ON SOME *MEGACHILIDAE* (HYM. *APOIDEA*) FROM SPAIN AND MOROCCO

POR

G. A. MAVROMOUSTAKIS

Limassol (Cyprus)

The following records, descriptions and notes were based on a material of Megachilid bees collected by Dr. José M.ª Dusmet, Madrid, from the continental Spain, and by Mr. Anselmo Pardo Alcaide, Melilla, from Spanish Morocco. I am greatly indebted to the above-said colleagues for their kind assistance, as well as, to the authorities Instituto Español de Entomología, Madrid, for sending me the type of *Anthidium astilleroi* Dusmet and *Anthidium doederleini dusmeti* subsp. nov., for study.

Osmia bidentata F. Mor.

Pozuelo, 1 ♂ (Dusmet).
Central and South Europe, North Africa, Palestine, Caucasus.

Osmia digitata Fr., var. **ibericola**, nov.

Male.—Length 7 mm.

Differs from the Algerian *Osmia digitata* Friese (1899, «Ent. Nachr.», XXV, p. 61), as follows: Sufficiently smaller, pilosity on head and thorax pale greyish-yellow ; apical margin of abdominal tergites narrowly deep reddish-brown ; tergites with extremely short, erect, shining white hairs ; apical margin of tergites with entire thin, narrow, shining white hair band ; the triangular apical spine of seventh tergite blunt in the apex.

Paracuellos, 1 ♂ (type), 17-V-24 (Dusmet), type in my collection.

Osmia tunensis F.

Morocco: Melilla, 5 ♀♀, 3 ♂♂, 24-III-46 (Alcaide).
Tunis, Algeria, Morocco: Oued Cherrat (Institut Scientific Chérifien, det. Benoist).

Osmia gracilicornis J. Pér.

Morocco: Melilla, 2 ♂♂, 24-III-46 (Alcaide).
Algeria, Tunis, Morocco: Bou-Knadel (Inst. Sc. Chér., det. Benoist).

Osmia rufigastra Lep.

Morocco: Melilla, 3 ♀♀, 17-III-46 (Alcaide).
Tunis, Algeria, Morocco: Kasba Qualidia (Inst. Sc. Chér., det. Benoist).

Osmia rutila Erichs.

1835. *Osmia rutila* Erichson, Waltl: Reise Tirol, p. 107.
1933. *Osmia rutila* Alfken & Bischoff, Sitzb Ges. Naturf. Freunde, pp. 551-512.

Puerto Santa María, 3 ♀♀ (Dusmet).

Osmia ferruginea Latr.

Puerto Santa María, 1 ♀ (Dusmet). Morocco: Melilla, 1 ♀, 17-III-46; 1 ♂, 10-IV-41 (Alcaide).
South Europe, North Africa, Palestina, Cyprus.

Osmia caerulescens L.

Guadalajara, 1 ♀, 31-V-25 (Dusmet).
Europe, Central Asia, North Africa, Egypt, Cyprus.

Osmia latreillei M. Spin.

Alicante, 1 ♀, 1 ♂; Seseña, 1 ♀ (Dusmet). Morocco: Melilla, 2 ♀♀, VI-1935 (Alcaide).

South Europe, North Africa, Egypt, Palestine, Cyprus.

Osmia fulviventris Latr.

Paracuellos

Guadalajara, 2 ♂♂, 1 ♀, 31-V-25; ~~Paracoello~~ de Jarama, 1 ♀, 26-VI-25, 1 ♀, 17-V-24; Mérida, 1 ♀, IV-27; Madrid, 1 ♀ (Dusmet).

Europe, Central Asia, North Africa.

Osmia antigae J. Pér.

Guadarrama

Sierra de ~~Guadalajara~~, 2 ♀♀, 15-VI-25 (Dusmet).

Spain, France (var. *laevior* R. Ben.).

Osmia mucida Dours.

Sierra de Guadarrama, 1 ♀, 1 ♂, 8-VI-26; Baños de Montemayor, 1 ♀, VI-07; Escorial, 1 ♀, 14-VI-22, 1 ♀, 21-V-22, 1 ♀, 6-VII-14 (Dusmet).

Algeria, South France, Switzerland.

