad. Tergites with fine and dense puncturation. Tergite VII with 2 well developed small teeth that are reddish at tips and separated by a broadly arched or straight interval. Tegulae ferruginous, dull. Wings scarcely shaded, veins dark, only costa often yellowish, the anterior cells distinctly pubescent and also in cells m2 and r2 some microsetae. Nervulus distinctly prefurcal.

FEMALE : 8-10.5 mm. Black, flagellum about from apex of antennal 3 onwards ferruginous, often darkened above. Antennal 1 beneath and face yellow, clypeus with two quadrangular black spots which are exteriorly limited by the yellow sides of the frons, and anteriorly straight or slightly emarginated, the exterior angle is right or pointed. Frontal area large, triangular, yellow, broader than the yellow median stripe of the clypeus. Vertex, thorax and abdominal tergite I profusely mixed with black hairs, grey-yellow to yellow. Fasciae of the tergites I-V white or anteriorly with yellow tinge; tergite V in the middle of the hind margin with black pilosity, also the basal white mixed with black hairs. Sternites as in the male. Tibiae exteriorly clothed with white, like metatarsus II (at base and upper margin), metatarsus III on both faces with black pilosity, at base mostly with several white hairs.

Face flattened, labrum little transverse, dull, densely punctured, clypeus less densely so, shining, especially in the middle. Antennal 3 2.3-2.5 times as long as broad.

HABITAT : Middle and Upper Egypt and also in the Canal Zone, common (April-October). Sudan.

The species was formerly considered to be identical with *A. annulifera* Walker, but ALFKEN changed his opinion and gave it later the name: *A. punctifrons* Walker. In *A. annulifera* the face is, according to WALKER, entirely pale, without black spots (female), our species can therefore not be identical with it. WALKER'S *A. punctifrons* has black dots, the 1st antennal is yellow below (female) and the pilosity of the tarsi seems to agree, too. With some hesitation I have to adopt ALFKEN'S interpretation. *A. albigena flaviceps* (l.c.) is surely identical with our species, as the examination of the type specimens confirmed. ALFKEN specimens of *punctifrons* from El-Obeid (Sudan) are also the same.

Anthophora albigena Lep. ssp. *afra* nov.

1841. *Anthophora albigena* Lapeletier, Hist. nat. Ins. Hym., II, p. 28.
1897. *Podalirius albigenus* Friese, Bienen Europas, III, p. 77 (further references).
1916. *Anthophora albigena* Storey, Min. Agric., Techn. Bul. 5, p. 15.

MALE : Length 9-10 mm. Ground colour black, face and antennal joint 1 beneath dull white; clypeus at the lateral suture with black arched line; frontal area a flat triangle, and sides of frons white. Clypeus and labrum little hairy. Thorax with yellow-grey hairs, mixed with black hairs, and also the vertex and the lateral suture of the clypeus with a few black hairs. Abdominal tergite I in the middle across with black raised hairs. Tergites with adpressed black pilosity on the disks and normally wide white fasciae on tergites I-V; the fasciae are medially slightly produced by a fine line. Tergite VI only at the sides with a few white hairs. Middle tarsi exteriorly with white hairs, also their joints 2 and 3; metatarsus III only in the basal third with white decumbent hairs.

fused with the sides of the frons and occupying about half of the clypeus' length; frontal area a flat white triangle connected with the white fore margin of the clypeus by a pale median line. Pilosity of frons and vertex short whitish. black hairs by the ocelli. Hairs on thorax grey-yellow, well mixed with black ones. Tergite I predominantly covered with pale hairs, tergites II-V with decumbent black hairs and few raised black hairs of medium length: posteromarginal fasciae on tergites I-V white, normal. sometimes with fine longitudinal short line in front of middle. Head and thorax beneath with white-grey, sternites with very short white hairs at the sides, without longer fringe hairs. Tibiae and the *whole tarsi* exteriorly clothed with white, interiorly with black, hairs. Calcaria dark. Tegulae brown with dark center.

Labrum somewhat transverse. Clypeus not much protruding, nearly dull. Antennal 3 short, not even 1.5 times as long as broad. Wings hyaline, with distinct pilosity in the cells m1, r1 and sc. near the fore margin of the wing. Veins black. Nervulus prefurcal. Tergite VII with two small teeth which are separated by a rather straight interval.

FEMALE: Length 9-10 mm. Black; labrum, mandibles (with red apices) and very narrowly the fore margin of the clypeus and a median line not reaching base, white. Pilosity of head and thorax as in the male, though with somewhat greater number of black hairs. The pilosity of the tergites is on II-V almost solely decumbent, without longer hairs. Hind tibiae exteriorly clothed with white to greyish-white hairs and the metatarsus III has a large white hair-spot at base that almost attains the apex. Calcaria dark. Tegulae brown or paler. Wings as in the male or the whole cell m1, also part of m2 pubescent; interior face of metatarsus III with dark brown hairs.

Labrum transverse. Clypeus dull. Antennal 3 scarcely three times as long as broad. about as long as the three following joints combined.

HABITAT: Uncommon; Kerdasa, Abu Rowash; Wadi Hussein; Wadi Galala; Sinai (Kosseima). (March-May).

Anthophora montivaga Fedt.

1875. *Anthophora montivaga* Fedtschenko, Turkest. Apid. I, p. 34, pl. 3, fig. 13 (male).

1894. *Anthophora montivaga* Morawitz, *Horae soc. ent. Ross.*, XXVIII, p. 22 (female).

1897. *Podalirius montivagus* Friese, *Bienen Europas*, III, p. 87.

MALE: "Maxillary palpi 5-segmented; black, head, thorax and 1st abdominal segment grey pilose; occiput and mesonotum with numerous black hairs intermixed; abdominal segments 1-5 with white-banded apical margin; calcaria black to piceous. Mandibles, labrum, fore margin and a longitudinal line of the clypeus as well as a small triangular band on the scutum (sc. frontal area) pale ivory-coloured; antennae wholly black. Length 11 mm." (FEDTSCHENKO).

FEMALE: "Genae wanting, labrum slightly transverse, 3rd antennal joint shorter than the three following joints combined; black, tegulae fusco-piceous,

mandibles, labrum, a narrow apical (on both sides abbreviated) fascia and a longitudinal line of the clypeus and a dot of the frontal area pale yellowish; head and thorax beneath grey pilose; thorax above with cinereous or blackish raised pilosity; wings slightly infumated, with dark veins, ordinary transverse vein prefurcal; abdominal tergites with black raised hairs, 1-4 at the apex fringed with grey-white, sternites with black, on either side with white, fringe; legs exteriorly with white, interiorly with black hairs, posterior metatarsus with dark penicillus at apex. Length 12-13 mm." (F. MORAWITZ).

To this original description (in Latin) FRIESE adds that the female is characterized by the limited pale markings of the face, i.e. a small triangular frontal area, a very narrow apical line of the clypeus which is abbreviated on either side, and, fused with it, a cuneiform marking, pale yellow. It is similar to *A. albigena* but somewhat larger. FRIESE mentions, besides the original specimens from Turkestan, such from Algeria and *Cairo*.

