NUNO FREIRE DE ANDRADE

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SPHECIDAE OF PORTUGAL
Genus MISCOPHUS Jurine

by

NUNO FREIRE DE ANDRADE (1)

1. INTRODUCTION

As a sequel to the author's previous lists on the species of *Sphecidae* occurring in Portugal (2) the genus *Miscophus* will be dealt with in the present paper.

The knowledge of the world's fauna of *Miscophus* is still very imperfect when compared to what is known about other sphecoid genera and may be considered as still in its infancy. Only little more than fifty species have been described until now and this number probably represents but a small fraction of the total existing species. Specimens are comparatively small, their size varying from about 2.5 to 10 mm, and are apt to pass unnoticed to general collectors excepting, of course, those who are especially looking for them. Facts seem to prove that whenever a hymenopterist starts looking for *Miscophus* in hitherto not much explored areas, he generally discovers an unexpected number of novelties. This was apparently the case with HONORÉ (1944), who published ten new species in his work on the Egyptian *Miscophus*. Also in the present paper seven undescribed species are mentioned, all collected within a comparatively small area *(vide* map, p. 40).

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(1) Author's address: N. F. de Andrade — R. Marquês de Subserra, 15, 5.º-D — Lisboa (Portugal).

(2) Esfecídeos de Portugal (Hym. Sphecidae). *Mem. Est. Mus. Zool. Coimbra*, 1949, N.º 194, 27 pp.

— Idem Gen. *Solierella* SPINOLA. *Brotéria*, 1950, vol. 19 (46), Pt. 1., pp. 5-11.

No comprehensive monograph on the palaeartic species of this genus has been published since 1884, the year in which KOHL's important work on the *Larridae* was issued. New species have been discovered since then and with the aid of higher stereoscopic magnifications and the study of the ♂♂ 's genitalia it has been possible to split several previously known forms into valid distinct species. The genus is thus in need of a full revision.

Since some new species are herein described it was considered advisable to work out a determination key for both sexes. This in no way implies that the present work should be looked upon as a monograph, in the usual sense of the term; the number of localities explored and the amount of specimens examined would not justify any such pretension. Though some foreign specimens were also examined, the present determination key and descriptions are mainly based on the study of indigenous material, and their utilization in specimens collected in distant regions and possibly subject to subspecific variation should be effected with a certain tolerance.

The purpose in view was, really, to give a comprehensive account of our indigenous species, and it is the author's hope that this will serve as a modest contribution to the realization of any future study on the palaeartic *Miscophus* as a whole.

It gives me great pleasure to express my gratitude to Sr. Prof. D. GONZALO CEBALLOS, director of the Instituto Español de Entomologia, Madrid, for making it possible for me to examine the types of *M. hispanicus* MERCET, to Dr. J. DE BEAUMONT, of the Musée Zoologique de Lausanne, for the loan of valuable material, to Mr. P. M. F. VERHOEFF, of den Dolder, Holland, for the extraction and expert settings of the genitalia sketched in this paper and other kind assistance, and to Dr. A. DE MAGALHÃIS RAMALHO, director of the Instituto de Biologia Marítima, Lisbon, and Sylv. Eng. C. M. BARTA NEVES, Prof. of Entomology at the Instituto Superior de Agronomia, Lisbon, for their generous support in the realization of this work.

2. METHODS

The specimens on which this work is based were studied by means of a binocular apparatus provided with three revolving

objectives corresponding to magnifications of 18, 54 and 108 times. *The median magnification of 54 times was on the whole adopted by the author in the elaboration of the descriptions;* otherwise the utilized magnifications shall be mentioned on the text, in a parenthesis. It should however be stressed that these magnifications are mentioned only as an indicative, as it is obvious that the required magnification grade depends largely on the ability of the observer, the apparatus and lighting process he uses, etc.

The usual terminology was on the whole adopted in the descriptions given below. The significance of some unusual terms and description ways is as follows.

Transverse interocellar distance. — The distance between the edges of the posterior ocelli.

Oblique interocellar distance. — The distance between the edge of the anterior ocellus and the edge of one of the posterior ones.

Ocello-ocular distance. — The distance between the edge of one of the posterior ocelli and the corresponding eye.

Shagreened microsculpture. — This type of microsculpture is very common in the genus and a few words should be devoted to it. It consists of a composite of very small sulci impressed on the integuments and forming a more or less close network upon which other major sculptural elements may be superimposed. These minute sulci must of course be examined under high magnification; they are sometimes deeply impressed, the intervening spaces becoming then rather tumescent and giving the integument a general granulate appearance (i.e., face in *M. bonifaciensis* FERTON). If a puncturation is superimposed on this type of microsculpture, the minute sulci will then irradiate from and, in a way, interconnect the punctures; an exemple of punctate-granulate-shagreened integuments is that of the faces of *M. verhoeffi* n. sp. and *M. nicolai* FERTON. In *M. nevesi* n. sp. the shagreen sulci are straight, regularly and rather shallowly impressed, and form a neat mosaic in some places where the punctures become obsolete or widely separated.

Measurement of the lateral sclerite of the clypeus. — The width of a lateral sclerite of the clypeus, for the purpose of comparing it with the width of the median sclerite, is the shortest distance between the indentation and the edge of the corresponding eye;

owing to the curvature of the eye below, this distance is thus shorter than the anterior edge of the sclerite.

Pronotal zones. — In order to facilitate and coördinate the description of this part of the thorax, the following more or less distinct zones are discerned: a) neck, b) anterior declivity, c) collar and d) posterior margin.

3. KEY TO THE SPECIES

♀♀

1. Front wings infuscated, with only one cubital cell; a whitish translucent patch covers part of the venation zone and the apex of the wing is somewhat clearer. Scutellum covered with neat longitudinal ridges. [Body very shining, with conspicuous bluish violet and cupreous tinges] 2
— Front wings normal. Scutellum punctured . . . 3
2. Dorsulum entirely smooth, practically impunctate. Face shagreened only at the lower half (108 ×), the upper half sparsely and obsoletely punctured, the intervening spaces smooth. . . . . *M. sp. aff. bonifaciensis* Ferton (p. 14).
— Dorsulum smooth only at the sides, strongly ridged in the middle zone, the ridges longitudinal. Face entirely shagreened, granulate (108 ×). . . . . *M. bonifaciensis* Ferton [1].
3. First joint of the flagellum subequal in length to the third and only a trifle shorter than the second. Side surfaces of the median segment smooth and shining, only with very faint vestiges of an oblique rugulosity and some fine scarce punctures near the posterior upper corner; no distinct ridges present. Small species; length of holotype: 3.8 mm. [Face markedly

[1] Not found in Portugal.

convex transversely (fig. 18). Head and thorax, excepting the median segment and metapleurae, very finely punctured, the punctures more or less spaced, dimentionless, with the appearance of mere dots; under low magnification (18×), the punctures are hardly visible. Dorsal surface of the median segment quadrate and clothed with a short whitish pilosity directed forwards] . . . . . *M. nevesi* n. sp. (p. 16).

— First joint of the flagellum distinctly shorter than either the third or second joints. Side surfaces of the median segment either dull or shining; in the latter case, distinct ridges are always present. Larger species, generally more than 4 mm long 4

4. Tarsal comb vestigial, the spine at the apex of the second joint of an anterior tarsus barely reaching half the length of the third joint (1). Face markedly convex transversely (fig. 19), closely punctured, the punctures shallow and ill-defined (108×). Ocello-ocular distance subequal to the oblique interocellar distance. Dorsulum rather flat, evenly but shallowly punctured, the spaces smooth and larger than the punctures. Scutellum flat, more sparsely punctured than the dorsulum. Epimeral region of the mesopleurae smooth and shining, with some scant obsolete punctures. In a front wing, the distance between the apex of the second cubital cell and the apex of the wing is distinctly greater than the largest width of the wing. Dorsal surface of the median segment trapezoidal, clearly longer than high at the posterior declivity and covered with thin oblique ridges; side surfaces shining, also obliquely ridged. Legs black, excepting the inner side of the anterior tibiae and the tarsi, which are dark ferruginous . . . . . *M. albufeirae* n. sp. (p. 20).

— Not *M. albufeirae* 5

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(1) As one single specimen of this species was examined, the tarsal combs of which may have been accidentally worn out, this character should be considered with a certain reserve.

5. Transverse interocellar distance distinctly shorter than the oblique interocellar distance. Median segment long, about one and a half times longer than high at the posterior declivity. [Face, vertex, ocellar area, pronotal collar, mesonotum and mesopleurae finely and very closely punctured, the punctures sometimes rather blurred, strongly and uniformely compressed against each other and thus originating a close network of neat small rugulae (108 ×). Second cubital cell usually large and distinctly higher than the radial cell. Abdomen obsoletely punctured. Body slender, with a general leaden dull appearance. Length: 5.5 — 9.0 mm] 6

— Transverse interocellar distance at least equal to the oblique interocellar distance. Median segment about as long as high at the posterior declivity, or only a trifle longer 8

6. Excepting the base of the first tergite, which is usually reddish, the abdomen seen from above is entirely black . . . . . *M. gallicus gallicus* KOHL (p. 14)

— First and second tergites red 7

7. Only the first segments of the abdomen red (after GINER MARÍ) . . . . *M. g. gallicus*, var. *rufus* GINER.

— Abdomen entirely red (after FERTON) . . . . . *M. gallicus rubriventris* FERTON (1)

8. Median segment without a fundamental shagreened microsculpture (108×), and, at least at the sides, with smooth and shining areas visible between the existing ridges; dorsal surface reticulated or obliquely ridged, rarely with distinct punctures; side surfaces not markedly divergent towards the front (fig 23) 9

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(1) Not found in Portugal. The author has recently examined specimens from Italy which seem to indicate that it is not always possible to draw a sharp distinction between this form and var. *rufus*. The latter may however be maintained, for practical reasons, until future investigation allow a more exact appreciation of the colour variability of the species, in connection with the location (geographical or ecological) of the respective populations.

