

*HERMAN A. SCULLEN*

*Review of the Genus  
Cerceris Latreille  
in Mexico and  
Central America  
(Hymenoptera: Sphecidae)*

## SERIAL PUBLICATIONS OF THE SMITHSONIAN INSTITUTION

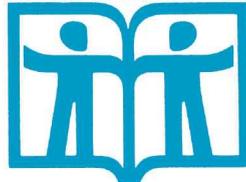
The emphasis upon publications as a means of diffusing knowledge was expressed by the first Secretary of the Smithsonian Institution. In his formal plan for the Institution, Joseph Henry articulated a program that included the following statement: "It is proposed to publish a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge." This keynote of basic research has been adhered to over the years in the issuance of thousands of titles in serial publications under the Smithsonian imprint, commencing with *Smithsonian Contributions to Knowledge* in 1848 and continuing with the following active series:

*Smithsonian Annals of Flight*  
*Smithsonian Contributions to Anthropology*  
*Smithsonian Contributions to Astrophysics*  
*Smithsonian Contributions to Botany*  
*Smithsonian Contributions to the Earth Sciences*  
*Smithsonian Contributions to Paleobiology*  
*Smithsonian Contributions to Zoology*  
*Smithsonian Studies in History and Technology*

In these series, the Institution publishes original articles and monographs dealing with the research and collections of its several museums and offices and of professional colleagues at other institutions of learning. These papers report newly acquired facts, synoptic interpretations of data, or original theory in specialized fields. These publications are distributed by mailing lists to libraries, laboratories, and other interested institutions and specialists throughout the world. Individual copies may be obtained from the Smithsonian Institution Press as long as stocks are available.

S. DILLON RIPLEY  
*Secretary*  
Smithsonian Institution

INTERNATIONAL BOOK YEAR • 1972



SMITHSONIAN CONTRIBUTIONS TO  
ZOOLOGY

NUMBER 110

*Herman A. Scullen* Review of the Genus  
*Cerceris* Latreille  
in Mexico and  
Central America  
(Hymenoptera: Sphecidae)

SMITHSONIAN INSTITUTION PRESS  
CITY OF WASHINGTON

1972

## ABSTRACT

Scullen, Herman A. Review of the Genus *Cerceris* Latreille in Mexico and Central America (Hymenoptera: Sphecidae). *Smithsonian Contributions to Zoology*, number 110, 121 pages, 173 figures, 1972.—This is a continuation of earlier studies by the author on the Sphecoid wasp tribe Cercerini of North America. Sixty-nine valid species of *Cerceris* previously described and recorded for Mexico and Central America are recognized. Three new combinations are recorded and 36 new species and subspecies are described. Distribution of all species and subspecies are recorded and illustrated on distribution maps. Morphological characters are illustrated in 173 drawings. Beetle prey and floral visiting habits are recorded when known.

*Official publication date is handstamped in a limited number of initial copies and is recorded in the Institution's annual report, Smithsonian Year.*

UNITED STATES GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1972

---

For sale by the Superintendent of Documents, U.S. Government Printing Office  
Washington, D.C. 20402 - Price \$1.50 (paper cover)  
Stock Number 4700-0190

## Contents

	<i>Page</i>
Introduction .....	1
Taxonomic Characteristics .....	2
Taxonomic Groups .....	2
Biology .....	2
Specimens Studied .....	3
Acknowledgments .....	5
Key to the Species .....	6
Group I .....	17
Group II .....	38
Group III .....	42
Group IV .....	55
Group V .....	59
Ungrouped Species .....	68
Literature Cited .....	99
Index .....	120



Herman A. Scullen

# Review of the Genus *Cerceris* Latreille in Mexico and Central America (Hymenoptera: Sphecidae)

## Introduction

The genus *Cerceris* Latreille (1802) is cosmopolitan in distribution, occurring most commonly in the warmer, more arid areas of the world. In North America, *Cerceris* is not uncommon in southern Canada, but it does not occur in the more northern latitudes. *Cerceris nigrescens nigrescens* F. Smith is recorded from the warmer parts of Alaska (Scullen 1965:494). Both species and numbers of individuals are abundant in the more southern latitudes, especially in the xeric portions of the southwestern United States and northern Mexico. The genus is represented continuously from Canada into South America.