I have not seen Egyptian specimens but only the male, noted also by FRIESE, in the collection of the Vienna Museum. From this I noted the following characters: Antennae black. Pilosity white, on vertex and thorax mixed with black. Clypeus with median line and fore margin broadly whitish, sides of frons black, labrum with two black dots. Antennal 3 longer than 4, much shorter than 4-5. Tergites with distinctly raised black hairs, tergites I-V with white fasciae, that on V interrupted in the middle where the hairs are brown. Metatarsus III exteriorly wholly clothed with white hairs.

The species is very close to *A. pipiens* but larger (female 13-14 mm.) and has tergite V dark-haired; the fasciae of the preceding tergites are not produced in the middle. In the male, having a length of 11 mm., the fascia on tergite V is interrupted in the middle, while it is full in *pipiens*.

The male is characterized by the clypeus spots, the wholly black antennae, the sharply defined fasciae and the exteriorly wholly white-haired tarsi. The female is recognized by the dark clypeus design and the white hairs of the whole outer face of the metatarsus III, and might only be mistaken with *albigena afra* which has, however, a pale brace-shaped frontal area and, joined with it, a complete median stripe of the clypeus, and also a pale incision at the sides between the clypeus and the sides of the frons.

Anthophora mucorea (Klug)

1845. *Megilla mucorea* Klug, Symb. phys., Dec. 5, Ins., pl. 49, fig. 13 (female), 14 (male).

1897. *Poialirius mucoreus* Friese, Bienen Europas, III, p. 66.

1916. *Anthophora mucorea* Storey, Min. Agric., Techn. Bull. 5, p. 18 (partim).

MALE : Length 8.5-10 mm. Black, face ivory-yellow, dull; labrum, mandibles (with red tips), clypeus, frontal area (a flat triangle) pale. Antennal joint 1 dark, not white beneath, but more or less densely set with white hairs. Flagellum dark

Clypeus finely and sparingly punctured, slightly protruding. Genae not developed. Antennae rather long, flagellum dark or slightly brownish below, antennals 3 and 4 mostly palest; joint 3 short, only a little longer than broad, the intermediate joints not quite twice as long as broad. Tegulae testaceous. Wings hyaline, fore wing distinctly pubescent in the anterior cells. Nervulus prefurcal. Tergite VII with two distinct small teeth, the interval between them little rounded, straight at least for a short distance.

FEMALE: Length 9-11 mm. Antennae dark, clypeus with very large black spots so that only the fore margin (laterally broader) and a narrow median line, as well as a narrow frontal area, remain white; sides of frons dark, rarely narrowly white. Pilosity as in the male or on the thorax grey mixed with black hairs; tergite I of the abdomen with raised white hairs, without black hairs. The white fasciae of the tergites somewhat broader than in the male, but they are medially less distinctly produced than in *A. pipiens*. Middle tibiae and tarsi and hind tibiae exteriorly clothed with white hairs; metatarsus III exteriorly with a large white basal hair-spot. Sides of the margins of the sternites with white fringe (as in the male).

Clypeus densely punctured. Antennal joint 3 scarcely three times as long as broad, gradually widened towards apex and about as long as the three following joints together. Puncturation of the tergites very dense.

HABITAT: The species is widely distributed in the country; I saw it not only from the desert valleys around Cairo-Helouan, but also from the northern coast (Mersa Matrouh, Ikingi), Gebel Ataq, Red Sea coast (Wadi Abrug) and the Sinai. (April-January)

The specimens of *Anthophora albigena* Lep. from South Europe (coll. Mus. Vienna, coll. PRIESNER), identified as such by FRIESE and ALFKEN, respectively, have in the male the whole metatarsus III covered with decumbent white pilosity, whilst in all Egyptian specimens the metatarsus bears black hairs in the distal two-thirds. The latter seem to represent a special variety or race of the species. Other varieties of *A. albigena*, so far as they are known, are not identical with ours.

A. albigena can hardly be confused with *A. punctifrons*, since the latter species has a yellow face and ferruginous flagellum, and its 3rd metatarsus has only a few white hairs at the base. *A. pipiens* Mocs. is similar, but in the latter the frontal area is black, the clypeus in front only very narrowly pale, and the white fasciae are distinctly linearly produced in the middle.

Anthophora pipiens Mocsary

1876. *Anthophora salviae* Morawitz, *Hor. soc. ent. Ross.*, XII, p. 29 (male); preoccupied by *salviae* Panz., 1805.

1879. *Anthophora pipiens* Mocsary, *Magy. Tud. Akad. Termész. Közlem.*, XVI, p. 9 (male and female).

1897. *Podalirius salviae* Friese, *Bienen Europas*, III, p. 83.

1916. *Anthophora salviae* Storey, *Min. Agric., Techn. Bull.* 5, p. 18.

MALE: Length 8.5-9.5 mm. Black, antennae black. Clypeus in front, labrum and mandibles (tips brown), white; clypeus with two rectangular basal markings

or brown beneath, not ferruginous. Face with short white, thorax with short grey to yellow-grey pilosity, without black hairs. Tergites I-V with rather *broad* white fascia of decumbent hairs, tergite I with raised white hairs; on tergites II and III the black hairs in front of the fasciae are almost adpressed and there are only few semi-erect hairs present. Tibiae and the whole metatarsus II is exteriorly clothed with decumbent white hairs, metatarsus III with black hairs and a few white hairs at the extreme base, without hair-spot. Specimens from the Gebel Ataqa show also in front of the fasciae some scattered white hairs; if such occur in all fresh specimens or if it is a varietal character, I could not say.

Clypeus little protruding, with very fine, medially scattered puncturation. Antennal 3 short, little longer than broad. Tegulae testaceous. Wings hyaline, costa yellow, the other veins basally yellow, of the cells are only those of the fore margin near the costa pubescent. Nervulus distinctly prefurcal. Tergite VII with two *short*, reddish teeth that are separated by a reddish transparent membrane and the teeth are therefore much shorter and broader than in *albigena* or *byssina*. Sternite VI is posteriorly around the transverse impression smooth, strongly shining, scarcely punctured.

FEMALE: Length 10-11 mm. Black, sternites sometimes reddish, also the femora and tibiae sometimes reddish. Face partly white, with two angular black basal spots, sides of frons black, frontal area small, white. Antennal 1 dark, with white hairs beneath, flagellum from antennal joint 4 ferruginous below, or all joints so. Vertex, thorax and scutellum base with a few black hairs among the pale ones, but often the whole thorax shows only pale pilosity. The fasciae of the tergites are broad, almost reaching the base, particularly at the sides, and the fasciae are less well limited in front than in other species; tergite V bears a large median velvet-spot of black hairs, like in *byssina*. Tibiae and metatarsus II exteriorly with white hairs, metatarsus III on both faces black, with only a few white hairs at the base or none at all; the metatarsus is broad, conical on account of the black hairs becoming gradually shorter towards the tip of the metatarsus. Pubescence of wing cells about as in the male.