— Median segment with a fundamental shagreened microsculpture (108 ×), without shining or completely smooth areas either on the dorsal surface or at the sides; dorsal surface with punctures; side surfaces markedly divergent towards the front (fig. 22). 12

9. Face unevenly punctured, with a median longitudinal impression widened at about halfway between the clypeus and the anterior ocellus into an oblong, more or less lenticular, smooth and shining area; the greatest width of this area is distinctly larger than half the diameter of the anterior ocellus. Anterior margin of the median sclerite of the clypeus well developed, its width in the middle equal to about half the distance between its upper limit and the antennal sockets, or greater (fig. 5). Dorsulum sparsely and unevenly punctured, the intervening spaces on the whole much larger than the punctures. [Body very shining, the face with a more or less pronounced cupreous tinge. Abdomen sparsely punctured]. . *M. merceti* n. sp. (p. 23)

— A median longitudinal impression sometimes present on the face, but never widened to the extent mentioned above. Anterior margin of the median sclerite of the clypeus less developed, its width in the middle shorter than half the distance between its posterior limit and the antennal sockets (figs. 3, 7 & 9). Dorsulum evenly and more closely punctured, the intervening spaces rarely larger than the punctures. 10

10. Face punctate-rugulose, the punctures mainly indistinct, the sinuate small rugulae emphasized transversely. Epimeral region of the mesopleurae shining and sparsely punctured, the spaces distinctly larger than the punctures. Length: 3.5-5.5 mm. [Tarsi fuscous. Abdomen black. Clypeus: fig. 3. Posterior margin of the pronotum smooth, abruptly depressed, narrowed towards the middle. Dorsulum evenly punctured, the intervening spaces on the whole slightly smaller than the punctures] . . . . . *M. sp. aff. spurius* Dahlbom (p. 27).

— Face closely punctured, the punctures distinct and adjoining each other. Epimeral region of the mesopleu-

rae closely punctured, the spaces on the whole clearly smaller than the punctures, sometimes rugulose. Length: 5.0 — 8.0 mm. 11

11. First and second tergites totally or partly red. Tarsi fuscous. Ocello-ocular distance subequal to the diameter of an ocellus and distinctly shorter than the oblique interocellar distance. Posterior margin of the pronotal collar smooth, neatly and strongly depressed along all its length, narrowed towards the middle. Second cubital cell large, usually more than 1.5 times as high as the petiole; third abcissa of the cubital vein about 2.5 times as long as the second abcissa, or larger (fig. 15) . . . *M. bicolor* JURINE (p. 28).

— Tergites black. Tarsi ferruginous. Ocello-ocular distance distinctly longer than the diameter of an ocellus and subequal to or larger than the oblique interocellar distance. Posterior margin of the pronotal collar also smooth and narrowed towards the middle, but not neatly depressed along all its length. Second cubital cell small, less than 1.5 times as high as the petiole; third abcissa of the cubital vein less than twice as long as the second abcissa (fig. 16) . . . . . *M. lusitanicus* n. sp. (p. 28).

12. Transverse interocellar distance about twice as long as the ocello-ocular distance, the latter only slightly larger than half the oblique interocellar distance (fig. 20). Ocellar area normally located: the distance between the edges of the posterior ocelli and an imaginary line uniting the upper corners of the eyes is at the most subequal to half the transverse interocellar distance (fig. 20). Tibiae black or dark brown. Median longitudinal carina of the dorsal surface of the median segment generally intersected along part of its length by transverse, more or less incurved small rugulae. Tergites punctured, the punctures plainly visible . . . . *M. verhoeffi* n. sp. (p. 33).

— Transverse interocellar distance clearly less than twice as long as the ocello-ocular distance, the latter subequal to or only slightly shorter than the oblique interocellar distance (fig. 21). Ocellar area advanced: the

distance between the edges of the posterior ocelli and an imaginary line uniting the upper corners of the eyes is subequal to the transverse interocellar distance (fig. 21). Tibiae either in part or wholly ferruginous. Median longitudinal carina of the dorsal surface of the median segment not intersected by small transverse rugulae, excepting sometimes at the apex. Tergites very finely punctured, the punctures spaced and nearly obsolete (108×) . . . . . *M. nicolai* FERTON (p. 31).

♂ ♂

1. Front wings infuscated, with only one cubital cell; a whitish translucent patch covers part of the venation zone and the apex of the wing is somewhat clearer. Scutellum covered with neat longitudinal ridges. [Body very shining, with conspicuous bluish violet and cupreous tinges] 2
— Front wings normal. Scutellum punctured . . . 3
2. Dorsulum entirely smooth, practically impunctate. Face shagreened only at the lower half (108×), the upper half weakly and sparsely punctured, the spaces smooth . . . . . *M. sp. aff. bonifaciensis* FERTON (p. 14).
— Dorsulum smooth only at the sides, strongly ridged on the middle zone, the ridges longitudinal. Face entirely shagreened, granulate (108×) . . . . . *M. bonifaciensis* FERTON (1).
3. Median segment about 1.5 times longer than high at the posterior declivity. Dorsulum and scutellum finely and very closely punctured, the punctures sometimes rather blurred, strongly and uniformely compressed against each other and thus originating a close network of fine small rugulae (108×); no funda-

(1) Not found in Portugal.

mental shagreened microsculpture present (108×). [Median sclerite of the clypeus usually less than twice as wide as a lateral one. Second cubital cell large, distinctly higher than the radial cell. Abdomen obsoletely punctured (108×). Body with a general leaden dull appearance. Length: 4.0 — 6.5 mm]. 4

— Median segment usually about as long as high at the posterior declivity; when clearly longer, then its side surfaces are shining, and the face is bulged (fig. 17) and very finely punctured, the punctures spaced. Dorsulum and scutellum not so closely punctured, the punctures neat and not uniformely compressed against each other (108×); a fundamental shagreened microsculpture may be either present or not . 6

4. Excepting the first tergite, which may be more or less reddish at the base, the abdomen seen from above is entirely black . . *M. gallicus gallicus* KOHL (p. 14).

— First and second tergites red 5

5. Only the first segments of the abdomen red (after GINER MARÍ) . . . . . *M. g. gallicus,* var. *rufus* GINER.

— Abdomen entirely red (after FERTON) . . . . . *M. gallicus rubriventris* FERTON (1)

6. Anterior edge of the median sclerite of the clypeus arcuate and armed with a small prominent tooth in the middle, sometimes rather stumped (fig. 6). [Dorsulum unevenly punctured, the puncturation scant, the intervening smooth spaces on the whole much larger than the punctures. Dorsal surface of the median segment with irregular sublongitudinal ridges occasionally somewhat curved inwards behind. Body very shining, the face with a more or less pronounced cupreous tinge] . . *M. merceti* n. sp. (p. 23).

— Anterior edge of the median sclerite of the clypeus without a tooth 7

7. Anterior edge of the median sclerite of the clypeus transverse (figs. 2 & 12) 8

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(1) Not found in Portugal. See footnote on p. 6.

— Anterior edge of the median sclerite of the clypeus regularly arcuate or ogival (figs. 4, 10 & 14) . 9

8. Face bulged (fig. 17), very finely punctured, the punctures spaced; under low magnification (18×), the punctuation is hardly visible. Median sclerite of the clypeus feebly convex transversely, its anterior edge slightly sinuate (fig. 2). Joints of the flagellum short, the second one subequal in length to the first; interocular distance greater than the combined length of the first four joints. Dorsal surface of the median segment quadrate and clothed with a rather dense whitish pilosity directed forwards; side surfaces smooth and shining, with very faint vestiges of an oblique rugulosity and some fine scarce punctures on the posterior upper corner. Tibiae dark brown, generally merging into ferruginous at both tips. Length: 2.5 — — 3.0 mm . . . . . *M. nevesi* n. sp. (p. 16).

— Face normal, punctate-shagreened, the punctures shallow and indistinct, the intervening spaces granulate (108×); under low magnification (18×), the integument looks closely punctured. Median sclerite of the clypeus bulged, its anterior margin straight (fig. 12). Joints of the flagellum of normal length, the second one about 1.5 times as long as the first; interocular distance only a trifle longer than the combined length of the first three joints. Dorsal surface of the median segment punctate, rounded behind, without such pilosity and sometimes with a few slightly oblique irregular rugae, more emphasized over the anterior half; side surfaces sculptured like the dorsal surface, the punctures sparser and the oblique rugae neater. Tibiae and tarsi entirely ferruginous. Length: 3.4 — — 5.0 mm. . . . . *M. nicolai* Ferton (p. 31).