Osmia chobauti J. Pér. (figs. 1 & 2)

Morocco: Melilla, 1 ♂, 22-IV-43 (Alcaide).

This little-known species was originally described from Algeria: Margueritte (1902, «Extr. Proc. Verb. Soc. Linn.», Bordeaux, LVII), and is very closely related to *Osmia mucida* Dours, both species differring as follows: *Osmia mucida*, ♂, from Spain, has the antennal joints 4 to 12 longer than broad (seen from below), sixth tergite very broad and short, base with a large spine at sides, apical margin nearly truncate and ending in to a blunt,

stout spine, at sides, disk rather strongly and densely punctured ; seventh tergite a little projected, with parallel sides, broader than long, apical margin with rounded side angles (fig. 1). *Osmia chobauti*, ♂, from Morocco: Melilla, has the antennal

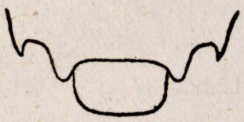

Fig. 1.—Sixth and seventh tergites of *Osmia mucida* Dours. ♂

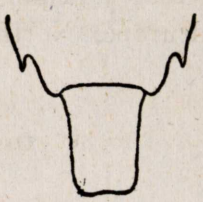

Fig. 2.—Sixth and seventh tergites of *Osmia chobauti* J. Per. ♂

joints 4 to 12 as long as broad (seen from below), sixth tergite broad and somewhat short, with a very small spine at sides, apical margin nearly truncate and ending in to a blunt little projecting spine on each side ; seventh tergite very long, longer than broad, with parallel sides, apical margin with rounded angles (fig. 2). *Osmia chobauti* J. Per., is known to me from Palestine: Kallia (on Dead Sea), Tiberias, Jerusalem-Jericho road.

Osmia cristata Gerst.

Escorial, 2 ♀♀, 21-VI-22 ; Herval, 1 ♀, VI-07 ; ~~Guadamilla~~, 1 ♂, 16-VII-19 (Dusmet).

Osmia lepeletieri J. Pér.

Valle de Ordesa, 1 ♀, 1 ♂, 26-VII-18 (Dusmet).
Alpes, Pyrenees.

Osmia pulchella J. Pér.

El Pardo, 1 ♀, 8-V-20 (Dusmet).
Algeria, Morocco: Demnat (Inst. Sc. Chér., det Benoist), new for Spain.

Osmia crenulata F. Mor.

Villaverde, 2 ♂♂, 9-VI-08 ; Río Alberche, 1 ♀, 8-VI-07, 1 ♀, 28-V-08 ; Madrid, 1 ♂, 31-V-01, 2 ♂♂, 16-VI-00 (Dusmet).

Closely related and very probably identical to *Osmia annulata* Latr., a species described long before from Spain (1811, «Enc. Méth.», VIII, p. 587). *Osmia crenulata* is known also from South Europe, North Africa, Morocco: Rabat (Inst. Sc. Chér. det. Benoist), Creta, Palestine, Cyprus, Transcaucasia.

Osmia alticola R. Benoist

Orihuela, 1 ♂ (Dusmet).

East Pyrenees.

Osmia tricornis Latr.

Colmenar, 1 ♀, 18-VI-17 (Dusmet). Morocco: Melilla, 3 ♀♀, 17-III-46 (Alcaide).

South West Europe, Morocco: Rabat (Inst. Sc. Chér., det. Benoist), Algeria.

Osmia emarginata Lep.

Sierra de Guadarrama, 1 ♂, 31-V-29 (Dusmet).

Central Europe, France, North Africa, Morocco: Tasrah des Ighezrane (Inst. Sc. Chér., det. Benoist), Palestine.

Osmia inermis Zett.

Sierra de Guadarrama, 1 ♀, 10-VI-24 (Dusmet).

Europe.

Osmia frieseana Ducke

Villaverde, 1 ♂, 13-V-07, 1 ♂, 10-V-08 (Dusmet).

Algeria, Morocco: Engil (Inst. Sc. Chér. det. Benoist), new for Spain.

Osmia signata Erichs. **(vidua** Gerst.)

1835. *Osmia signata* Erichson, Waltl : Reise nach Spanien, p. 107.
1913. *Osmia signata* Alfken & Bischoff, Sitz. Ges. Naturf. Freunde, p. 511.