Clypeus convex, rather coarsely punctured, shining in the middle. Antennal 3 about three times as long as broad.

HABITAT: Widely distributed, especially in Upper Egypt, while it is uncommon in the region of Cairo and at the Canal Zone (Cairo, Helouan, Wadi Rasheed; Gebel Ataqa, Fayed; Assiout, Assouan, Oasis Kharga; Gebel Elba). January-November.

This species has repeatedly been confused with others, e.g. with *byssina*, *latizona* and even with *crocea*. The latter species is, even in old, pale specimens easily distinguished by the profusely pubescent wing cells and the shining scutellum with its scattered puncturation at the fore margin. *A. byssina* differs in the male in the pilosity of the tergites which is always extended up to the basal ridge, the sharper teeth of tergite VII, the dense white pile of the clypeus covering the ground and the densely punctured, only slightly shining, sternite VI of the abdomen.

In the female of *byssina* the frontal area is seldom somewhat whitish, the clypeus more densely and finely punctured, the white pilosity of the tergites attains the basal ridge (8) and the cell pubescence is yet less distinctly visible. The male of *A. latizona* bears white hairs all over the exterior face of the 3rd metatarsus, and the female has a great number of black hairs among the pale ones on the thorax, densely punctured clypeus, a large white basal spot of hairs at the 3rd metatarsus and somewhat shorter antennal joint 3.

In the Vienna Museum, there stand some specimens of *A. mucorea* determined by FRIESE as *alternans*, but correctly named *mucorea*, by KOHL.

Figure 15 (female) on plate I of SAVIGNY'S "Description d'Egypte" may refer to *A. mucorea* but I am not sure about it; neither am I about the possible identity of WALKER'S *Anthophora pulverea* (List Hym. Egypt, p. 57; 1871).

Anthophora latizona (Spin.)

1812. Unnamed, Savigny, Description d'Egypte, pl. I, fig. 19 (female).

1838. *Saropoda latizona* Spinola, *Ann. soc. ent. France*, III, p. 543 (female).

1897. *Podalirius latizonus* Friese, *Bienen Europas*, III, p. 107 (female).

MALE : Length 8.5-10.6 mm. Ground black, only tergite I of the abdomen may sometimes be reddish-brown as well as the basal sternites. Face white, sides of face dark, antennal 1 white beneath, flagellum somewhat ferruginous but mostly joints 1-3 black. Face with dense, almost decumbent, laterally short, raised white pilosity. Thorax covered with grey hairs, mixed with some black hairs, tergite I only with white hairs. The posterior margins of the tergites I-V have comparatively broad white fasciae, the black basal space being narrower than the bands, but on tergites II and III this space is somewhat wider laterally; pilosity on II and III decumbent. Middle tibiae and 1st and 2nd joint of the middle tarsi exteriorly with decumbent white hairs, hind tibiae and metatarsus III also with white hairs, the latter with black hairs at the upper (exterior) margin, and the white patch becoming much narrower towards apex. The hind margins of the sternites bear, at least laterally, white hairs.

Labrum only slightly transverse. Antennal 3 scarcely longer than broad, somewhat longer than 4. Cells of the hyaline wings only in r1 with a few microsetae. Nervulus prefurcal. Tergite VII with two small reddish teeth which are separated by a broad interval and are shorter than in *albigena*.

FEMALE : Length 10-11 mm. Antennae black, flagellum somewhat reddish below. Face white with two large basal spots of the clypeus that are fused with

(8) In cases where the segments of the abdomen are fully distended one may observe a narrow dark basal band in front of the white pilosity of the tergites even in species which have the pilosity extended to base; but in such cases the dark fascia is situated in front of the basal ridge of the segment, as e.g. in *A. byssina*. In *A. latizona* and *A. mucorea*, however, the pale hairs do not reach the basal ridge, except at the sides of the segments.

the dark sides of the frons; fore margin of clypeus broadly white, like a longitudinal conical median line extending basad to the frontal area which is dark or little white. Pilosity of the thorax as in the male, short, sometimes with yellowish tinge, and like the vertex well supplied with black hairs. Tergite I in the middle across with semi-erect black hairs, margins with raised white hairs. Abdominal fasciae very broad so that there remains only a narrow black basal space on tergites II and III that may be covered in specimens with contracted segments, but laterally the black is always visible at base, since the fasciae are somewhat convex in the middle; tergite V in the middle with black velvet-spot, as in *A. byssina*. Basal sternites often reddish-brown; hind margins with white fringe. Middle and hind tibiae exteriorly with white hairs, wholly covering matatarsus II; metatarsus III shows a roundish white basal hair-spot: the metatarsi are broad and narrowed towards apex.

Antennal 3 gradually widened towards tip, not quite three times as long as broad, and not longer than the three following joints together. Pubescence of wing as in the male. Clypeus in front medially with very fine and dense, laterally with coarser and more scattered puncturation. Tegulae testaceous, pubescent within.

HABITAT : Widely distributed (El-Mallah: Mansuriah, Gebel Asfar, Cairo, Meadi, Helouan, Wadi Hof; Fayed: Luxor. (May-September).

Anthophora byssina (Klug)

1812. Unnamed, Savigny, Description d'Egypte, pl. I, fig. 20 (female) ?
 1845. *Saropoda byssina* Klug, Symb. phys., Dec. 5, Ins., pl. 50, fig. 4 (female).
 1871. *Anthophora cana* Walker, List Hym. Egypt, p. 56 (male) ?
 1897. *Podalirius byssinus* Friese, Bienen Europas, III, p. 106.
 1899. *Podalirius schmiedeknechti* Friese, Ent. Nachrichten XXV, p. 323 ?
 1916. *Anthophora byssina* Storey, Min. Agric., Techn. Bull. 5, p. 18.
 1926. *Anthophora byssina* Alfken, Senckenbergiana, VIII, p. 101.

MALE : Length 8.5-10 mm. Black. Antennal I sometimes brownish or reddish beneath or with yellow dot at tip, never wholly yellow or white beneath, but with white hairs; flagellum black or at the most brownish beneath. Face white, though the ground is scarcely visible owing to the dense, short, white pilosity; vertex and thorax with snow-white hairs, without yellow tinge, on the propodeum this white pilosity is long, posteriorly far surpassing base of tergite I of abdomen; the latter tergite with almost decumbent, the tergites II-V with wholly decumbent, white pilosity, covering the disk to nearly the basal ridge and being somewhat denser at the hind margins in place of the fasciae; tergite VI with dark pilosity. Head and thorax below with white, sternites of the abdomen with short brownish hairs, sides with some white fringe hairs. Middle tibiae and metatarsus II, as well as hind tibiae with adpressed white, metatarsus III on both faces with black hairs, only at the base exteriorly sometimes with very few white hairs. Ground colour of tarsi and calcaria black.