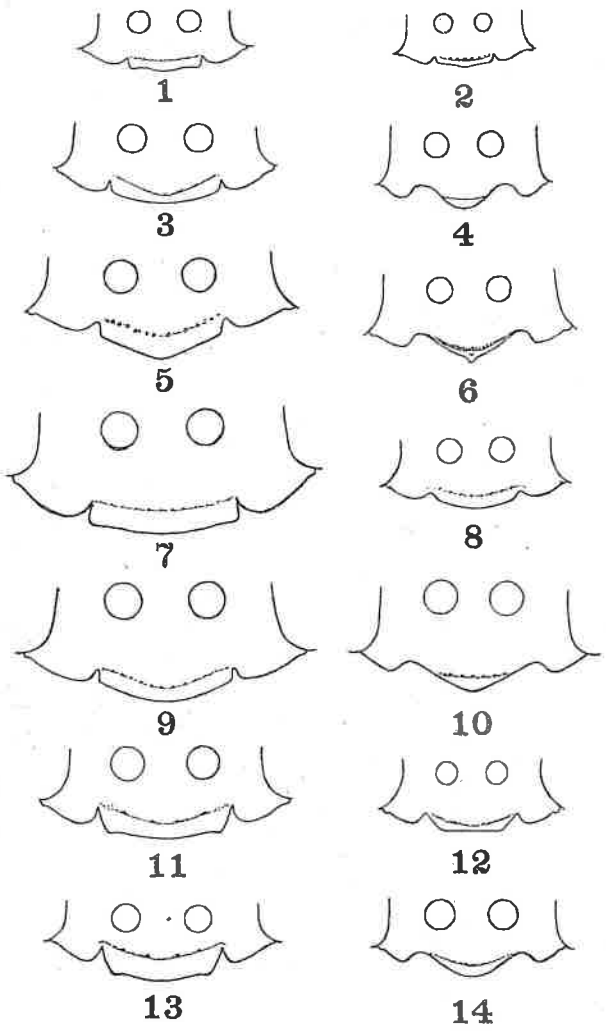
9. Median segment with a fundamental shagreened microsculpture (108×), without smooth and shining areas either on the dorsal surface or at the sides; dorsal surface with punctures. Tarsi ferruginous, with well developed black spines; anterior pair with a weak tarsal comb. [Face punctate-shagreened, the shagreen strong, the spaces granulate between the punctu-

res (108×). Mesonotum also punctate-shagreened, the spaces subequal to the punctures or larger. Median longitudinal carina of the dorsal surface of the median segment generally intersected along part of its length by transverse, more or less incurved, small rugulae] . . . . . *M. verhoeffi* n. sp. (p. 33).

— Median segment without a shagreened microsculpture (108×) and, at least at the sides, with smooth and shining areas visible between the existing ridges; dorsal surface reticulated or obliquely ridged, rarely with distinct punctures. Tarsi fuscous, the spines weak; anterior pair without a comb. 10

10. Abdomen black. Epimeral region of the mesopleurae very shining, the punctures scant and usually weak, sometimes obsolete. Scutellum sparsely punctured, the intervening spaces on the whole larger than the punctures. Face punctate-rugulose, the punctures mainly indistinct, the rugulae emphasized transversely (108×). Length: 3.0—4.5 mm. [Clypeus: fig. 4. Ocelli large. Vertex small; the distance between the posterior ocelli and the posterior limit of the vertex is equal to or smaller than the diameter of an ocellus. Posterior margin of the pronotum smooth, abruptly depressed, narrowed towards the middle. Dorsulum evenly punctured, the intervening spaces larger than the punctures]. *M. sp. aff. spurius* Dahlbom (p. 27).

— At least the first tergite with red colour. Epimeral region of the mesopleurae strongly and closely punctured, the spaces on the whole smaller than the punctures. Scutellum closely punctured, the spaces usually also smaller than the punctures. Face very closely punctured, the punctures distinct and adjoining each other. Length: 4.5 — 6.5 mm. . . . . *M. bicolor* Jurine (p. 28).



Figs. 1-14 — Clypeus of. 1. *M. nevesi* n. sp. ♀, 2. Idem ♂, 3. *M. sp. aff. spurius* Dahlbom ♀, 4. Idem ♂, 5. *M. merceti* n. sp. ♀, 6. Idem ♂, 7. *M. lusitanicus* n. sp. ♀, 8. *M. albufeirae* n. sp. ♀, 9. *M. bicolor* Jurine ♀, 10. Idem ♂, 11. *M. nicolai* Ferton ♀, 12. Idem ♂, 13. *M. verhoeffi* n. sp. ♀, 14. Idem ♂.

4. NOTES AND DESCRIPTIONS OF SPECIES

1. **M. sp. aff. bonifaciensis** FERTON

Records

Portugal: Trafaria, Cova do Vapor, Caparica, Troia.

The fact that this form is not conspecific with *M. bonifaciensis* FERTON was kindly pointed out to me by my friend and colleague P. M. F. VERHOEFF, who was able to compare Portuguese with Corsican specimens, and I leave with pleasure its description to him. The characters given on the key to the species are enough to separate both forms.

2. **M. gallicus gallicus** KOHL

M. gallicus n. sp. — KOHL, 1883 p 347.
M. helveticus KOHL — KOHL, 1883 a p. 673.
M. gallicus KOHL — KOHL, 1884 p. 226.
M. gallicus KOHL — BERLAND, 1925 p. 127.
M. gallicus KOHL — GINER MARÍ, 1943 p. 207.

Records from Portugal.

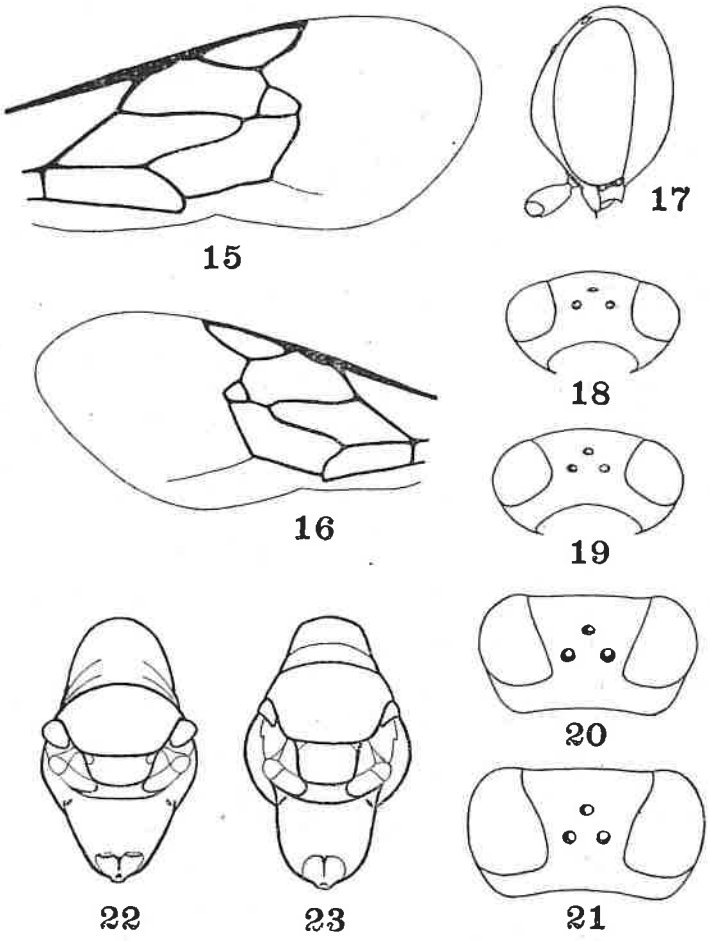
Lisboa (Tapada da Ajuda); Cascais (Boca do Inferno); Estoril (Areias) Porto de Rei; Monchique; Vale de Gaio [2 ♀♀ of var. *rufus* GINER].

Rather abundant in the explored localities. GINER MARÍ (1943) mentions a variety *rufus*, of this species, which he attributes to KOHL, for the specimens with the first segments of the abdomen red. Since I have not found this name on any of KOHL's papers, I mention it under GINER MARÍ's authorship, this author being, to my knowledge, the first to use it.

The following characters may be added to those given on the key to the species and to KOHL's good description (1884):

♀ — Clypeus and lower zone of the face with a dense whitish pilosity hiding the sculpture unless the examination is made from below. On the median zone of the face, the pilosity may show a more or less dirty yellow tinge. Median sclerite of the clypeus somewhat flattened longitudinally. Face narrow, its width midway between the antennal sockets and the anterior

ocellus only about 1.75 times as great as the width of an eye at the same level. Interocular distance as long as the combined length of the first and second joints of the flagellum plus about



Figs. 15-23 — 15. *M. bicolor* Jurine ♀; front wing; 16. *M. lusitanicus* n. sp. ♀, idem; 17. *M. nevesi* n. sp. ♂, side view of head; 18. *M. nevesi* n. sp. ♀, top view of head; 19. *M. albufeirae* n. sp. ♀, idem; 20. *M. verhoeffi* n. sp. ♀, idem; 21. *M. nicolai* Ferton ♀, idem; 22. *M. verhoeffi* n. sp., thorax; 23. *M. bicolor* Jurine, idem.

three fifths of the third. Posterior margin of the pronotal collar very thin and separated from the posterior declivity of the collar by a fine sulcus (108×), more clearly marked at the sides. Tarsal comb well developed, some of the spines slightly spatulate.

♂ — Clypeus and lower zone of the face with a pilosity similar to that of the ♀. Interocular distance as long as the combined length of the first three joints of the flagellum plus about half the fourth. Posterior margin of the pronotal collar as in the ♀. Apex of the eighth ventral plate generally not visible from the outside and armed with two long sharp spines (fig. 28).

Note on *M. gallicus rubriventris* FERTON.

This form was first described by FERTON (1896, p. 261) upon Corsican specimens of both sexes; he gave it then specific rank and named it *rubriventris*. Later on, in 1901 (p. 88), he placed it in synonymy with *M. gallicus* KOHL, as a colour variation.