Sevilla, 1 ♀, V-17. Baños de Montemayor, 1 ♀, VI-07 (Dusmet).

Spain, South Europe, North Africa, Egypt, Palestine, Cyprus, Central Asia.

Anthidium doederleini Friese, subsp. **dusmeti** nov. (fig. 3)

1915. *Anthidium malacopygum* Brib., var.? o n. sp.?, Mem. R. Soc. Esp. Hist. Nat., VIII, p. 307.

Male.—Length 6 mm.

Black ; clypeus covered with rather long shining white hairs ; apical margin crenulated ; clypeus, supraclypeal area, lateral face marks a little surpassing level insertion of antennae and then narrowing along inner orbits to the top, ochreous yellow ; mandibles except the dark red-brown apex, entire occipital stripe a little descending on cheeks, yellow ; scape black, with ochreous yellow linear band in front ; flagellum brown, light brown beneath except first and second joints ; vertex finely, rugosely punctured, dull ; pilosity on head white, rather short on vertex and occiput. Mesonotum finely very densely rugosely punctured, with short and sparse greyish-white hairs and with a pale yellow band on each side above ; scutellum projecting, with a pale yellow mark on each side ; axillae with a pale yellow mark ; tubercles pale yellow ; wings subhyaline, second recurrent nervure very slightly out of second transverse cubital nervure ; area moderately shining, sides, basal half narrowly, with shallow punctures except a very small polished and impunctate basal space in middle, rest polished and nearly impunctate ; thorax with shining white hairs at sides ; anterior femora rather brown beneath,

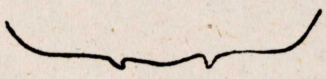

Fig. 3.—Seventh tergite of *Anthidium doederleini* Fr. *dusmeti*, subsp. nov. ♂

with some white hairs ; anterior tibiae and tarsi pale yellow ; middle femora mostly yellow-brown (base narrowly dark brown) and with a pale mark in the apex ; middle tibiae and basitarsi pale yellow above, small tarsal joints brown ; hind tibiae and femora similar to preceeding ; hind basitarsi pale yellow, small hind tarsal joints light brown ; femora and tibia with white hairs ; pulvilli absent. First abdominal tergite with base very narrowly black and very finely and densely punctured, middle of disk with a pale yellow band nearly covering sides and narrowing in middle and very finely somewhat sparsely punctured, rest of subapical area dull red-brown and very finely densely punctured, apical margin very narrowly impunctate and red-brown ; second and third tergites nearly similarly coloured as the preceeding (the black more in base) ; fourth and fifth tergites as the preceeding, the pale yellow band broader on fifth ; sixth tergite broad and short, nearly pale yellow, apical margin entire, crenulated, with hardly visible basal angle on each side ; seventh tergite short and broad, sides rounded, apical margin with an extremely short, blunt spine on each side of middle and between with a shallow, broad, somewhat convex towards middle emargination (fig. 3) ; sternites brown ; sixth sternite bare, apical margin rounded, with a small basal spine at sides ; sternites with rather dense greyish-white hairs.

Female.—Length 5,5 mm.

Similar to the male ; head black ; clypeus very finely, rugosely punctured, moderately shining, apical margin slightly crenulated ; clypeus nearly covered with short white hairs ; a linear pale yellow stripe along inner orbits to the top ; a small pale yellow mark on each side of occiput ; scape black ; colour of flagellum nearly as in the male ; pilosity on head short and white, that on vertex and occiput pale yellowish-white. Mesonotum as in the male, the pale yellow mark missing on each side above ; legs nearly coloured as in the male ; apex of anterior and middle tibiae brown, of hind ones black ; hind basitarsi black. First abdominal tergite black suffused with dull red-brown subapically, with a pale yellow lateral mark ; tergites 2 to 5 with base black, below with a transverse pale yellow median band a little broader at sides and rather narrowing in middle of tergites 2 to 4, rest of disk dull red-brown (except that of fifth which is pale yellow-

brown) ; sixth tergite black, with a pale yellow band on each side of middle of disk, apical margin rounded, subcrenulated and very slightly notched in middle ; ventral scopa covered by pollen.