Labrum moderately transverse. Antennal 3 short, scarcely longer than broad. Wings hyaline, longitudinal veins at base and costa yellowish, cells almost without pubescence. Nervulus distinctly prefurcal. Tergite VII with two ferruginous (but often blackened by the hairs) small teeth, with an almost straight marginal interval between them. Sternite VI more shining than the preceding sternites but distinctly punctured, without larger smoothening (as against *micorea*).

FEMALE : 8.5-11 mm. Face white, at base black, clypeus with broad white fore margin and wedge-shaped median stripe, but the frontal area remains dark. Antennal 1 and flagellum mostly slightly reddish beneath, the former with white hairs beneath. Face with short, dense, white pilosity. Pilosity of head, thorax and abdomen as in the male, the 5th tergite with a large, black, about triangular velvet-spot in the middle. Sternites often reddish on the ground of the hairs, sides white-haired. Metatarsus III with black hairs only. Antennal 3 about three times as long as broad and about as long as the three following joints combined. Wings hyaline, costa wholly, the other longitudinal nervures at base, yellowish. Tegulae with white pubescence.

HABITAT: Common all over the country, all the year round.

Anthophora deceptrix spec. nov.

MALE : 8.5-9.2 mm. Black, only the ultimate tarsal joint reddish, sometimes all tarsi brown. Face (labrum, frontal area, mandibles and clypeus) yellow; sides of frons black, tips of mandibles reddish. Antennal joint 1 black, or with a small yellow dot or line near apex beneath. Flagellum not ferruginous. Face with dense and rather long, almost decumbent, hairs; vertex and thorax with raised grey-white pilosity, without black hairs, like the 1st tergite; the remaining tergites, inclusive of VI, with dense decumbent grey-white pilosity, the pale margins somewhat transparent. The whole middle and hind tibiae and tarsi exteriorly with adpressed white pilosity, metatarsus III only interiorly with black hairs. Under side of body in front clothed with raised white hairs. Calcaria yellow, margined with black. Wings hyaline, veins ferruginous at base, dark about the apical half; cells almost devoid of pubescence.

Labrum scarcely transverse, clypeus little protruding. Antennal 3 above scarcely 1.3 times as long as broad, joint 4 about square, 5 elongate. Tergite VII yellow at the apex, with two distinct small teeth separated by a flatly arched interval. Nervulus strongly prefurcal. Ultimate joint of middle tarsi slender.

FEMALE : Length 9-9.5 mm., width of head 3.7-3.8 mm. Clypeus at the fore margin for scarcely one-third of the length, yellow, in connexion with a wedge-shaped median line, scarcely reaching base; frontal area and sides of frons black, labrum and mandibles (with dark tips), yellow. Flagellum ferruginous below. Thorax with short raised grey pilosity, without black hairs, abdomen with dense grey pilosity and a large velvet-spot in the middle of tergite V. Tegulae testaceous; Wings hyaline,

veins testaceous in basal half, dark in apical half. Pubescence of cells visible only near the fore margin of cell m1 and somewhat in r1. Nervulus prefurcal. Middle and hind tibiae and middle tarsi exteriorly with decumbent white hairs, metatarsus III exteriorly for two-thirds with white, for the rest and interiorly with black, pilosity.

HABITAT : 1 male (holotype), Sinai, Tayiba, (30-31.v.1935), coll. ALFIERI; 1 male (paratype), Wadi Shagra, 24. iv. 1935 (leg. M. KASSIM, coll. Min. Agric.); 1 male, Kafr Hakeem, 14.vi.1933 (coll. Min. Agric.); 1 male, Helouan, x. (leg. and coll. H. PRIESNER).

The female described above most likely belongs to this species, though I saw only 1 specimen (Borgash, 8.v.1934, coll. Min. Agric.).

The species is very similar to *byssina*, but in the latter the 3rd metatarsus has only black hairs, the face is white (not yellow), tergite VI has only dark hairs and VII is not pale yellow. The male of *mucorea* has the base of the tergites narrowly black and is differing too by the dark tergites VI and VII, and the black metatarsus.

Anthophora torensis spec. nov.

FEMALE : 9-9.5 mm. Width of head 4 mm. Black, flagellum from joint 4 onwards ferruginous beneath. Clypeus at the fore margin and in the middle (broadly conically) yellow, the black base occupying at least half of the length; labrum and base of mandibles yellow, tips of the latter dark. Head in front with short, raised white, vertex and thorax with such more yellowish white, pilosity, tergite I in front and at the sides with raised, otherwise with decumbent dense grey pilosity, like the rest of the abdomen. Thorax with a few brown hairs between the pale ones; tergite II without raised hairs, III and IV with scattered semi-erect pale hairs, visible in profile. Apical margins of tergites slightly yellowish transparent beneath the pile; tergite V with black cushion of hairs in the middle. Middle tibiae with decumbent yellow-white hairs, apex with ferruginous adpressed tuft of hairs; metatarsus at the hind margin with somewhat longer whitish hairs, interiorly with brown hairs; hind tibiae with decumbent yellow-white hairs, metatarsus III at base with slightly raised yellow-white hairs, *but in the apical third with black hairs* like the remaining tarsal joints; interiorly the 3rd metatarsus bears blackish-brown hairs. Penicillus with rather fine short bristles. Wings hyaline, veins brown, pubescence of cells noticeable only in r1. Sternites in the middle with ferruginous, at the sides with white, fringe hairs, the disks with dark brown hairs mixed with pale hairs, all slightly raised.

Labrum moderately strongly transverse. Puncturation of the clypeus covered by the pilosity. Antennae short, joint 32.5 times as long as broad, little shorter than the three following joints together, 4 strongly transverse, the following joints about square. Nervulus strongly prefurcal.

HABITAT : 1 female (holotype), Sinai, El-Tor, 14.v.1934 (leg. H. PRIESNER, coll. Min. Agric.).

None of WALKER'S species described from Sinai agrees with this remarkable species.

***Anthophora candidella* spec. nov.**

FEMALE : 6.6-7 mm. Width of head about 3 mm. Black, tarsal joints 2-5 dark brown; mandibles (with reddish tips), labrum, fore margin of clypeus and a median stripe reaching base, *white*; fore margin of clypeus for somewhat less than half of the latter's length, white. Flagellum brownish below. Face in front with almost decumbent, above with raised, pure white pilosity; thorax and tergite I with raised, the other tergites with decumbent, very dense, white pilosity; tergite II with a few raised white hairs, visible in profile, on the remaining tergites raised hairs are fewer yet and inclined, not vertical; tergite V with black velvety spot at the hind margin. Under side of anterior body with raised white hairs, sternites of the abdomen black, with margins somewhat paler, transparent, and with *black hairs on the disks*, some white fringe hairs at the sides. Tegulae testaceous, somewhat pubescent. Wings hyaline, without pubescence in the cells, nervures yellowish at base, brown in the distal part.

Labrum strongly transverse. Clypeus densely punctured. Antennal joint 3 (black) not quite twice as long as broad, longer than the two, but shorter than the three, following joints together. Nervulus distinctly prefurcal.