In the author's opinion, FERTON was right in considering *rubriventris* conspecific with *gallicus* KOHL; the morphological differences he points out in the original description are certainly insignificant and subject to individual variation, as he probably was able to find out later on. On the other hand, the establishment of a subspecies for the *gallicus* specimens with red abdomen seems perfectly justified inasmuch as no *gallicus gallicus* have apparently been found in Corsica. In Spain, this subspecies also seems to appear isolated; GINER MARÍ (1943, p. 209) records it (as a species) from several localities in the vicinity of Valencia and also from Ibiza (Balearic Islands), wherefrom no typical *gallicus* are recorded.

3. **M. nevesi** n. sp. (1)

Holotype ♀. — Length: 3.8 mm. Black, with the following main coloured zones: mandibles, excepting the apical two fifths, amber red; scapes below and apical margin of the first joint of the flagellum dark ferruginous; flagellum below with faint vestiges of the same colour; tarsi and inner sides of the front tibiae dark brownish ferruginous; outer side of the front tibiae, middle and hind tibiae dark brown.

Lower zone of the face and clypeus with a short pilosity not hiding the sculpture. Dorsal surface of the median segment clothed with a uniform erect whitish pilosity directed forwards which renders difficult the examination of the sculpture; side and hind surfaces glabrous. Head and rest of the thorax clothed with a more or less dense microscopic pilosity, matching the fine puncturation. Abdomen with a similar pilosity, more conspicuous at the sides of the apical margins of the tergites and below.

(1) Sylv. Eng. C. M. Baeta Neves.

Median sclerite of the clypeus unevenly punctured, the punctures fine and spaced at the sides and above (108×), the middle zone with relatively large impunctate areas and a few larger and coarser disseminated punctures; anterior edge transverse, slightly sinuate (fig. 1). Lateral sclerites very finely punctured, the punctures ill-defined (108×). The indentations which separate the median from the lateral sclerites reach the upper limit of the anterior smooth margin and their inner side is perpendicular.

Face markedly convex, bulged (fig. 18); the puncturation is neat, close and extremely fine, the intervening spaces on the whole smaller than the punctures (108×), the latter dimentionless, with the appearance of mere dots. Ocellar and ocello-ocular areas more sparsely punctured, the spaces subequal to or larger than the punctures and displaying a delicate shagreened microsculpture formed by minute straight sulci interconnecting the punctures and thus giving place to a very fine mosaic process with the vertexes at the punctures themselves (108×). Vertex relatively well developed, the ocelli rather advanced. Temples obliquely and very closely punctured, the spaces smaller than the punctures (108×).

Neck and pronotal declivity rather shining, the punctures ill-defined and hardly visible (108×). Collar well developed, rather thick and punctured like the ocellar area, with an identical shagreen (108×); the median tumescence is wide and faintly apparent. Posterior margin of the pronotum not depressed at the sides, still punctured but more sparsely so than the collar.

Dorsulum rather flat and, like the scutellum, metanotum, mesopleurae and mesosternum, very finely punctate-shagreened (108×), the shagreen identical to that of the ocellar area. On the dorsulum and scutellum the intervening spaces are on the whole subequal to or slightly larger than the punctures; on the metanotum the punctures are weaker, the spaces much larger; on the mesopleurae the shagreen is stronger and the punctures more spaced, more widely so on the epimerum and less so on the episternum; on the mesosternum the punctures are oblique and again very close. Metapleurae smooth and shining, impunctate, with faint vestiges of the same fine mosaic shagreen above; the sutures which separate them from the median segment are perceivable but not clearly marked.

Spinosity of the legs much reduced, including the tarsal comb; the lateral spine at the apex of the second joint of the anterior tarsi barely reaches half the length of the third joint. Posterior tibiae neatly conical, when seen sideways; tarsi cylindrical.

Median segment quadrate, when seen from above. Dorsal surface more or less coriaceous, with vestiges of a close oblique puncturation matching the pilosity; there is a weak median longitudinal carina which nearly reaches the apex of the surface, where a series of fine transverse ridges can be perceived; a few neat short ridges spring from the basal transverse carina — about ten at each half of the surface — their length equal to about half the width of the metanotum. Side surfaces depressed, shining and nearly smooth; there are vestiges of a mosaic shagreened microsculpture over part of the surfaces, more stressed near the posterior upper corners (108×), where a few disseminated punctures can be perceived; vestiges of a faint oblique rugulosity can also be perceived over the whole surface. Hind surface shining, transversely ridged, with a median longitudinal sulcus along the upper half; this sulcus is gradually deepened towards the top and ends in a small oblong fovea; the ridges are weak and ill-defined, excepting for two or three strong ones near the top, at each side of the sulcus. Hind surface not very abruptly cut, forming an angle of about 130 degrees with the dorsal surface.

Abdomen wide, punctate-shagreened like the dorsulum; the width of the second sternite is equal to the length of a posterior tibia plus a quarter of the metatarsus; the punctures are more spaced than on the dorsulum and on the whole somewhat weaker, the integuments rather shining.

Median sclerite of the clypeus 1.9 times wider than long in the middle and slightly more than twice as wide as a lateral one; anterior margin well developed, its width in the middle equal to about half the distance between its posterior limit and the antennal sockets. Inner margins of the eyes incurvated, converging above and below; the interocular distance across the antennal sockets is 1.2 times as long as the same distance across the vertex. Face wide, its greatest width in the middle equal to 2.8 times the width of an eye at the same level. Joints of the flagellum short and thick, the second one 1.5 times as

long as wide at the apex and 1.1 times as long as the first. Interocular distance equal to the combined length of the first four joints of the flagellum. Ocelli small. Transverse interocellar distance about 1.6 times as long as the ocello ocular distance; the latter is longer than the diameter of an ocellus. Oblique interocellar distance equal to 0.85 of the transverse interocellar distance. Dorsulum 1.3 times as long as the median segment; the latter is about 1.25 times longer than high at the posterior declivity.

Front wings normally developed, slightly infuscated. The distance between the apex of the second cubital cell and the apex of the wing is equal to about 1.2 times the largest width of the wing. The second cubital cell is about half as long as the radial cell.

Allotype ♂. — Length: 2.8 mm. Very much like the holotype ♀ from which it differs in the following main respects:

Flagellum dark brownish ferruginous above and more clearly ferruginous below. Tarsi neatly ferruginous. Tibiae lighter brown, merging into ferruginous at the tips, the front pair lighter in colour. Femora, trochanters and anterior thighs more or less dark brown.

Median sclerite of the clypeus on the whole strongly punctured, the punctures varying in size and considerably spaced in the middle convexity. Anterior edge more or less shaped like in the holotype ♀ (fig. 2).

The bulging of the face is more stressed (fig. 17) and the puncturation not so close, the intervening spaces on the whole a trifle larger than the punctures. Temples more sparsely punctured, the spaces with the same typical mosaic shagreened microsculpture.

Dorsulum, scutellum, metanotum and mesopleurae on the whole also more sparsely punctate-shagreened. On the mesopleurae the punctures are very widely separated and the shagreened microsculpture forms a loose neat triangular network (108×).

Median sclerite of the clypeus 1.5 times wider than long in the middle and less than twice as wide as a lateral one; anterior margin normally developed, its width in the middle slightly shorter than one third of the distance between its posterior limit and the antennal sockets. Interocular distance across the

antennal sockets subequal to the same distance across the vertex. The largest width of the face is equal to 3.3 times the width of an eye at the same level. Interocular distance equal to the combined length of the first four joints of the flagellum plus half the fifth. Transverse interocellar distance 1.4 times as long as the oblique interocellar distance and 1.75 times as long as the ocello-ocular distance. Dorsulum 1.45 times as long as the median segment.

Second cubital cell of the front wing smaller than in the holotype ♀, about as long as high and equal in length to about one third of the radial cell.

Type material and records

Holotype ♀. — Portugal: Caparica; 22.7.1951 (leg. Verhoeff).
Allotype ♂. — Portugal: Cascais (Boca do Inferno); 7.8.1949 (leg. Andrade).
Paratype (3 ♂♂). — Cascais (Boca do Inferno).

All type material in the author's collection.
Though the holotype ♀ and the allotype and paratypes ♂♂ were collected in different localities, the similarity between the specimens leaves no doubts that they belong to the same single species.

4. **M. albufeirae** n. sp.

Holotype ♀. — Length: 4.2 mm. Black, with the following main coloured zones: mandibles, excepting the apical two fifths, amber red; upper half of the scapes below, posterior margin of the tegulae and tarsi more or less ferruginous; tibiae dark brown, their inner sides, especially in the anterior pair, lighter in colour.

The whitish pilosity of the clypeus and face is rather scant and short. Temples, pronotum, mesopleurae and mesosternum clothed with a relatively well developed, sparse, oblique pilosity with silvery reflexes, matching the puncturation. On the dorsulum the hairs are inconspicuous. Upper and hind margins of the sides of the median segment clothed with some short whitish setiform hairs.

Median sclerite of the clypeus convex, punctate, the punctures somewhat irregular in size and on the whole slightly larger than the intervening spaces; anterior edge transverse, regularly and very widely curved (fig. 8). Lateral sclerites closely punc-

tured, the punctures shallow and ill-defined. The indentations which separate the median from the lateral sclerites are shallow, and do not quite reach the upper limit of the anterior smooth margin; their inner side is oblique.