Morocco: Marraquesh, 1 ♂ (type), 1 ♀ (allotype), IV-1907 (Escalera), in Instituto Español de Entomología, Madrid.

I treat the present Moroccan *Anthidium*, a subspecies of *Anthidium doederleini* Friese, ♂, described from Biskra, South Algeria (1917, «Deutsch. Ent. Zeitschr.», p. 50), as it is very closely related to that species, and I am unable, owing to the short description of Friese, to find sufficient specific differences, so that to separate it as distinct species. Unfortunately details of the sculpture of the area of median segment, of the punctation of abdomen, of the form of scutellum and sixth sternite are missing from the original description of *Anthidium doederleini*. Bischoff, long before, sent me a sketch of the sixth and seventh tergites of the male, type, *Anthidium doederleini* Fr. (Zoological Museum, Berlín), and according to that sketch, sixth tergite has the apical margin entire, with a developed angle on each side, seventh tergite similar to same of the race *dusmeti*. In the race *dusmeti*, the apical margin of sixth tergite is crenulated, without any distinct lateral angle. This is the only structural difference, besides the colour differences. I find to separate the Moroccan *dusmeti* from the Algerian *doederleini*. When topotypical material of *Anthidium doederleini* Fr., is available, especially males, then we shall be able to decide whether the races *doederleini* Fr., and *dusmeti* n., belong to the same species or to two distinct ones. The two races, besides the difference of the form of sixth tergite of the males may be separated as follows: *Anthidium doederleini doederleini* Fr., male ; abdomen black, tergites with broadly yellow apical margins ; tergites 1 to 5 with narrow, transverse, yellow band (Friese says in error, black) in the middle ; ventral segments yellow, only fifth and sixth black. *Anthidium doederleini dusmeti* subs., nov., male ; first abdominal tergite with base very narrowly black, rest of disk with median pale yellow band nearly covering sides and narrow in middle, subapical area dull red-brown, apical margin very narrowly red-brown ; tergites 2 to 5 coloured as the preceeding ; the black more in base, the pale yellow band broader en fifth sternites brown. *Anthidium doederleini dusmeti* is related to *Anthidium malacopygum* Gribodo (—*ko-*

nowi Friese), and both differ in many details. *Anthidium malacopygum*, male, length 8 mm. ; apical margin of scutellum rounded, with indistinct median emargination ; punctation of basal part of the area of median segment somewhat strong, without unpunctured narrow small space in middle ; punctation of second and third tergites rather strong ; seventh tergite short and broad, apical margin with sublateral emargination and a median broader one in the middle of which is projected a very small spine ; this tergite looks as having four blunt angles and a median very small spine ; sixth sternite with the apical margin truncate. *Anthidium doerderleini dusmeti*, male length 6 mm. ; apical margin of scutellum rather ovate, slightly truncate and indistinctly emarginate in middle ; area of median segment otherwise punctured ; punctation of abdominal tergites finer and denser ; seventh tergite short and broad, sides rounded, apical margin with an extremely short blunt spine on each side of middle and between with a shallow broad somewhat convex towards middle emargination ; sixth sternite with apical margin rounded. The females of both species are separated in the differences of the length and the colour of body, the punctation and the form of scutellum. *Anthidium karshi* Friese, male, from Egypt (1899, «Entom. Nachr.», 21, pp. 335-336), may be compared with the present new Moroccan race, but the former is very different. *Anthidium karshi*, male, length 5,5 mm. ; head broader than long, yellow, only the surroundings of ocelli are black, frontal shield very sparsely punctured, otherwise smooth ; abdomen yellow, with broadly red-yellow apical margin ; disk of tergites sparsely punctured ; sixth tergite projecting on both sides only a rounded angle, straight in middle, not produced as in *Anthidium pulchellum*, indistinctly crenulated, seventh tergite quadrangular somewhat wave-like ; female (1932, «Bull. Soc. R. Ent. Egypt.», pp. 103-104), has the head and thorax straw yellow, abdomen pale reddish, with silvery transparent hind margins. *Anthidium zonulum* Alfken, male, from Jericho (Palestine), of the some group is very different from *dusmeti*, and the former has the form of scutellum in both sexes and of the last tergites in the male, similar to *Anthidium malagopygum* Gribodo.

Anthidium lituratum Pz., subsp. **astilleroi** (Dusm.)