HABITAT : 1 female, Mansuriah, 23.iv.1954, holotype, in coll. Ain-Shams University.

Although I only known a unique specimen this species had to be described, since it can easily be recognized again, being rather characteristic.

Belonging to the smallest forms, like *nivosella*, it differs from this species by the shorter pilosity of the legs, the white, instead of pale yellow, face, the dark pilosity of the sternites and the still smaller size. In the other very small grey species the nervulus is not so distinctly prefurcal, the colour of the pile not so pure white, the pilosity less dense, and the metatarsus 3 is interiorly clothed with ferruginous hairs.

***Anthophora nivosella* spec. nov.**

MALE : 8 mm. Black, middle and hind tarsi with joints 2-5 ferruginous to brownish, tip of joint 5 darkened. Flagellum below ferruginous to pale brown. Face whitish, tips of mandibles testaceous, clypeus in front for a little more than half of its length, and antennal joint 1 beneath, white. Face with long and dense, almost decumbent, white pilosity. Thorax and abdominal tergite I, the latter with particularly long, raised white hairs, the remaining tergites with very dense, adpressed white

pilosity; tergite II also with scattered long pale raised hairs, seen in profile. Sternites of the abdomen with yellowish transparent margins, at the sides with some white fringe hairs, in the middle of sternite IV with very fine, short, testaceous tomentum. Legs exteriorly with decumbent white pilosity, the hind margins of the femora, tibiae and tarsi with rather long raised white hairs; all tarsal joints exteriorly with white hairs, metatarsus III interiorly with dark brown hairs. Wings hyaline, nervures yellow, somewhat brownish towards apex of wing, cells bare.

Clypeus somewhat protruding, labrum transverse. Antennal 3 scarcely longer than broad, longer than 4, but somewhat shorter than 5. Nervulus distinctly prefurcal. Joint 5 of middle tarsus *slender*. Tergite VII ferruginous apically, with median carina and ending in two small broadly triangular teeth which are separated by an obtusely angled excision.

FEMALE : Length 7.5-8.5 mm. Width of head 3.3-3.4 mm. Black, legs sometimes dark brown, tarsal joints of middle and hind legs testaceous to pale brown. Flagellum wholly or only below ferruginous, mostly from apex of joint 3 onwards. Face pale yellow, i.e. mandibles (tips reddish), labrum, almost apical half of clypeus and a median line of it that may reach the base; the fine fore margin of the clypeus lined with brown; frontal area usually dark. Face with almost adpressed, vertex and thorax with short raised, tergite I with partly raised and partly decumbent *white* pilosity; the remaining tergites with very dense decumbent white pilosity, tergite V with large black velvet-cushion. Sternites shining, brownish, with yellowish transparent margins, little hairy, at the sides with some whitish, in the middle with ferruginous, fringe hairs. Fore femora with long white hairs. Tibiae and tarsi exteriorly with white hairs, metatarsus II at the hind margin with white hairs, on the disk which is rather dark, with few white hairs. Metatarsus III interiorly with *dark brown to black* hairs. Tegulae pale, transparent. Wings hyaline, veins yellow, terminal cross-veins brownish. Calcaria yellow.

Labrum strongly transverse, very coarsely rugose. Clypeus convex, especially in the middle slightly raised. Antennae short, joint 3 only 1.5 times as long as broad or scarcely more, distinctly shorter than the three following joints together, little longer than 4 and 5 combined. Wing cells bare. Nervulus distinctly prefurcal.

HABITAT : Kerdasa, Abu Rowash, Wadi Rishrash (May-June).

The female is quite similar to *A. tenella* (Kl.) but certainly specifically different by the very dense white pilosity of the tergites, the 3rd metatarsus which is interiorly clothed with dark hairs, the almost wholly yellow wing veins and the distinctly prefurcal nervulus. In habitus and pilosity it is closer yet to *A. candidella* in which, however, the sternites of the abdomen are set with blackish hairs and the pale parts of the face are white.

I am not yet sure whether the male described above really belongs to this species, since the colour of the pale parts of the face is white, while in other respects it better agrees with this species than with *candidella*. More material will be required to clear up this question.

Group VIII (*tarsalis*)*Anthophora tarsalis* spec. nov.

MALE : 9.5-10 mm. Black, femora and tibiae reddish-brown, apices of tibiae ferruginous, like all metatarsi. Antennal joint 1 beneath, frontal area, clypeus and labrum white, clypeus with black lateral stripe at the suture to the sides of the frons; labrum with two small reddish dots at base, mandibles ferruginous, base and tips darker. Flagellum dark. Pilosity of frons dirty white, of vertex white and black mixed like the thorax. Tergite I almost only with raised whitish-yellow hairs, tergites II-V with moderately long, raised, chiefly black hairs, fasciae of attached white hairs present on the broadly yellowish transparent hind margins of tergites I-VI. Under side with long whitish hairs, anterior sternites with longer, posterior with short, whitish pilosity and a velvet-black double spot on tergite IV medially; the following sternites nearly smooth, reddish, with a transverse arched fovea on VI. Wings hyaline, veins black, cells *m*₁, *r*₁ and *sc* with some pubescence at the fore margin. Nervulus prefurcal. Pilosity of the hind tibiae and metatarsus III almost decumbent, yellow-white. The metatarsus II at the apex with somewhat longer, whitish pilosity, exteriorly at the apex with a small black fan. Calcaria yellow.

Clypeus protruding, shining, extremely finely and rather sparingly punctured. Labrum little punctured, smooth, square. Genae wanting. Antennae slender, joint 3 about 2.5 times as long as broad. Anterior metatarsus slightly club-shaped, middle metatarsus long, slender, at least as long as the tibia, the remaining tarsal joints together longer than the metatarsus of the tibia, joint 5 blackened, with black hairs on both sides (weak brush). Hind legs quite peculiar: hind coxae with long, fine tooth, trochanters with hump; femora simple, posterior face smooth and shining; hind tibiae much widened towards apex, at the end with a blunt interior hump; metatarsus broad, widened towards apex and with triangular tooth, exterior margin of metatarsus convex towards apex and set with bristles; joints 2-5 of the hind tarsi very long, joints 2-4 of about equal length, 2 somewhat thicker than the following joints, joint 5 about 1.5 times as long as each of the preceding three; the whole tarsus almost three times as long as the tibia (apical tergite damaged).

FEMALE : 9-11 mm. Quite different from the male. Black, legs pale brown to ferruginous, tips of tibiae mostly and tarsi ferruginous. Antennae dark, flagellum below at most dark brown; face black, clypeus with narrow white median stripe that sometimes reaches base, frontal area dark or slightly reddish; in front, the clypeus is only in the middle somewhat triangularly whitish; labrum white, at the sides more or less broadly margined with brown. Mandibles reddish-brown. Face with moderately dense, short, raised dirty pilosity, on the vertex the hairs are mixed with black ones. Thorax with very short yellow-white hairs, mixed with black hairs. Tergite I with raised, whitish-yellow-grey hairs, the following tergites densely clothed with almost decumbent comparatively thick, nearly scale-like grey hairs between

which there are scattered, raised, moderately long *brownish* hairs. Tergite V with a dark brown median cushion, at the sides with longer, whitish hairs. Fasciae are not developed but the narrow transparent pale margins suggest bands which are somewhat broader in the middle and at the extreme sides, narrower at the two intervals. Sternites reddish on the ground, at the sides with whitish fringe. Tibiae and metatarsi with slightly raised whitish hairs.