Although limited attention has been given species of the genus in South America, it appears to be widely distributed there, especially outside the Amazon basin and in the extreme southern latitudes. In the Western Hemisphere, most species are limited to either North or South America, but a few range from the southern part of North America into northern or central South America. The closely related genus *Eucerceris* Cresson is endemic to North America (Scullen 1968).

The genus *Didesmus* Dahlbom (1845) is considered by some hymenopterists to be merely a group of *Cerceris*. I do not include the genus as such. Davidson (1970), on the male genitalia of *Eucerceris* and allied genera of sphecids including *Didesmus*,

concludes that the latter genus is distinct from *Cerceris*. *Didesmus* ranges from central Mexico into South America. Extensive study of the group, including internal and external characters as well as the biology, should shed some light on the placement of this genus.

The earliest records of *Cerceris* that are known to occur in Mexico are two species (*C. cubensis* and *C. dilatata*) described by Spinola in 1841 from South America. In 1856 Frederick Smith described *C. verticalis* from Georgia. This species has been taken in northeastern Mexico. In his publication of 1873 Smith described three additional species from Mexico (*C. exsecta*, *C. graphica*, *C. rostrata*). In 1867 Saussure added 14 additional species from Mexico, and in 1887 Schletterer described five more species. Cameron (1890, 1904) described 20 species. Some of the above species have been recognized as synonyms, and some have been reduced to the status of subspecies. A number of species described from the southwestern United States by later workers have been found to range south of the border into Mexico. The present author is adding 25 new species and nine new subspecies. A total of 86 species and 28 subspecies are recorded herein.

In Mexico and Central America many species exhibit marked color variations that make it difficult to determine when to recognize subspecies.

This paper is a combination of my studies of the tribe Cercerini of the Western Hemisphere. Due to my advanced age, it will be necessary to leave the study of South American species to a younger worker.

---

Herman A. Scullen, Professor Emeritus, Department of Entomology, Oregon State University, Corvallis, Oregon 97331.

A large amount of South American material is on hand and several species recorded from Mexico and Central America are recorded herein for South America.

For complete descriptions and distribution maps of species of *Cerceris* of America north of the Mexican border that also occur south of the border, the reader is referred to Scullen (1965a).

Types of North American species of *Cerceris* located in the United States are concentrated largely in the following institutions: American Museum of Natural History; California Academy of Sciences; University of California at Davis; Museum of Comparative Zoology; Academy of Natural Sciences of Philadelphia; the National Museum of Natural History, Smithsonian Institution (under the catalog numbers of the United States National Museum: USNM); and the University of Nebraska. Western Hemisphere types of *Cerceris* deposited in European museums, which were studied by the author in 1959, are located as follows: Wien Naturhistorisches Museum, Vienna, Austria; Museum Historie Naturelle, Geneva, Switzerland; British Museum of Natural History, London, England; Instituto e Museo di Zoologia, Turin, Italy; Museum für Naturkunde, Der Humboldt-Universität zu Berline, Berlin, Germany; Zoologisches Institut der Universität, Halle (Salle), Germany; and Zoologiska Institution, Lund, Sweden.

The author has made three extensive trips into Mexico and Central America for collecting purposes and for making observations on the habits of the genus *Cerceris* in that area.

**TAXONOMIC CHARACTERISTICS.**—In general, structural characters associated with the clypeus have been most useful for females. These include the clypeal process, if present, on the medial lobe and denticulation on the free margin. Dentation of the mandibles is often of much value, especially for the females. The length of the epistomal suture has been found to be a valuable unit of measure in a few cases. The presence or absence of a mesosternal tubercle and its form is of value in some species. The surface sculpturing of the triangular enclosure at the base of the propodeum often presents characters of taxonomic value. The tegulae may assume form or surface structures of value. The form of the pygidium of the female is often of such value that it is illustrated. Special clusters or rows of bristles are often of value especially for the males. The form of the hair lobes of the male is also of value in a few males.

The color pattern and shade of color have been used extensively by all workers on the tribe Cercerini and both are of value; however, one must not be misled by variations of either within the species. Light evanescent yellow or white spots or patches often appear on elevated areas of tan or browning structures. Certain areas—for example, the metanotum—have less variable coloration than other areas, like the scutum. Light spots or lines may often be evanescent, and this can lead to confusion in recognizing subspecies.

The present author has not used the male genitalia in separating species because he has not found it of much value for closely related species. Different groups do, however, show distinct variations in the genitalia. Unpublished studies by Jerry Davidson on the genitalia of *Eucerceris* and closely related groups and genera indicate such studies may prove to be of considerable value in recognizing the phylogenetic relationship of higher groups. These studies could be of help on the species level. Further studies along this line should be undertaken.