1915. *Anthidium astilleroi* Dusmet, Mem. R. Soc. Esp. Nat. Hist., VIII, pp. 301-303.

Through the kindness of the authorities of Instituto Español de Entomología, Madrid, I have received and examined the type female of *Anthidium astilleroi,* from Morocco: «Mogador», V, 1907 (Ecalera). This species structurally is identical to *Anthidium lituratum* Pz., from Europe, from which differs in the rich extension of orange-red on abdomen and legs, and the former may be considered as a subspecies of *Anthidium lituratum* Pz. I possess a female, from Kairwan (Tunis), received from Schulthess, and is identical to *Anthidium lituratum astilleroi,* differring only as having the occipital band entire. *Anthidium lituratum astilleroi* comes very near to *Anthidium lituratum fraternum* (J. Pérez), known only in the male, from Algeria (1895, *Anthidium fraternum* J. Pérez, «Esp. nouv. Mellif. Barbarie», p. 22), and it is very probable that the former belongs to the other sex of the latter.

Dianthidium infuscatum (Erichs.) subsp. **bellicosum** (Lep.)

1898. *Anthidium bellicosum* Friese, Bienen Europas, IV, pp. 146-147.
1908. *Anthidium bellicosum* Saunders, Trans. Ent. Soc. London, p. 254.
1914. *Anthidium bellicosum* Alfken, Mem. R. Soc. Ent. Belg., XXII, p. 203.
1915. *Anthidium bellicosum* Dusmet, Mem. R. Soc. Esp. Hist. Nat., VIII, p. 296.
1932/1933. *Anthidium bellicosum* Alfken, Jahr. Naturf. Ges. *Graub.*, LXXI, p. 72.

Morocco: Melilla, 1 ♀ (Alcaide).

Anthidium bellicosum Lep., may be considered as a subspecies of *Anthidium infuscatum* Erichs., originally described from Spain (1933, «*Anthidium infuscatum* Alfken and Bischoff, Sitz. Ges. Naturf. Freunde.», p. 513), and differring as having the abdominal tergites reddish with interrupted yellow bands. Both ra-

ces, the Spanish and the North African, hace small pulvilli, second recurrent nervure is out of second transverse cubital nervure.

Dianthidium laterale subsp. **scutellare** (Latr.)

1931. *Anthidium ifranicum* Cockerell, Ann. & Mag. Nat. Hist. (10), VII, pp. 209-210.

According to Alfken (1935, «Mitt. Ent. Ver. Bremen», 23, p. 26), his *Anthidium laterale confluens* is identical to *Anthidium laterale scutellare* (Latr.), both described from Spain, the latter having priority. I have compared a male of *Anthidium laterale scutellare,* from Spain, with a male *Anthidium infranicum* Ckll., from Ifrane (Morocco), VIII, 1930 (T. D. A. Cockerell) and det. Cockerell, and both species are identical. *Anthidium laterale* has very small pulvilli ; second recurrent nervure is slightly out of second transverse nervure and its genitalia belong to *Dianthidium.* This species and its races may be transfered to *Dianthidium.*

Dianthidium afrum (Lep.)

1841. *Anthidium afrum* Lepeletier, Hist. Nat. Insect. Hym., p. 387.
1846. *Anthidium afrum* Lucas, Explor. Sc. Algerie, Zoologie, III, p. 202.
1894. *Anthidium afrum* Gribodo, Bull. Soc. Ent. Ital., XXVI, p. 92.
1908. *Anthidium afrum* Saunders, Trans. Ent. Soc. London, p. 254.
1932/1933. *Anthidium afrum* Alfken, Jahr. Naturf. Ges. Graub., LXXI, p. 72.

Morocco: Melilla, 3 ♀♀, 3 ♂♂ (Alcaide).

Gribodo (1894) treated *Anthidium afrum* Lep., as a synonyme of *Anthidium ferrugineum* F., but this synonymy is not correct. *Anthidium ferrugineum,* female, has a small projected polished plate in middle of apical margin of second tergite, while *Anthidium afrum,* female, is much larger, without any projection in the middle of apical margin of second tergite. *Anthidium afrum* belongs to *Dianthidium,* of the group of *Dianthidium laterale.*