Labrum about square, angles rounded. Clypeus with somewhat transversely rugose sculpture in front, the rest covered by the pile. Antennal joint 3 somewhat more than three times as long as broad, little longer than the three following joints together. Wings as in the male.

HABITAT : Wadi Ambaga near Kosseir (male and female; types); Bir Abrag (South Eastern Desert), leg. *Selim Farag* (coll. Min. Agric.).

The species is unmistakable by the characteristically formed and extremely long middle and hind legs of the male, and obviously belongs near *A. gracilipes* F. Mor., but differs from it in details of the structure of the legs.

A P P E N D I X

1. DESCRIPTIONS OF SPECIES WHICH REMAINED UNKNOWN TO THE AUTHOR

Anthophora kneuckeri Alfken

1938. *Anthophora kneuckeri* Alfken, *Deutsche Entom. Zeitschr.*, p. 427 (female).

ALFKEN describes (in German) the species as follows: "Female 8.5 mm. Black. Mandibles red in the middle. Genae linear, red at base. Labrum somewhat broader than high, shining, coarsely rugosely punctured, red, only the exterior angles black and with raised white hairs. Clypeus strongly convex, on the disk more sparingly and coarsely, in front more densely and finely, punctured, with distinct median carina and brown-red fore margin. Frons, vertex and temples with long raised white pilosity; vertex with some intermixed black hairs, at the sides densely and finely punctured. Antennal joint 1 at extreme apex annulated with testaceous; flagellum below at middle dark red-brown. Thorax and propodeum dorsally with grey, ventrally with white, hairs; mesonotum with many black hairs mixed with the pale hairs. Sculpture not visible owing to the dense pile. Tergites of abdomen very densely and finely punctured. Hind margins of tergites I-IV with dense, decumbent white fasciae, the posterior ones broadest, those of II-IV somewhat produced. Tergite I at base with raised grey-white hairs. Tergite V with brown-black apical fringe, at the sides with raised white pilosity. Sternites slightly shining, extremely finely and densely granulated and, besides, with scattered punctures, hind margin somewhat pale

transparent, thinly set with white fringe. Legs entirely with white pilosity. Scopa of tibiae white, calcaria ferruginous. Metatarsus III exteriorly clothed with loose white hairs, penicillus black, patella red. Tarsi ferruginous. Wings slightly shaded, veins and pterostigma black-brown, tegulae brown-red".

HABITAT : 1 female, Sinai (leg. A. KNEUCKER).

ALFKEN hints at that this species may be identical with the poorly described *A. pauperata* Walker.

Anthophora combusta Dours

1869. *Anthophora combusta* Dours, Icon. Anthoph., p. 188 (female).

1897. *Podalirius combustus* Friese, Bienen Europas, III, p. 291.

Description translated (from French) : "Black; antennae ferruginous below, except the first three joints which are black; clypeus finely punctured, black, except a dot between the antennae, the inferior portion, and part of the cheeks (sc. sides of frons) which are yellow; besides, there is a raised line on its middle; labrum finely punctured, yellow-ferruginous towards its inferior two-thirds, black towards the upper end (sc. base) where there are two small tubercles; mandibles yellow-ferruginous, black at tips; hairs of face, vertex and thorax black, mixed with red. Abdominal segments clothed with decumbent ferruginous hairs, except on the upper third of the 1st segment where they are black. Beneath, the segments are blackish ferruginous and fringed with ferruginous hairs. Hairs of legs black, long, coarse. Wings infumated; margin, veins black. — Length 14 mm." — Egypt.

Anthophora cinerascens Lep.

1841. *Anthophora cinerascens* Lepeletier, Hist. nat. Ins. Hym., II, p. 51 (female).

Description translated (from French) : FEMALE: "Black, labrum (having a ferruginous dot on either side of base) and clypeus (with a rather small nearly square spot on either side of base, and the lower margin, black) yellowish-white, somewhat ferruginous. Hairs of head and thorax cinereous, perhaps somewhat red on the dorsum when alive. Hairs of 1st abdominal segment raised; 2nd and 3rd segments covered with decumbent cinereous hairs, the inferior margin of these three segments bearing a narrower fascia of denser and more whitish decumbent hairs; hairs of 4th and 5th segments black and raised, those of the sides longer, white; lower margin of 5th segment and sides of the anus clothed with brown-ferruginous hairs; fringe of under side of segments dirty white. Legs brown-ferruginous. Hairs of upper side of legs cinereous, those of under side black on the tibiae, blackish-ferruginous on the tarsi. Wings transparent, veins and margins brown. . . Nubia".

This species does not agree with any Egyptian one described in this paper. Its interpretation is rendered more difficult yet, because no measurements are given by LEPELETIER .

Anthophora nigrilabris Spin.

1838. *Anthophora nigrilabris* Spinola, *Ann. Soc. Ent. France*, VII, p. 543 (female).

1896. *Podalirius saropodooides* Dalla Torre, *Catal. Hym.*, X, p. 288.

1897. *Podalirius saropodooides* Friese, *Bienen Europas*, III, p. 108.

Original description (from French) : FEMALE: "Antennae, body and legs black; clypeus, labrum and mouth parts of the same colour; head and thorax covered with raised, in general cinereous, hairs, fulvous only on the mesothoracic dorsum. Tergite I covered likewise with raised whitish or cinereous hairs; the following segments nearly smooth having some hairs only here and there : three large bands of white hairs, somewhat woolly, decumbent in various directions on the hind margins of segments II-IV; V black with fine white margin; VI covered with white woolly hairs. Venter little hairy; black hairs on the disks of the segments; marginal fringe whitish. Legs black-haired: everywhere with cinereous hairs, except on the 1st joint of the hind tarsi where they are white at the anterior (sc. exterior), fulvous on the posterior (sc. interior) face and black at the apical appendage. Wings hyaline; veins black. — Length 7 lines, width 3 lines. — Male unknown. — I presume that this female is represented by fig. 10, pl. I of *Descr. d'Egypte*. No details are drawn, and one cannot see the front of the head, but it is just this what makes me believe that it is entirely black".

I do not think that SAVIGNY'S illustration (pl. I, fig. 10) refers to SPINOLA'S species; the former might well be identical with *A. blanda* Pér. which is certainly a smaller species. I do not know any Egyptian species that would agree with *nigrilabris* Spin. (l.c., p. 543 nec p. 546); there is no proof either for that it is really Egyptian, except for SPINOLA'S reference to SAVIGNY'S figure.