Face markedly convex, bulged (fig. 19); the punctures are close, contiguous, but very shallow and ill-defined. Ocellar area punctured more or less like the face. Vertex more sparsely punctured, the punctures neater; ocello-ocular zones with relatively large, slightly shagreened (108×), impunctate zones. Temples shining, very sparsely and obsoletely punctured.

Pronotum sparsely punctured, the punctures shallow and ill-defined. Collar strong and thick, regularly convex longitudinally. Posterior margin smooth, not abruptly depressed at the sides, and gradually narrowed towards the middle, where it is invaded by a slight tumescence directed backwards which is present at the hind declivity of the collar in the middle.

Dorsulum shining and sparsely punctured, its convexity little stressed; the punctures are shallow, somewhat oblique and on the whole distinctly smaller than the intervening spaces. Scutellum with a puncturation identical to that of the dorsulum but more sparse. Metanotum much more finely and densely punctured, the intervening spaces, however, still larger than the punctures.

Sternum of the mesopleurae sparsely punctured, the spaces on the whole larger than the punctures; in front, close to the episternal suture, and also behind, above the insertion of the middle legs, the punctures are somewhat oblique, setaceous and intermingled with a few, more or less distinct, oblique rugae; the punctures nearly disappear in the vicinity of the metapleurae, where the integument is shining. Episternum sparsely and very obliquely punctured, the punctures spaced and ill-defined. Epimerum smooth and shining, with only some very weak obsolete punctures scattered over its surface and a few distinct and stronger punctures below, close to the epimeral suture.

Metapleurae smooth and shining, uninvaded by the ridges of the lateral surfaces of the median segment, excepting, to a very small extent, on top, above the stigmata.

Spinosity of the tibiae and tarsi ill-developed. Anterior tarsi without a developed comb; the lateral spine at the apex of the second joint barely reaches half the length of the third joint.

Mesosternum obliquely punctured, the punctures spaced.

Median segment trapezoidal, when seen from above. Dorsal surface obliquely ridged, the ridges rather irregular, small, subparallel, intermingled with each other and becoming gradually more oblique towards the hind margin, where they are practically transverse; an imaginary oblique line connecting an anteriolateral angle of the surface with the middle of its apical edge intersects about 21 ridges; there is a neat uninterrupted median longitudinal carina from which the oblique ridges spring. Side surfaces obliquely ridged, the ridges also rather irregular, subparallel, the intervening spaces smooth and shining; an imaginary line uniting the anterior upper corner with the posterior lower corner of a surface intersects about 22 ridges. Posterior declivity transversely ridged, with a median longitudinal sulcus on its upper half; this sulcus is progressively wider and deeper upwards, and the ridges are straight, subparallel. The dorsal and hind surfaces form an angle of about 117 degrees.

Tergites finely punctured, the punctures spaced and on the whole smaller than the intervening spaces. Sternites also sparsely punctured; the punctures of the second sternite are shallow and larger than those of the remaining ones.

Median sclerite of the clypeus 1.6 times wider than long and slightly more than twice as wide as a lateral one; anterior margin normal, its width in the middle slightly less than half the distance between its posterior limit and the antennal sockets. Inner margin of the eyes incurvated; the interocular distance across the antennal sockets is equal to 1.25 times the same distance across the vertex. Face wide, its greatest width in the middle equal to about 2.6 times the width of an eye at the same level. Second joint of the flagellum 2.4 times longer than wide at the apex and 1.7 times as long as the first. Interocular distance only slightly shorter than the combined length of the first three joints of the flagellum. Ocelli of normal size. Transverse interocellar distance slightly greater than the ocello-ocular distance; the latter is subequal to the oblique interocellar distance and larger than the diameter of an ocellus. Dorsulum 1.35 times longer than the median segment; the latter is 1.3 times longer than high at the posterior declivity.

Front wings rather infuscated, slightly clouded beyond the venation zone. The distance between the apex of the second

cubital cell and the apex of the wing is equal to 1.2 times the largest width of the wing. The second cubital cell is about as high and half as long as the radial cell.

Type material and records

Holotype ♀. — Portugal: near the Albufeira Lagoon; 25.7.1950 (leg. Verhoeff). In the author's collection.

5. **M. merceti** n. sp. (1)

M. hispanicus Mercet — Ceballos, 1941-43 p. 364 (fig. 257) (s. descr., nomen nudum).

Holotype ♀. — Length: 5.5 mm. Black, the integuments very shining, with the following main coloured zones: mandibles in the middle third in front, amber red; a small patch at the apex of the scapes below and hind margin of the tegulae, ferruginous; tarsi very dark ferruginous; tibiae dark brown. Head, mesonotum, metanotum and abdomen displaying a cupreous tinge, distinctly lighter on the face.

The pilosity is on the whole short, scant and uneven. Sides of the abdominal segments with a short whitish pilosity. The erect hairs on the hind margins of the sternites are pale, thin and rather flexible.

Clypeus finely and sparsely punctured, with some large shallow punctures intermingled with the smaller closer ones. Anterior edge of the median sclerite widely angular, the apex rounded (fig. 5). The lateral indentations which separate the median from the lateral sclerites just reach the upper limit of the anterior smooth margin, and their inner side is perpendicular.

Face unevenly punctured, the punctures more or less spaced. There is a median longitudinal impression widened in the middle into a smooth lenticular oblong area; near this area and near the edges of the eyes the puncturation is fine and sparse. Ocellar area more closely punctured, the spaces subequal to the punctures.

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(1) The late D. Ricardo Garcia Mercet, celebrated Spanish hymenopterist.

Vertex well developed, relatively long, punctured like the ocellar area. Temples very shining, weakly and scantly punctured.

Pronotum shining, obsoletely punctured. Collar relatively thin, its posterior margin smooth, inconspicuously depressed at the sides and gradually invaded towards the middle by a tumescence which is present in the middle of the hind declivity of the collar.

Dorsulum rather convex, unevenly punctured, the puncturation very sparse at the sides and behind, where the punctures are widely separated; in the middle front area the puncturation is closer, the spaces, however, on the whole still larger than the punctures. Scutellum more finely, but also very sparsely, punctured.

Sternum of the mesopleurae punctured in front, the puncturation strong, oblique, spaced and merging backwards into a rough rugosity. Episternum very obliquely punctured, the punctures spaced. Epimerum shining and nearly smooth; there are a few disseminated obsolete punctures and some rugulae below.

Mesosternum smooth and very shining, with only a few disseminated, somewhat large punctures.

Metapleurae shining, the zone above the stigmata totally invaded by the ridges of the sides of the median segment.

Spinosity of the legs normally developed, including the tarsal comb.

Median segment short, its posterior corners very widely rounded. Dorsal surface obliquely ridged, the ridges somewhat irregular, slightly sinuate and gradually becoming more and more oblique towards the hind margin, where they are practically transverse; the spaces are impunctate and shining; an imaginary oblique line connecting an anteriolateral angle of the surface with the middle of its apical edge intersects about 15 ridges; the median longitudinal carina, weakly emphasized, does not reach the hind edge of the surface. Side surfaces with an identical sculpture, the ridges oblique, straight and varying in length; an imaginary line uniting the anterior upper corner of the surface with its posterior lower corner intersects about 18 ridges. Posterior declivity shining, transversely ridged; there is a median longitudinal impression not reaching the insertion of the abdomen and somewhat laterally expanded on top. Dorsal and hind surfaces forming an angle of about 120 degrees.

Abdomen shining, the tergites finely punctured, the punctures weak and widely separated. Sternites more strongly but also sparsely punctured, the punctures rather shallow.

Median sclerite of the clypeus 1.6 times wider than long in the middle and about twice as wide as a lateral one; anterior margin wide, its width in the middle only a little shorter than the distance between its posterior edge and the antennal sockets. Interocular distance across the antennal sockets 1.45 times longer than the same distance across the vertex. Face in the middle about 2.5 times as wide as an eye. Second joint of the flagellum 3.5 times longer than wide at the apex and 1.75 times as long as the first. Interocular distance as long as the combined length of the first and second joints of the flagellum plus two thirds of the third. Transverse interocellar distance 1.8 times longer than the ocello-ocular distance, the latter longer than the diameter of an ocellus and slightly shorter than the oblique interocellar distance. Dorsulum 1.4 times as long as the median segment; the latter is about as long as high at the posterior declivity.

Front wings slightly infuscated, more strongly so beyond the venation zone; the largest width of the wing is subequal to the distance between the apex of the second cubital cell and the apex of the wing. The radial cell is as high and 2.6 times as long as the second cubital cell.

Allotype ♂. — Length: 4.4 mm. Like the holotype ♀, from which it differs in the following main respects:

Mandibles more darkly amber red in the middle; scapes entirely black; tarsi a trifle lighter in colour.

Integuments on the whole more strongly punctured and not so shining; the cupreous tinge is not so apparent.

Lower zone of the face and clypeus densely pubescent.

Median sclerite of the clypeus convex, its anterior edge arcuate and armed with a blunt tooth in the middle; lateral sclerites and separating indentations also arcuate (fig. 6).

Ocellar area and vertex more sparsely and neatly punctured, the spaces smooth and wider than the punctures.

Anterior declivity and collar of the pronotum distinctly punctured, the spaces smooth and larger than the punctures; posterior margin also smooth but slightly more depressed at the sides.

The oblique coarse punctures prevail on the sternum of the mesopleurae, the rugae being little emphasized.

Anterior tarsi with a vestigial tarsal comb.

Dorsal surface of the median segment sublongitudinally ridged, the ridges curved inwards behind; the intervening spaces are very shining and about 15 ridges spring from the basal carina of the surface. A distinct median carina is absent.