**TAXONOMIC GROUPS.**—In this review the author recognized the five groups isolated in his review of *Cerceris* north of the Mexican border (Scullen 1965a). Likewise, a large number of species not segregated into groups are included. There is considerable variation evident within this ungrouped list of species. To satisfactorily separate these species into groups or into subspecies will require exhaustive studies involving male genitalia, biology, and other factors, all of which demand research far beyond the time and ability of the present author.

It should be noted that several species have been described from a limited number of specimens. The fact that many of the new species are represented by only a few individuals, which are large specimens, leads the author to think many such species may be limited in their feeding habits to tall flowering trees. Continued collecting into more limited habitats and a larger series of flowering plants should bring to light many unnamed species.

**BIOLOGY.**—Biological information on the genus *Cerceris* south of the United States-Mexican border is very limited. Floral visitation recorded are seldom indicated on the insect labels. This could be owing to a lack of time as well as a lack of knowledge of the plant species and the inconvenience of bringing plants back for identification. When known, the information is recorded with the records of each species

of wasp. The writer has found the most productive plant to be *Baccharis glutinosa* (seep willow). This is a plant of wide distribution in low moist areas and along exposed river beds throughout much of Mexico and into Central America. Frequently other more locally distributed plants are very productive. Open blooming plants especially should be observed and may prove very attractive to limited species either as food for adults or beetle prey for the larvae. Generally speaking, *Cerceris* adults are not active until after midmorning, and they become inactive after midafternoon.

Limited observations on the biology of species of *Cerceris* south of the United States border indicate the beetles used as food for the young are closely allied to forms used north of the border (Scullen and Wold 1969). Limited records will be found in connection with some species of wasp.

**SPECIMENS STUDIED.**—The present writer has had an opportunity to study most of the collections of *Cerceris* taken in Mexico and Central America. This amounts to nearly 75,000 specimens. The writer has made three extensive trips into Mexico and Central America to collect material and study biology. Collections have been lent by the following institutions:

Academy of Natural Sciences of Philadelphia, Philadelphia, Pa.  
 American Museum of Natural History, New York, N.Y.  
 Arizona State University, Tempe, Ariz.  
 Brigham Young University, Provo, Utah  
 British Museum of Natural History, London, England  
 Carnegie Museum, Pittsburgh, Pa.  
 California Academy of Sciences, San Francisco, Calif.  
 Canadian National Collection, Ottawa, Canada  
 Colegio de Post-Graduados, Chapingo, Mexico  
 Cornell University, Ithaca, N.Y.  
 Humboldt University, Berlin, Germany  
 Instituto Espanol de Entomologia, Madrid, Spain  
 Instituto Nacional de Investigaciones Agricolas, Mexico, D.F., Mexico  
 Instituto Tecnologico y de Estudios Superiores, Monterrey, Mexico  
 Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium  
 Kansas State University, Manhattan, Kans.  
 Los Angeles County Museum, Los Angeles, Calif.  
 Museum Histoire Naturelle, Geneva, Switzerland  
 Museum National d'Histoire Naturelle, Paris, France  
 Museum of Comparative Zoology, Harvard University, Cambridge, Mass.  
 National Museum of Natural History (catalog numbers of USNM), Smithsonian Institution, Washington, D.C.  
 Natural History Museum, San Diego, Calif.

Naturhistorisches Museum, Zoologische Abteilung, Vienna, Austria  
 Oregon State University, Corvallis, Oreg.  
 Pomona College, Claremont, Calif.  
 Rockefeller Foundation, Mexico City, D.F., Mexico  
 University of Arizona, Tucson, Ariz.  
 University of California, Berkeley, Calif.  
 University of California, Davis, Calif.  
 University of California, Riverside, Calif.  
 University of Costa Rica, San José, Costa Rica  
 University of Kansas, Lawrence, Kans.