2. WALKER'S NOT YET INTERPRETED SPECIES OF EGYPTIAN ORIGIN

WALKER reports in his "List of Hymenoptera collected by J.K. Lord in Egypt, etc.", 1871, p. 55, the occurrence in Egypt of the following species:

Anthophora basalis Smith from Sinai. This species is South African; *A. dubia* Smith, which is according to Friese identical with *A. gallica* DT. and Fr. (cf. FRIESE, *Bienen Europas*, III, p. 139-140), from Cairo and Heliopolis. This species has not been found again; *A. nigrocincta* Lep. (cf. FRIESE, l.c., p. 204) from Cairo and Heliopolis; this species too is not represented in Egyptian collections. It seems to me that it is preferable to assume a confusion of labels or wrong identification than to list these species as Egyptian before they have not been collected again in this country.

Moreover, WALKER described (l.c., 1871) a series of at that time new species which have either not yet been found again or cannot be interpreted owing to the inadequacy of the descriptions. Since the paper in question is difficult to obtain I am copying these descriptions, as follows.

Anthophora annulifera Walker (l.c., p. 55): "Female: Black. Head, pectus and legs with white hairs. Head above yellow, excepting the vertex. Eyes lurid. Mouth tawny. Antennae dark red beneath; first joint pale testaceous beneath. Thorax with yellowish hairs. Abdomen with a band of white pubescence on the hind border of each segment. Legs with black hairs beneath. Wings cinereous; veins black. Length of the body 5 lines. Wady Ferran".

Anthophora leucomelaena Dalla Torre (= *melaleuca* Walker, l.c., p. 56): "Female: Black. Head, thorax, pectus and legs thickly clothed with snow-white hairs. Eyes reddish. First joint of antennae whitish beneath. Abdomen with snow-white pubescence and with four deep black bands, which from the first to the fourth are successively narrower. Legs clothed with black hairs beneath. Wings pellucid; veins black, testaceous at the base. Length of the body 4 1/2 lines. Cairo." May, yet be a specimen of *A. byssina* with abdominal segments distended. The white colour of antennal I may refer to its pilosity.

Under the name of *leucomelaena* DT. ALFKEN described (*Ent. Mitt.*, XVI, p. 151, 1927) a male from Port Sudan. He does not compare this specimen with other similar species but just says that *A. andresi* Fr. might coincide with it. However it could not be identical with *A. andresi* Fr. since in the former the face is yellow, not white. WALKER'S species cannot be identical with *A. andresi* either, because the wing veins are described as testaceous at the base in WALKER'S *melaleuca* = *leucomelaena* DT.

Anthophora lutescens Walker (l.c., p. 56): "Female: Black, clothed with luteous hairs. Hind part of the head with cinereous tomentum. Face and clypeus yellow. Eyes lurid. Antennae piceous, red beneath; first joint piceous, whitish beneath. Pectus with hoary hairs. Abdomen with a testaceous band along the hind border of each segment. Four posterior tibiae densely pilose. Wings cinereous; veins black, tawny towards the base. Length of the body 4 lines. Wady Ferran".

Anthophora pauperata Walker (l.c., p. 57): "Female: Black. Head, thorax, pectus and legs with cinereous hairs. Eyes piceous. Mouth tawny. Antennae tawny beneath. Abdomen with a hoary testaceous-bordered pubescent band on each dorsal segment. Legs with black hairs beneath. Wings cinereous; veins black. Length of the body 5 lines. Mount Sinai".

Anthophora illepida Walker (l.c., p. 57): "Female: Black. Head, thorax, pectus and legs with cinereous hairs. Face and clypeus prominent, forming a transverse ridge. Eyes piceous. Abdomen with a pale luteous band on the border of each segment. Tibiae and tarsi partly clothed with luteous hairs. Wings cinereous; veins black; tegulae tawny, large. Length of the body 6 lines. Wady Ferran".

Anthophora pulverea Walker (l.c., p. 57): "Female: Black. Head, thorax, pectus and the tibiae and tarsi of the four anterior legs with white hairs. Face and clypeus yellow, the former divided from the latter by a slight transverse ferruginous ridge. Mouth ferruginous. Eyes red. Antennae red beneath. Abdomen with a broad band of white pubescence along the hind border of each dorsal segment. Hind tibiae

beneath and hind tarsi with black hairs, the former with bright ochraceous hairs above. Wings cinereous; veins black. Var. b. Hind tibiae with yellowish white hairs above. Length of the body 5 lines. Wady Hebran".

Anthophora superans Walker (l.c., p. 58). "Female. Vertex, thorax, pectus and base of abdomen thickly clothed with pale ochraceous hairs. Head excepting the vertex white and without hairs. Eyes and mouth ferruginous. First joint of the antennae white beneath. Abdomen with three bands of pale ochraceous pubescence on the hind border of the segments. Legs fringed with cinereous hairs; tibiae and tarsi clothed with cinereous pubescence; tarsi with ochraceous hairs beneath. Wings slightly cinereous; veins black. Length of the body 7 1/2 lines. Mount Sinai".

3. A LIST OF SPECIES OF NEIGHBOURING COUNTRIES

Some of the species of neighbouring countries, especially those from Libya and the northern Sudan are likely to occur in Egypt too. The student is therefore advised to also consult the descriptions of the species alphabetically listed below, in cases of discovery of forms which do not agree with the species described in this paper.