Abdomen more strongly and closely punctured, the punctures spaced and still smaller than the intervening spaces, excepting on the second sternite, where the relatively large shallow punctures are on the whole subequal to the spaces.

Median sclerite of the clypeus 1.4 times wider than long in the middle. Interocular distance across the antennal sockets 1.2 times as long as the same distance across the vertex. Second joint of the flagellum 2.5 times longer than wide at the apex and 1.5 times as long as the first. Interocular distance on the vertex as long as the combined length of the first three joints of the flagellum plus half the fourth. Dorsulum 1.6 times as long as the median segment.

In a front wing the radial cell is a trifle lower than and only 2.2 times as long as the second cubital cell.

Outer paramera of the genitalia shaped like in fig. 24 (1).

Type material

Holotype ♀. — Portugal: Lisboa (Areeiro); 29.5.1949 (leg. Andrade). In the author's collection.

Allotype ♂. — Portugal: Lisboa (Areeiro); 29.5.1949 (leg. Andrade). In the author's collection.

Paratypes (8 ♀♀ 3 ♂♂). — Inst. Esp. Entom. (1 ♀ 1 ♂ from coll. Mercet, both labelled: MADRID / G. Mercet; the ♂ carries also a determination label: Miscophus / hispanicus / Mercet); Mus. Hist. Nat. Paris (1 ♀ from coll. Ferton, labelled: Miscophus ♀ / concolor Dhlb / dans n.° p. 181 /

(1) In the outer paramera of the genitalia sketched in this work (figs. 24-26), only the dotted zone should be considered for taxonomic purposes. The aspect of the remaining right-hand zone is contingent upon the position of the organ inside the balsam mounting. The dots indicate the insertion of hairs which were not drawn for the sake of clearness.

Pas des Lanciers / 7.9.93); Mus. Zool. Lausanne (2 ♀♀ 2 ♂♂ leg. de Beaumont); coll. Verhoeff (2 ♀♀ leg. Verhoeff); author's coll. (2 ♀♀ leg. Andrade).

Records

Portugal: Lisboa; Spain: Madrid; France: Vaucluse-Carpentras, Pyr.-Or. — Banyuls-sur-Mer, Pas des Lanciers.

It was apparently MERCET who first recognized this form as a new species and who provisionally labelled the above mentioned paratypes as *hispanicus;* as far as I know, however, he never published his discovery. Since CEBALLOS (1941-43) only gave a figure (drawn up from the same specimens, as this author kindly informed me) without a description, *hispanicus* remained a nomen nudum.

The paratypes from South of France evidence a certain variability in the following main respects:

♀♀ — The face and dorsulum are somewhat more densely punctured than in the holotype and, in one specimen, the ridges of the dorsal surface of the median segment are very little oblique, only slightly divergent towards the hind edge, and show a tendency to curve inwards behind (as is the case with the males but not so much pronouncedly).

♂♂ — The tooth of the anterior margin of the clypeus is sharp and not stumped as in the allotype and, in one specimen, the ridges of the dorsal surface of the median segment are slightly oblique and not curved inwards behind.

6. **M. sp. aff. spurius** DAHLBOM

Records from Portugal

Cascais (Boca do Inferno); Estoril (S. João).

This species was split from *spurius* auct. by VERHOEFF, to whom I leave the task of its description.

7. **M. bicolor** Jurine

M. bicolor Jurine — Jurine, 1807 p. 206 (1).
M. bicolor Dhlb. (2) — Kohl, 1884 p. 222.
M. bicolor Jurine — Berland, 1925 p. 127.
M. bicolor Jurine — Giner Marí, 1943 p. 209.

Records from Portugal

Cascais (Boca do Inferno); Resende (Quinta do Mato).

In the Portuguese specimens which I have examined (5 ♀♀ and 18 ♂♂) the third tergite in the ♀♀ and the second one in the ♂♂ are usually entirely black. In some ♂♂ even the first tergite is in greater part black, showing only some vestiges of red colour.

8. **M. lusitanicus** n. sp.

Holotype ♀. — Length: 6.0 mm. Black, with the following main coloured zones: mandibles, excepting the apical third, amber red; scapes underneath, tegulae behind and tarsi, ferruginous; tibiae dark brown, the front pair lighter in colour. Body, excepting the black median segment, displaying a slight cupreous tinge.

The pilosity is relatively well developed, especially on the lower part of the face, clypeus, temples, pronotum, metanotum and lateral edges of the dorsal and hind surfaces of the median segment. There are lateral patches of silvery pilosity on the first four tergites. The erect hairs at the apical margin of the sternites are thin and relatively short.

Median sclerite of the clypeus moderately convex and finely punctured; at the sides and above, the punctures are close and larger than the intervening spaces, while they become sparser

(1) From Dalla Torre (1897 p. 667).
(2) Kohl's attribution of this species to Dahlbom is certainly a lapsus calami.

towards the middle, where they are relatively spaced; there are a few disseminated larger and coarser punctures intermingled with the smaller closer ones; the anterior edge is transverse, widely and regularly curved, and obsoletely sinuate (fig. 7). Lateral sclerites very finely punctured, the punctures close, oblique and ill-defined. The indentations which separate the median from the lateral sclerites reach the upper limit of the anterior smooth margin and their inner side is perpendicular.

Face finely, uniformely and very closely punctate-shagreened, the punctures compressed against each other (108×). Vertex and ocellar area punctured more or less like the face, excepting that the shagreened microsculpture is absent. Temples very finely punctured, the punctures oblique and separated.

Pronotal declivity obliquely and rather indistinctly punctured. Collar normal, shallowly punctate-rugulose, the rugulae very weakly emphasized. Posterior margin of the pronotum smooth, thin, clearly delimited in front, slightly depressed on the sides and gradually narrowed towards the middle, where it is invaded by a slight tumescence directed backwards which occurs in the middle of the hind declivity of the collar.

Dorsulum normally convex, very closely punctured, the intervening spaces much smaller than the punctures, which are practically contiguous.

Scutellum punctured like the dorsulum but slightly more sparsely so and showing here and there very faint vestiges of a shagreened microsculpture (108×). Metanotum very finely punctured, the intervening spaces smooth.

Sternum of the mesopleurae closely punctate-rugose, the punctures more or less placed in rows between the existing rugae and somewhat oblique behind; the rugae are subparallel, rather irregular and fade away before reaching the mesometapleural suture, near which the punctures are indistinct. Episternum closely punctured, the punctures contiguous but very oblique and ill-defined. Epimerum closely punctate-rugulose, the spaces smaller than the punctures, the rugulae weakly emphasized.

Metapleurae invaded above the stigmata by the ridges of the median segment; the median zone is smooth and shows a few disseminated punctures.

Mesosternum rather obliquely punctured, the punctures close at the sides and in front; towards the apical expansions,

the punctures become somewhat larger and separated, the intervening spaces shining.

Spinosity of the legs rather ill-developed, including the tarsal comb; the spines at the apexes of the first, second and third joints barely reach the apexes of the joints that come next.

Median segment more or less trapezoidal, when seen from above. Dorsal surface with a median longitudinal carina which does not quite reach the hind edge of the surface; there are some very irregular, close, anastomosed, oblique ridges, which become indistinct and give place to a close reticulate process before reaching the transitions to the side surfaces. These are obliquely ridged, the ridges straight, neat and subparallel, some of them very short, intermingled with the larger ones, the intervening spaces smooth; an imaginary line connecting the anterior upper corner of the surface with its posterior lower corner intersects about 27 ridges. Hind surface transversely ridged, with a median longitudinal sulcus along the middle third, and forming an angle of about 120 degrees with the dorsal surface.

Tergites finely and rather neatly punctate-shagreened (108 ×), the intervening spaces on the whole subequal to the punctures. Sternites also punctate-shagreened, the spaces on the whole larger than the punctures, which are stronger on the second sternite.

Median sclerite of the clypeus 1.6 times wider than long in the middle and 2.5 times as wide as a lateral one; anterior margin normal, its width in the middle equal to 0.44 of the distance between its upper limit and the antennal sockets. Inner margin of the eyes somewhat sinuate; interocular distance across the antennal sockets 1.25 times as long as the same distance across the vertex; the greatest width of the face in the middle is equal to 2.5 times the width of an eye at the same level. Second joint of the flagellum 2.7 times longer than wide at the apex and 1.7 times as long as the first. Interocular distance as long as the combined length of the first three joints of the flagellum. Ocelli of normal size; transverse interocellar distance 1.4 times as long as the ocello-ocular distance; the latter is subequal to the oblique interocellar distance and larger than the diamater of an ocellus. Dorsulum 1.6 times as long as the median segment; the latter is only a trifle longer than high at the posterior declivity.

Wings subhyaline, darkened beyond the venation zone. The distance between the apex of the second cubital cell and the apex of the wing is subequal to the greatest width of the wing. Second cubital cell small, about as high as the petiole; radial cell higher than the second cubital and 3.4 times as long (fig. 16).

Type material and records

Holotype ♀. — Portugal: Portimão (Praia da Rocha); 14.8.1951 (leg. Andrade). In the author's collection.

Paratype (1 ♀). — Portugal: Trafaria (leg. Andrade). In the author's collection.

This species is close to *bicolor* Jur. from which it can be separated by the characters given in the key to the species. In should be noted that the transverse interocellar distance in the paratype is only 1 2 times as long as the ocello-ocular distance; this fact evidences the relative insignificance of the relation between these distances as a thoroughly reliable specific character in the genus.