The names of collectors for the above material are indicated by the following abbreviations:

Abu	August Busck
AE	A. Enriquez
AMi	A. Michelbacher
AO	Alberto Ortiz
ARH	A. R. Hardy
ASB	A. S. Bohart
ASM	A. S. Menke
AVD	A. V. Daley
AW	A. Wile
Ba	Bates
B and C	Beck and Call
B and S	R. C. Techtel and E. I. Schlinger
BJR	B. J. Rannels
BM	Borys Malkin
Bo	Böttchery
BOA	B. O. Allen
CAK	C. A. King Jr.
CAP	C. A. Purpus
C and B	Cazier and Bigelow
C and D	Cazier and Davidson
C and I	D. Q. Cavagnaro and M. E. Irwin
C and P	Chemsak and Powell
C and PV	C. and P. Vaurie
CBe	C. Benechoter
CCP	C. C. Porter
CDM	C. D. Michener
CDMc	C. D. MacNeil
CFB	C. F. Baker
CGM	C. G. Martell
CHC	C. H. Curran
COD	C. O. Deam
CSG	C. S. Glaser
CTD	C. T. Dodds
CTo	C. H. Townsend
CWB	C. W. Barrett
CWR	C. W. Rettenmeyer
DB	Duis Bolinger
DBr	D. Breedlove
DDL	D. D. Linsdale
DEB	D. E. Beck
DEH	D. E. Hardy
DHJ	D. H. Johnson
DMA	D. M. Anderson

- DQC David Q. Cavagnaro  
 DR D. Rockefeller  
 DS and JAR D. Spencer and J. A. Ryckman  
 DSE Dieter S. Enkerlin  
 E and A H. E. Evans and D. M. Anderson  
 ED E. Duges  
 EEG E. E. Gilbert  
 EGL E. G. Linsley  
 EGL and JML E. G. and J. M. Linsley  
 EGS E. G. Smyth  
 EIS E. I. Schlinger  
 EJM E. J. Montgomery  
 EMP E. M. Painter  
 EO E. Ordway  
 EPD E. P. Van Duzee  
 ER Edward Ross  
 ESc E. Schunger  
 FDP Frank D. Parker  
 FEL F. E. Lutz  
 FJ F. Johanson  
 FJD F. J. Dyer  
 FK F. Knab  
 FLo F. Lopez  
 FO F. Osorio  
 Gau Gaumer  
 GCE George C. Eichwort  
 GDB G. D. Butler  
 GEB George H. Bohart  
 GEB and HSB G. E. and H. S. Bohart  
 GG G. Gandara  
 GL G. Lassmanu  
 GMB G. M. Gradt  
 GWB G. W. Buers  
 HA H. Atkinson  
 HAS Herman A. Scullen  
 HCh H. Chipman  
 HDi H. F. Dietz  
 HEE Howard E. Evans  
 HEH H. E. Hinton  
 HEM H. E. Milliron  
 HEw H. E. Ewing  
 HFD H. F. Dietz  
 HFS H. F. Schwarz  
 HG H. Griffin  
 HHK H. H. Keifer  
 HMo Harold Morrison  
 HOW H. O. Wagner  
 HTD H. T. Dalmart  
 JA Jorge Aquilar  
 JAC J. A. Chemsak  
 JB J. Bequaert  
 JBr J. C. Bradley  
 JCB J. C. Bridwell  
 JCC J. C. Crawford  
 JDB J. D. Birchim  
 JDL J. D. Lattin  
 JE J. Edward  
 JGC J. G. Chilcott  
 JJM J. J. McKelvey  
 JKD J. K. Drew  
 JMa J. Manuel  
 JMD Jerry M. Davidson  
 JP and DP J. and D. Pallister  
 JPo J. Powell  
 JSB J. S. Buckett  
 JSI J. Slansky  
 JVa Jarier Vazquez  
 JWM J. W. MacSwain  
 K Kerfoot  
 K and H Knight and Hoagstraal  
 KD K. Dreisbach  
 KL K. Lorenzen  
 Ko Kovacic  
 Koeb Koebele  
 KWC K. W. Cooper  
 KWR K. W. Radford  
 LAS L. A. Stange  
 LB L. Biart  
 LDi L. Diguët  
 LJL L. J. Lipovsky  
 L, S, and M Linsley, Smith, and MacSwain  
 M W. M. Mann  
 MAC Mont A. Cazier  
 MAE M. A. Evans  
 M and H Maynard and Honey  
 M and R Michelbacher and Ross  
 MAW and MW M. A. Wasbauer  
 Mc McClendon  
 ME Mel Embusy  
 MEI Mickel E. Irwin  
 MF Moises Fraire  
 MG M. Guerra  
 MGN and MN M. Neuman  
 MR M. Rettenmeyer  
 MV M. Valerie  
 N and M Neff and Mathews  
 Nau Nauman  
 NB N. Banks  
 NLK N.L. Krauss  
 NM N. Marston  
 NW N. Weber  
 O and N Ordway and Naumann  
 O and R Ordway and Roberts  
 OHJ O. H. Janzen  
 OLC O. L. Cartwright  
 OSi O. Sichell  
 P and S F. D. Parker and L. A. Stange  
 PAHE Philadelphia Academy Honduras Expedition  
 PAP P. A. Pauch  
 PAO P. A. Opler  
 PDH P. D. Hurd  
 PHA P. H. Arnaud  
 PJS P. J. Spangler