aflabellata Gribodo (in Zanon, *Mem. Acc. Nuovi Lincei* (2) VIII, p. 69, 1926; Bengasi), *agama* Radoszkowsky (FRIESE, *Bienen Europas*, p. 177; Algeria), *albescens* Dours (FRIESE, l.c., p. 64; Algeria), *albicilla* Pérez (FRIESE, l.c., p. 224; Cockerell, *Ann. Mag. Nat. Hist.* V. (9), p. 114, 1920; Algeria), *albobinerea* Saunders (*Trans. Ent. Soc. London*, p. 268, 1908; Biskra), *ambigua* Pérez (FRIESE, l.c., 183; Algeria), *arietina* Dours (FRIESE, l.c., p. 172; Algeria), *atroalba* Lep. (FRIESE, l.c., p. 250; Algeria), *bimaculata* Panz. (FRIESE, l.c., p. 102; Algeria), *bisulca* Pérez (FRIESE, l.c., p. 209; Algeria), *calcarata* Lep. (FRIESE, l.c., p. 158; ALFKEN, *Mitt. D. Ent. Ges.*, III, p. 123, 1932; Algeria, Tunisia), *caroli* Pérez (FRIESE, l.c., p. 98; Algeria), *doursiana* Friese (l.c., p. 292; Algeria), *dusmeti* Guiglia (*Ann. Mus. Genova*, LVI, p. 131, 1933; Cyrenaica), *erschowi* Fedtsch. (FRIESE, l.c., p. 252; GRIBODO, *Boll. Mus. zool. Torino*, XXXIX, p. 9, 192, Libya), *farinosa* Klug (*Symb. phys.*, pl. 50, fig. 2, 1845; Arabia), *fastuosa* Gribodo (l.c., p. 13; Libya), *ferruginea* Lep. (FRIESE, l.c., p. 131; Algeria), *festae* Gribodo (l.c., p. 16; Libya), *fratercula* Gribodo (l.c., p. 7; Libya), *ghigii* Gribodo (l.c., p. 14; Libya), *guigliae* Dusmet (*Ann. Mus. Genova*, LIII, p. 314; Libya), *holoxantha* Pérez (FRIESE, l.c., p. 297; Algeria), *intermixta* Gribodo (l.c., p. 11; Libya), *intricata* Gribodo (l.c., p. 10; Libya), *libyphaenica* Gribodo (l.c., p. 13; FRIESE, l.c., p. 300; Algeria, Libya), *marqueti* Pérez (FRIESE, l.c., p. 91; Algeria), *nigrociliata* Pérez (FRIESE, l.c., p. 303; Algeria), *nigrocincta* Lep. (FRIESE, l.c., p. 204; Algeria), *nigropilosa* Friese (l.c., p. 99; Algeria), *planca* Pérez (FRIESE, l.c., p. 164; Algeria), *quadricolor* Er. (FRIESE, l.c., p. 140; Algeria), *retusa* L. (FRIESE, l.c., p. 243; Algeria), *rivolettii* Pérez (FRIESE, l.c., p. 183; Algeria), *romandi* Lep. (FRIESE, l.c., p. 228; Algeria), *talariis* Pérez (Friese, l.c., p. 79; Algeria), *valga* Klug (*Symb. phys.*, pl. 49, fig. 3, 1845; Arabia), *ventilabris* Lep. (FRIESE, l.c., p. 207; Algeria), *vetula* Klug (*Symb. phys.*, pl. 49, fig. 3, 1845; Arabia).

INDEX

Aegyptiaca 9, 25, 26, 28; *aegyptorum* 7, 18, 30; *aflabellata* 114; *afra* 14, 21, 98; *agama* 36, 114; *albescens* 114; *albicilla* 114; *albigena* 15, 98; *albicinerea* 114; *albosignata* 8, 18, 25, 38; *alfierii* 12, 18, 25, 52; *alfkenella* 10, 21, 22, 76; *alternans* 13, 20, 81; *ambigua* 53, 54, 114; *andresi* 15, 19, 94; *annulifera* 98, 113; *arabica* 16, 44; *arietina* 114; *armata* 87; *atriceps* 7, 12, 25, 27, 43; *atricilla* 30; *atroalba* 114; *basalis* 112; *bicincta* 83; *bimaculata* 114; *hisulca* 114; *blanda* 11, 20, 60; *hoops* 11, 82; *borgensis* 11, 27, 58; *byssina* 14, 15, 22, 104; *calcarata* 46, 58, 59, 114; *cana* 104; *candidella* 24, 107; *canescens* 42; *carnea* 11, 17, 88; *caroli* 39, 114; *cine-rascens* 111; *cinerea* 46; *cinereiceps* 7, 16, 26, 41; *clavatipes* 11, 17, 56; *combusta* 111; *concinna* 9, 24, 74; *concolor* 17, 84; *crassipes* 11, 28; *crocea* 13, 22, 89; *cunicularia* 55; *deceptrix* 15, 23, 105; *desertorum* 8, 27, 45; *dispar* 8, 26, 33; *disparilis* 7, 26, 35; *doursiana* 114; *dubia* 112; *dusmeti* 114; *elbana* 10, 64; *erschowi* 114; *erubescens* 88; *extricata* 17, 28, 55; *facialis* 7, 12, 25, 47; *fallaciosa* 10, 70; *farinosa* 14, 19, 90, 91, 114; *fastuosa* 114; *fayoumensis* 9, 13, 16, 24, 64; *ferruginea* 114; *festae* 114; *flabellata* 9, 18, 50; *flaviceps* 97; *fratercula* 114; *fulvitaris* 28; *fulvitecta* 81; *fulviscopa* 78; *fulvodimidiata* 9, 19, 21, 77; *fumipennis* 17, 86; *galalensis* 22, 78; *gallica* 112; *glauc* 94, 95; *ghigii* 114; *gracilipes* 110; *guigliae* 27, 114; *hegasica* 9, 24, 75; *helouanensis* 15, 16, 63; *hispanica* 12, 18, 25, 52; *holoxantha* 114; *humilis* 23, 67, 68; *illepida* 113; *inclyta* 11, 18, 80; *intermixta* 114; *intricata* 114; *klugi* 14, 19, 90; *kneuckeri* 20, 110; *lanata* 7, 16, 26, 42; *latizona* 15, 21, 103; *leucomelaena* 113; *libyphaenica* 114; *litorana* 14, 93; *lutescens* 113; *lutulenta* 10, 24, 61; *maculigera* 10, 85; *magnilabris* 14, 92; *marqueti* 114; *melaleuca* 113; *mellina* 9, 13, 22, 73; *montivaga* 16, 20, 21, 100; *moricei* 17, 27, 56; *mucida* 8, 18, 25, 37; *mucorea* 15, 16, 20, 21, 22, 101; *nasuta* 28; *nigrilabris* 41, 42, 111; *nigripes* 77; *nigripilis* 17, 27, 57; *nigrociliata* 114; *nigrocincta* 112, 114; *nigropilosa* 114; *niveiventris* 27, 36; *niveohirta* 34; *nivosella* 15, 24, 107; *nubica* 12, 17, 85; *omissa* 19, 95; *oraniensis* 12, 25, 79; *orientalis* 42; *pauperata* 113; *perlustrata* 10, 71; *pipiens* 16, 21, 99; *planca* 114; *pretiosa* 7, 32; *priesneri* 11, 28, 57; *pulverea* 103, 113; *punctifrons* 14, 20, 97; *quadri-color* 114; *quadrifasciata* 14, 19, 92; *retusa* 29, 114; *rivolettii* 54, 114; *robusta* 36; *rogenhoferi* 46; *romandi* 47, 114; *salviae* 99; *saropodoides* 42, 111; *savignyi* 14, 20, 96; *schmiedeknechti* 104; *scopipes* 8, 18, 47; *selecta* 23, 69; *semirufa* 10, 18, 78; *senescens* 8, 26, 29; *senilis* 28; *shagrensis* 23, 66; *sicheli* 44; *speciosa* 8, 26, 34; *spinipes* 60; *spinolana* 8, 18, 26, 49; *stschurowskyi* 30; *superans* 114; *talaris* 114; *tarsalis* 10, 23, 109; *tenella* 15, 24, 61, 67; *tenuiciliata* 8, 12, 18, 25, 39; *tetra* 12, 18, 87; *torensis* 22, 106; *tridentata* 74; *tridentella* 13, 23, 71; *valga* 11, 114; *ventilabris* 114; *vetula* 12, 114; *vidua* 17, 83; *wagneri* 81, 82; *wegelini* 17, 27, 53; *wegeneri* 81; *zanoni* 58.