9. **M. nicolai** Ferton

M. nicolai n. sp. — Ferton, 1896 p. 263.
M. nicolai Ferton — Berland, 1925 p. 127.
M. nicolai Ferton — Giner Marí, 1943 p. 208.

Records from Portugal

Lisboa (Benfica, Areeiro); Cascais (Boca do Inferno); Trafaria; Setúbal; Portimão; Massora; Porto de Rei.

This species was described from the environs of Marseille (France) by Ferton only in the ♀ sex. I have examined ♀ specimens from South of France which seem to agree with those collected in Portugal.

The following characters may be added to Ferton's description and to those given on the key to the species.

♀. — Median sclerite of the clypeus bulged, the bulging very roughly trihedral, its integument punctured, the punctures leaving smooth spaces between them; anterior edge trans-

verse, very widely curved, sometimes obsoletely sinuate near the indentations, the anterior margin rather wide (fig. 11). The lateral indentations are wide and their inner side is oblique. Face closely punctate-granulate-shagreened, the granules on the whole encompassing the punctures in a corollaceous way (108×).

Pronotal declivity and collar, mesonotum, mesopleurae and upper zone of the metapleurae, closely punctate-shagreened, the intervening spaces, with rare exceptions, smaller than the punctures. Pronotal collar thick and rather flat, without a clearly delimited posterior margin and showing in the middle a rather wide but not much pronounced tumescence.

Dorsal surface of the median segment closely punctate-shagreened (108×), usually with a median longitudinal carina and sometimes with some oblique irregular rugae, neater on the basal half of the surface. Side surfaces obliquely rugose, punctate-shagreened (108×), the punctures more or less placed in rows between the rugae, and markedly divergent towards the front.

Abdomen obsoletely punctured (108×).

Median sclerite of the clypeus about three times as wide as a lateral one. Interocular distance across the antennal sockets equal to about 1.4 times the same distance across the vertex; the latter is as long as the combined length of the first and second joints of the flagellum plus about half the third. Inner margin of the eyes regularly curved. Pronotum somewhat long, usually slightly longer than the dorsulum.

In a front wing, the venation zone is placed rather far away from the apex of the wing: the distance between the apex of the second cubital cell and the apex of the wing is equal to about 1.25 times the greatest width of the wing.

Colour variations: *a)* in the ♀♀ from Portimão (7 specimens, leg. Andrade) the tibiae and tarsi are not entirely ferruginous, and show some fuscous patches which in the middle and hind tibiae may be predominant over the coloured zone, *b)* in the ♀♀ from Setúbal (2 specimens, leg. Verhoeff) the first tergite is ferruginous and the second one, in one of them, shows also clear vestiges of this colour, and *c)* the posterior margin of the tergites may also be tinged with ferruginous colour.

♂. — Coloured like the ♀. The erect hairs at the apical margins of the sternites are stiff, dark, rather thick and occasionally truncated through usage.

Median sclerite of the clypeus similar to that of the ♀, with the difference that the anterior edge is absolutely straight (fig. 12). Pronotal declivity and collar, mesonotum, mesopleurae and upper zone of the metapleurae closely punctate shagreened (108×), the intervening spaces on the whole smaller than the punctures. The median tumescence of the pronotal collar is slightly more pronounced than in the ♀.

Abdomen obsoletely punctured (108×).

Median sclerite of the clypeus about 2.5 times as wide as a lateral one. Interocular distance across to antennal sockets equal to about 1.25 times the same distance across the vertex. Inner margin the eyes regularly curved. Ocelli somewhat advanced, like in the ♀. Transverse interocellar distance only a trifle longer than the ocello-ocular distance (in the specimen before me, 1.16 times as long) and about 1.3 times as long as the oblique interocellar distance; the ocello-ocular distance is much greater than the diameter of an ocellus.

Front wings like in the ♀.

Outer paramera of the genitalia shaped like in fig. 26 (1).

10. **M. verhoeffi** n. sp. (2)

Holotype ♀. — Length: 4.5 mm. Black, with the following main coloured zones: mandibles, excepting the apical third, amber red; lower face of the scapes and posterior margin of the tegulae, ferruginous; tarsi dark ferruginous; tibiae dark brown. Body on the whole dull, practically without smooth and shining zones; excepting the black median segment, the integuments display a uniform cupreous tinge which is lighter on the face.

The pilosity is on the whole very short; there are lateral patches of silvery pilosity at the posterior margin of the tergites, more stressed on the first two, vestigial or absent on the remaining ones. The erect hairs at the hind margin of the sternites are dark, thin and somewhat stiff.

Median sclerite of the clypeus shallowly and indistinctly

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(1) See footnote on page 26.

(2) P. M. F. VERHOEFF, Dutch hymenopterist.

punctured at the sides and above, the median zone smooth and only with some irregular in size, disseminated punctures; anterior edge transverse, widely convex in the middle and feebly sinuate at the sides, close to the lateral angles (fig. 13). Lateral sclerites very shallowly, closely and indistinctly punctured. The indentations which separate the median from the lateral sclerite do not quite reach the upper limit of the anterior smooth margin and their inner side is oblique.

Face evenly punctate-granulate shagreened (108×), the shagreen strong, the punctures ill-defined, the granules encompassing the punctures in a corollaceous way; under low magnification (18×), it looks very closely and indistinctly punctured. Ocellar area more distinctly punctured, the shagreen weaker, the spaces not granulate and on the whole smaller than the punctures. Ocello-ocular zones with some sparse, fine and weak punctures, the spaces very finely shagreened (108×). Vertex more or less punctured like the ocellar area. Temples rather shining, very obliquely punctured, the punctures weak and somewhat sparse.

Neck and pronotal declivity also obliquely and shallowly punctured, the punctures larger than the intervening spaces. Collar moderately developed, more distinctly punctured, the puncturation becoming gradually sparser and weaker towards the posterior smooth margin, which is thus not neatly delimited in front; there is a median tumescence in the middle which nearly reaches the posterior edge of the pronotum along a small part of its length in the middle.

Dorsulum and scutellum also punctate-shagreened, the punctures on the whole subequal to the intervening spaces, which are very weakly shagreened (108×).

Metanotum more weakly punctured, the punctures rather sparse.

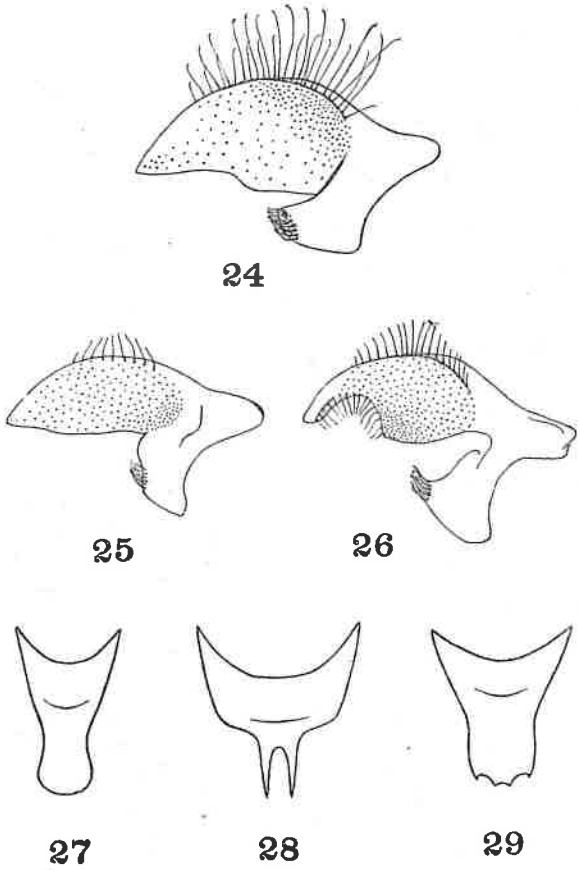
Mesopleurae punctate shagreened. The sternal region is closely punctured, the intervening spaces on the whole smaller than the punctures and rugulose behind, towards the mesometapleural suture. Episternum rather closely and very obliquely punctured. Epimerum more sparsely punctured, the intervening spaces on the whole larger than the punctures.

Middle zone of the metapleurae somewhat invaded by the sculpture of the side surfaces of the median segment; above the

stigmata the integument is finely and scantly punctate-shagreened.

Mesosternum closely and obliquely punctured.

Spinosity of the tibiae and tarsi well developed, including



Figs. 24-29 — 24. *M. merceti* n. sp. ♂, outer paramerum of genitalia; 25. *M. verhoeffi* n. sp. ♂, idem; 26 *M. nicolai* Ferton ♂, idem; 27. *M. sp. aff. bonifaciensis* Ferton ♂, eighth ventral plate; 28. *M. gallicus* Kohl ♂, idem; 29. *M. merceti* n. sp. ♂, idem.

the tarsal comb, the spines of which are dark and slightly spatulate.

Median segment subogival, when seen from above; its side surfaces are markedly divergent towards the front (fig. 22) and the whole integument is shagreened. Dorsal surface with a median longitudinal carina not quite reaching the hind margin

and rectangulary intersected along part of its length by small, rather incurved, transverse rugulae; some oblique irregular rugae spring from the basal transverse carina, but fade away before reaching the second half of the segment; a sparse puncturation covers the whole surface, the punctures being placed between the rugae where the latter exist. The transitions to the side surfaces are very widely rounded. Side surfaces punctate-rugose-shagreened, the rugae oblique, the punctures rather indistinct and ill-defined, placed in rows between the rugae; an imaginary line uniting the anterior upper corner of the surface with its posterior lower corner intersects about 23 rugae. Hind surface transversely rugulose, the rugulae rather indistinct, the shagreened microsculpture weak; near the upper margin there is a prominent transverse ridge, divided in two parts by the median longitudinal sulcus. Dorsal and hind surfaces forming an angle of about 130 degrees.