Pl Playton  
 PS P. Serre  
 R Rentz  
 R and B Ross and Bohart  
 R and GR R. and G. Roberts  
 R and KD R. R. and K. Dreisbach  
 R and M Roberts and Marston  
 RAS R. A. Scheibner  
 RB R. Benoist  
 RC R. C. Buckell  
 RCB Robert C. Bechtel  
 RCG R. C. Gardener  
 REB R. E. Beer  
 RFS R. F. Smith  
 RHa Ralph Haag  
 RHB R. H. Brewer  
 RHP R. H. Painter  
 RLU R. L. Usinger  
 RMc R. MacGregor  
 RME Rockefeller Mexican Expedition  
 RR R. Roberts  
 RRD R. R. Dreisbach  
 RRSn R. R. Snelling  
 S Shramel  
 S and B Scullen and Bolinger  
 SEJ S. E. Jones  
 SFo S. Forrer  
 SG S. Gardener  
 Sn R. R. Snelling  
 Spi Spieth  
 SS S. Schmidt  
 SVP S. V. Purpus  
 SWF S. W. Frost  
 T Truxel  
 TAS T. A. Sears  
 TDAC T. D. A. Cockerell  
 THH T. H. Haliman  
 THHu T. H. Hubell  
 UKE University of Kansas Mexican Expedition  
 W and CDM Wile and C. D. Michener  
 WJG W. J. Gertsch  
 WCR W. C. Russell  
 WHF W. H. Foshag  
 WHL W. H. Littlewood  
 WLN W. L. Nutting  
 WLT W. L. Tower  
 WMM W. M. Mann

WPC W. P. Cockerell  
 WPf William Pfaeffle  
 Z Zetek

**ACKNOWLEDGMENTS.**—Financial assistance, which has made it possible to continue these studies on the tribe Cercerini of North America, including Mexico and Central America, have come from two sources. In the earlier years all financial support came from the Oregon State University, General Research Council. Additional grants of variable amounts have continued to come from the Council. In later years, when it became necessary for the author to personally collect and study in Mexico and Central America and to study types in European museums, substantial support has come largely from the National Science Foundation through a series of seven grants starting in 1956.

Over the years, as these studies have been conducted by the writer, many individuals have contributed to the value of the studies. Collectors who have traveled in Mexico and Central America have made special efforts to collect Cercerini. Outstanding among those who have given encouragement and personal support over the years is Dr. Karl V. Krombein of the National Museum of Natural History. The artwork of this publication and some other recent papers has been done by Thelwyn M. Koontz. Some illustrations reproduced from Scullen (1965a) were drawings made by Margaret Hsieh. The author extends his thanks to all of these individuals and institutions. Special thanks also should go to Janet (Bedeá) Wold and Martha Jordan, who have done most of the typing and other routine work connected with the studies.

The writer is also deeply indebted to Dr. Paul O. Ritcher, head of the Entomology Department, Oregon State University, for the use of those facilities to continue the studies after the author's retirement and to Jerry M. Davidson, who has reviewed special parts of the manuscript and has assisted in many other ways.

## Key to the Species

## GROUP I

This group<sup>1</sup> is distinguished by the following characters: (1) small size, (2) very dark stigma, (3) punctation usually crowded, (4) anterior abdominal segments and propodeum often more or less reddish, (5) mandibles of females bidentate, (6) mesosternal tubercle usually present on the female, (7) small and widely separated hair lobes on the males, (8) apical segments of the antennae normal on the male.

## FEMALES

1. Distinct reddish to amber area covering one or more abdominal terga and, in some cases, extending onto the propodeum of the thorax ..... 2  
No red or amber on the abdomen or thorax ..... 8
2. Medial clypeal lobe without a dorsal surface process but with a bidentate upper carina on the free margin of the lobe (two records from central Mexico) ... 20. *rufinoda* Cresson  
Medial clypeal lobe with a distinct process above the free margin ..... 3
3. Clypeal process cone-shaped with an amber tip; two small erect denticles ventrad of the process; most of the face white (north-central plateau of Mexico) 6. *conifrons* Mickel  
Clypeal process more or less scoop-shaped, truncate, or reduced to a low ridge or carina .. 4
4. Clypeal process reduced to little more than a ridge or carina parallel to the clypeal border (north-central plateau of Mexico) ..... 11. *echo echo* Mickel  
Clypeal process distinctly extended to a length equal to, or greater than, the length of the epistomal suture ..... 5
5. Clypeal process distinct and truncate, depressed; (north-central plateau of Mexico).  
3. *argia* Mickel  
Clypeal process inflated with border forming an amber arch, or converging apically to a narrow amber truncate process ..... 6
6. Clypeal process inflated, subequal in width to the epistomal suture, terminating in the form of an arch ..... 4. *bridwelli* Scullen  
Clypeal process not inflated, subequal in width to two-thirds the length of the epistomal suture, and not terminating in the form of an arch apically ..... 7
7. Markings yellow; propodeum black; legs largely amber ..... 15. *irene* Banks  
Markings white; propodeum except enclosure reddish amber; legs largely dark fuscous with white marks ..... 10. *cretonella* Viereck and Cockerell
8. Without a distinct process on the dorsal surface of the medial clypeal lobe well above the free border; some species have a double margin on the free clypeal border, one above the other<sup>2</sup> ..... 9  
With a distinct process well above the free border on the surface of the medial clypeal lobe ..... 13
9. With a bilobed or bidentate extension on the medial clypeal lobe close to, or on, its margin ..... 10  
Clypeal border with two widely separated small hyaline denticles ..... 11
10. Entire clypeal area white except two widely separated denticles above a dark sinuate carina on the medial clypeal lobes; an evanescent white tip on the mesosternal tubercle; a white patch on the pleuron (state of Sonora, Mexico) ..... 18. *obregon*, new species  
Entire clypeal area black with a bilobed extension above, and close to, the medial clypeal margin; mesosternal tubercle and pleuron immaculate (state of Sonora, Mexico).  
5. *butleri* Scullen

<sup>1</sup> This is the group Banks (1947:26) calls *Apiraptrix* (Shestakov). He misspelled it as "Apiratrix." In a personal letter, de Beaumont has informed the present writer that Group I is not *Apiraptrix* (Shestakov). The latter is related to *C. rybyensis* (Linnaeus) Schletterer.

<sup>2</sup> *Cerceris convergens* Viereck and Cockerell may appear to run to couplet 8a, but is placed under 8b.