Tergites distinctly punctured, the intervening spaces slightly larger than the punctures. Sternites shallowly punctured, the second one more strongly so, the intervening spaces subequal to the punctures.

Median sclerite of the clypeus twice wider than long in the middle and 2.7 times as wide as a lateral one. Anterior margin very well developed, its width in the middle subequal to the distance between its posterior limit and the antennal sockets. Interocular distance across the antennal sockets 1.4 times as long as the same distance across the vertex. The width of the face at the upper third is equal to about 2.2 times the width of an eye at the same level. Second joint of the flagellum three times longer than wide at the apex and 1.75 times as long as the first. Interocular distance on the vertex as long as the combined length of the second and third joints of the flagellum. Transverse interocellar distance twice as long as the ocello-ocular distance; the latter is subequal to the diameter of an ocellus and only slightly longer than half the oblique interocellar distance (fig. 20). Dorsulum 1.4 times as long as the median segment; the latter is about as long as high at the posterior declivity.

Front wings subhyaline, clouded beyond the venation zone. The distance between the apex of the second cubital cell and the apex of the wing is 1.15 times the largest width of the wing.

Radial cell slightly lower than the second cubital and 2.4 times as long.

Allotype ♂. — Length 4.1 mm. Like the holotype ♀, from which it differs in the following main respects:

Scapes below and tarsi more lightly coloured.

Clypeus and lower zone of the face more strongly pubescent. On the remaining parts of the body the pilosity is still short but more abundant; there are patches of silvery pubescence at the tergites. The erect hairs at the hind margins of the sternites are shorter.

Median sclerite of the clypeus convex, finely and obliquely punctured at the sides and above, the intervening spaces smaller than the punctures; the latter become sparser and stronger towards the middle, where a relatively large impunctate zone can be observed. Anterior margin crescent-shaped, regularly narrowed towards the sides, its anterior edge arcuate (fig. 14). Lateral sclerites closely punctured, the punctures shallow and ill-defined. The lateral indentations are wide and regularly arcuate.

Pronotal declivity more neatly punctured, the intervening spaces smaller than the punctures.

Dorsulum, scutellum and mesopleurae more strongly punctate-shagreened; on the dorsulum, the intervening spaces are on the whole subequal to the punctures; on the scutellum, slightly larger; on the sternum and episternum of the mesopleurae, smaller and, on the epimerum, larger.

Anterior tarsi with a vestigial tarsal comb, the spines dark and contrasting with the ferruginous colour of the integument.

Median sclerite of the clypeus 1.6 times wider than long in the middle and 2.3 times as wide as a lateral one; the width of the anterior margin in the middle is equal to about half the distance between the antennal sockets and the anterior edge of the clypeus at the indentation. Interocular distance across the antennal sockets 1.25 times as long as the same distance across the vertex. Second joint of the flagellum about twice longer than wide at the apex and 1.4 times as long as the first. Interocular distance equal to the combined length of the first three joints of the flagellum plus one third of the fourth. Transverse interocellar distance slightly less than twice as long as the ocello-ocular distance; the latter is equal to three fourths of the

oblique interocellar distance and slightly larger than the diameter of an ocellus. Dorsulum 1.5 times as long as the median segment, the latter as long as high at the posterior declivity.

Second cubital cell of a front wing small, slightly lower than the radial cell and three times as short. The distance between the apex of the second cubital cell and the apex of the wing is equal to 1.2 times the greatest width of the wing.

Outer paramera of the genitalia shaped like in fig. 25 (1).

Type material

Holotype ♀. — Portugal: Cascais (Boca do Inferno); 27.7.1949 (leg. Andrade). In the author's collection.

Allotype ♂. — Portugal: Cascais (Boca do Inferno); 27.7.1949 (leg. Andrade). In the author's collection.

Paratypes (16 ♀♀ and 54 ♂♂). — Coll. VERHOEFF and author's coll.

Records

Portugal: Lisboa, Cascais (Boca do Inferno), Trafaria, Cova do Vapor, Caparica, Porto de Rei, Portimão (Praia da Rocha).

The sculpture of the median segment is somewhat variable in both sexes; the following are some possible modalities: *a)* the median carina may disappear along the posterior half of the dorsal surface, *b)* the transverse rugulae which usually cut this carina more or less along the posterior half of the surface may also disappear, and *c)* in some ♂♂ from Cova do Vapor, the side surfaces show no rugae at all, the integument being weakly and sparsely punctate-shagreened (108 ×) and somewhat shining.

5. AFFINITIES BETWEEN THE SPECIES

As already pointed out above, our present knowledge of this genus is still in an incipient stage, and any attempt to arrange all known species in a body of clearly cut species groups would be untimely. Moreover, such an attempt would by far exceed the scope of this contribution and the working possibilities which the author had at his disposal. Some species however show evi-

(1) See footnote on page 26.

dent affinities and can already be given a more or less fixed standing within the genus, subject to correction after future investigations or discoveries.

The following are some conclusions at which the author has arrived after the study of not only the indigenous species mentioned in this paper but likewise of other allien species, representative specimens of which were kindly sent to him for examination.

1. *M. bonifaciensis* FERTON and *M. sp. aff. bonifaciensis* FERTON, mentioned herein, together with *M. handlirschi* KOHL and *M. alfierii* HONORÉ, belong to a well defined species group, since long recognized by some authors under the name *handlirschi* group; its main characters are: *a)* front wings short, their venation zone placed far apart from the apex of the wing, the radial cell very small, globular, the second cubital cell also very small or totally inexistent, *b)* integuments with strong metalic tinges, *c)* eyes markedly convergent towards the vertex, *d)* pronotum very long, in comparison with the dorsulum, and *e)* eighth ventral plate in the ♂♂ simple, without teeth or spines (?) (1) (fig. 27).

2. Another well defined species group may be considered for *M. gallicus* KOHL and other allied species *(gallicus* group). The characters of this group are: *a)* eighth ventral plate in the ♂♂ with two sharp spines (fig. 28), instead of the normal four small teeth (fig. 29), *b)* median segment long, about one and a half times longer than high at the posterior declivity or even longer, *c)* face, vertex, ocellar and ocello-ocular areas, pronotum, mesonotum and mesopleurae usually very finely and closely punctured (108×), the punctures strongly compressed against each other, more or less blurred, and separated by a fine close network of very small rugulae (108×); these rugulae may in some zones be disposed in a given direction and give place to a composite of very close parallel rugulae, usually rather sinuate (108×), *d)* oblique interocellar distance in the ♀♀ distinctly greater than the transverse interocellar distance, *e)* spinosity of the legs well developed, including the tarsal comb in the ♀♀ and *f)* relatively large species.

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(1) This last character has only been verified in the species of this group which the author examined, namely *M. bonifaciensis* and *sp. aff. bonifaciensis*.

It is possible that *M. ctenopus* KOHL, *M. manzonii* GRIBODO, *M. rubriventris* HONORÉ (nec FERTON) and *M. deserti* BERLAND may prove to be included in this group; the author has not examined any specimens which might for certain be included in any of these species and the published descriptions are not sufficiently elaborate to allow for any definite opinion.

3. *M. nevesi* n. sp. also shows a combination of characters which, on account of their unusualness may justify the creation of a distinct species group *(nevesi* group); its characters would be the following: *a)* first three joints of the flagellum subequal in length, *b)* median segment neatly quadrate or rectangular, when seen from above, its dorsal surface clothed with a pilosity directed forwards, *c)* face bulged, markedly convex transversely, *d)* head, pronotum, mesonotum and mesopleurae uniformely and very finely punctured, the punctures, so to speak, dimentionless; the intervening spaces may show a very delicate shagreened microsculpture constituted by thin and weakly impressed straight lines interconnecting the punctures, and *e)* relatively small species.

Fig. 30 — Map of Portugal showing the localities mentioned in this work.

4. Another species group may be provisionally considered for *M. nicolai* FERTON and *M. verhoeffi* n. sp. *(nicolai* group). This group does not show such clear cut features as the previous ones and the possibility that its determinative characters may have to be readjusted in accordance with further investigation should be contemplated. At present the following characters may be considered: *a)* dorsal and side surfaces of the median segment with a fundamental shagreened microsculpture, without perfectly smooth and shining areas, usually punctured or punctate-

rugose, *b)* side surfaces of the median segment markedly divergent towards the front, *c)* spinosity of the legs well developed, and *d)* face, mesonotum and mesopleurae also with a fundamental shagreened microsculpture and usually dull.

According to information kindly communicated to me by VERHOEFF, *M. posthumus* BISCHOFF may also be included in this group.

5. All the remaining species mentioned in this work, namely, *M. albufeirae* n. sp. *M. sp. aff. spurius* DAHLBOM, *M. bicolor* JURINE and *M. lusitanicus* n. sp., together with other European ones such as *M. spurius* DAHLBOM, *M. concolor* DAHLBOM, and *M. maritimus* SMITH, are independent from any of the groups mentioned above. These species show however many morphological divergences and the creation of a hypothetical «*bicolor* group» for all of them does not seem thus to be advisable from a strictly taxonomical point of view; this measure might none the less be taken for practical reasons. It is the author's belief that this species complex may in the future be broken down into further distinct groups, after the types of HONORÉ's species (1944) and further possible discoveries having been conveniently studied.