11. Tegulae elevated and pitted; all abdominal bands uniformly yellow (largely in north-eastern Mexico with scattering records to the south) ..... 12a. *finitima finitima* Cresson  
Tegulae low and smooth; abdominal bands either uniform in color and white to very light yellow, or bands on terga 1-3 light yellow and on terga 4 and 5 white ..... 12
12. All abdominal bands white to very light yellow (throughout Mexico, but most common in the northwest) ..... 12c. *finitima vierecki* Banks  
Bands on terga 4 and 5 white in noticeable contrast to light yellow of bands on terga 1 to 3 (largely in south-central Mexico) ..... 12b. *finitima morelos*, new subspecies
13. Sides of clypeal process converging distally and terminating as a very acute denticle (states of Sinaloa and Sonora, Mexico) ..... 2. *alamos*, new species  
Sides of clypeal process subparallel and not converging distally ..... 14
14. Clypeal process very narrow, not wider than one-sixth the length of the epistomal suture; body very slender (southern Mexico to Panama) ..... 17. *marginula* Dalla Torre  
Clypeal process much broader than one-sixth the length of the epistomal suture; body form not slender but more average in form ..... 15
15. Sides of clypeal process terminating in prominent slender denticles extending well beyond the central portion of the process (states of Guerrero and Oaxaca, Mexico).  
22. *zumpango*, new species  
No prominent denticles extending well beyond the margin of the clypeal process ..... 16
16. Terminal border of the clypeal process with three subequal small denticles (medial denticle often very indistinct); band on tergum 3 an evanescent line, which may disappear or may appear as a hair line ..... (*kennicottii* group) ..... 17  
Terminal border of the clypeal process smooth, or with small lateral denticles different from the small medial denticles or with two laminate extensions; tergum 3 immaculate or with a strong band ..... 20
17. Propodeum with one or more distinct yellow patches ..... 18  
Propodeum immaculate or with very small yellow spots ..... 19
18. Markings on propodeum limited to a triangular area laterad of the enclosure; markings very light yellow to creamy white (Central America).  
16c. *kennicottii smithiana* Cameron  
Most of the propodeum including the enclosure light yellow (Central America).  
16b. *kennicottii bakeri* Cameron
19. Medial clypeal lobe immaculate or with limited light markings; markings creamy white or very light yellow (Central Mexico) ..... 16d. *kennicottii zapoteca* Saussure  
Medial clypeal lobe largely yellow; all markings distinctly yellow (northeastern Mexico).  
16a. *kennicottii kennicottii* Cresson
20. Tergum 3 of the abdomen immaculate except for a possible small lateral patch or minute trace of yellow ..... 21  
Tergum 3 with a definite light band, which may have one or two breaks in it; light marks cream to white ..... 23
21. Light band on tergum 2 confined to the basal half of the tergum; tergum 4 and 5 solid yellow or nearly so; shade of yellow more fulvous (throughout Mexico, but more common in the south) ..... 19. *parkeri*, new species  
Band of yellow on tergum 2 confined to the distal half of the tergum; terga 4 and 5 with narrow evanescent bands; markings light yellow to white ..... 22
22. Propodeum and inclosure immaculate; clypeal process very short with conspicuous thickening along the lateral borders of the process, which is considerably depressed terminally, emarginate, and immaculate (southern Mexico through Central America to South America) ..... 9. *cribosa* Spinola  
Propodeum and inclosure, as a rule, with prominent yellow markings; clypeal process without lateral carina, borders smooth and rounded; clypeal process almost as long as broad, convex above, only slightly emarginate apically, and usually with a yellow patch (widely distributed over Mexico and into Central America) ..... 21. *truncata* Cameron
23. Terminal border of the clypeal process with two rounded extensions becoming almost laminated distally; band on tergum usually broken at two points or showing two deep incisions; pygidium very slender and pyriform (widely scattered over northern and central Mexico) ..... 7. *convergens* Viereck and Cockerell  
Terminal border of the clypeal process without rounded extensions; band on tergum 3 always strong without incisions; pygidium much broader with little evidence of being pyriform ..... 24

24. Clypeal process very broad with the apical border straight except for the extremities, which show indistinct denticles and a minute medial denticle; process cream colored except for black borders (scattered records from northwest and Central Mexico).

1. *acanthophila* Cockerell

Apical border of clypeal process emarginate with the lateral angles slightly extended and rounded at the apex; process black except for a yellow spot in the center on some specimens (recorded only from states of Chihuahua, Sinaloa, and Sonora, Mexico).

8. *crandalli* Scullen

#### MALES

1. Distinct reddish to amber area covering one or more anterior abdominal terga and bordering areas ..... 2  
All parts black with yellow, white, or creamy white markings, no red, ferruginous or amber markings ..... 5
2. Markings white or creamy white ..... 3  
Markings yellow (limited records from northern state of Mexico)<sup>a</sup> ..... 3. *argia* Mickel  
11. *echo echo* Mickel  
20. *rufinoda rufinoda* Cresson
3. Terga 2, 3, and 4 with broad bands of creamy white, some specimens showing slight emargination of band on tergum 4; punctuation more sparse than normal (recorded only from Baja California, north, and Sonora) ..... 4. *bridwelli* Scullen  
Wide bands on terga 2 and 3 only, or bands on all terga subequal and of medium width; punctuation crowded or average ..... 4
4. Light bands on terga 2 and 3 broad medially, bands on terga 4 and 5 narrow; punctuation average (one record each from Chihuahua and Sonora).  
10. *crotonella* Viereck and Cockerell  
Bands on terga 2 to 6 subequal and of medium width; punctuation crowded (north-central Mexico) ..... 6. *conifrons* Mickel
5. Propodeum including the enclosure with two or more light spots or areas; three species<sup>a</sup> as follows with the distribution of each species or subspecies:  
(Mexico, Central America) 21. *truncata* Cameron  
(Central and South America) 16b. *kennicottii bakeri* Cameron  
(Central America, southern Mexico) 16c. *kennicottii smithiana* Cameron  
Propodeum immaculate ..... 6
6. Distal end of hind femur distinctly yellow or white ..... 7  
Distal end of hind femur black or indistinctly light at the margin ..... 11
7. Clypeal area and frons of face black ..... 8  
Entire face light ..... 9
8. Band on tergum 3 with a double break (these breaks may be reduced to indistinct depressions); two small evanescent spots may appear on the scutellum (general over Mexico) ..... 7. *convergens* Viereck and Cockerell (in part)  
No double break evident in band on tergum 3 (a).  
(general over Mexico) 7. *convergens* Viereck and Cockerell (in part)  
(northwestern Mexico) 8. *crandalli* Scullen
9. Light apical end of hind femur demarked obliquely to axes of femur ..... 10  
Light apical end of hind femur demarked at approximately right angles to the axes of the femur.<sup>a</sup>  
(north and central Mexico) 1. *acanthophila* Cockerell  
(Sonora and Sinaloa, Mexico) 2. *alamos*, new species  
(Sonora, Mexico) 18. *obregon*, new species
10. Markings yellow; tegulae distinctly elevated; punctuation crowded (scattered records in north-central Mexico) ..... 12a. *finitima finitima* Cresson  
Markings light yellow to white; tegulae showing little or no elevation; punctuation less crowded (a).  
(common through northern Mexico south to 20th parallel) 12c. *finitima vierecki* Banks  
(mostly south-central Mexico) 12b. *finitima morelos*, new subspecies

<sup>a</sup>At present, the author is unable to distinguish the males of these species except when they are associated with the females.

- 11. Tergum 2 with very broad uniform band, tergum 3 immaculate, distal half of tergum 4 with narrow band (general over Mexico) .....19. *parkeri* new species  
Not so marked .....12
- 12. Tergum 2 with a narrow band along the distal margin which extends forward along the pleural margin (southern Mexico and Central America) .....9. *cribrosa* Spinola  
Tergum 2 without an extension of the tergal band along the pleural border .....13
- 13. Light marks of tergum 2 limited to two patches laterally next to the pleuron border; body slender (southern Mexico and Central America) .....17. *marginula* Dalla Torre  
Band on tergum 2 distinct but usually emarginate; band on tergum 3 medially reduced to an evanescent line .....16a. *kennicottii*<sup>4</sup> Cresson

GROUP II

This group is distinguished by the following characters: (1) there is no prominent elevation on the surface of the medial lobe of the clypeus, but two small papilliform structures are just above the clypeal border; (2) the second abdominal segment is much broader than the first, especially noticeable on the female; (3) the mesosternal tubercle is absent from both sexes; (4) the terminal segment of the male antenna is distorted slightly; (5) the males have relatively inconspicuous denticles on the clypeal border or none at all; (6) Buprestidae are used as prey.

FEMALES

- 1. Enclosure surface deeply ridged at 45° angle to base; length about 20 mm (northern Sonora and Baja California) .....26. *grandis grandis* Banks  
Enclosure surface not ridged; length not over 15 mm .....2
- 2. Abdomen black except for a broad creamy white band on tergum 2 and lateral patches on terga 3 (not recorded, but should be taken in extreme northeastern Mexico).  
25. *fumipennis* Say  
Posterior half of abdomen largely light yellow, brownish yellow, light amber, or entire abdomen with light bands on more than one tergum .....3
- 3. Posterior half of abdomen (from center of third tergum) brownish yellow; thorax black except for a broken band on the pronotum and the entire metanotum .....4  
Yellow bands on all terga or abdomen all yellow .....5
- 4. First and second segments black (widely distributed over Mexico, Central America, and into South America) .....24a. *dilatata dilatata* Spinola  
First abdominal segment reddish, second tergum with limited amber yellow and red shading (north-central Mexico) .....24b. *dilatata chisosensis* Scullen

<sup>4</sup>This species is abundant and widely distributed in Mexico and Central America. Variable in shade and markings, it has been described under various species names. The present author tentatively recognizes the following subspecies (segregated by the table below): *C. kennicottii kennicottii* Cresson and *C. kennicottii zapoteca* Saussure.

Subspecies of *Cerceris kennicottii* Cresson

	<i>kennicottii</i> Cresson	<i>bakeri</i> Cameron	<i>smithiana</i> Cameron	<i>zapoteca</i> Saussure
distribution	northeastern Mexico	Central America	southern Mexico, Central America	southern Mexico, Central America
markings	yellow	light yellow	light yellow cream	cream
scutellum	yellow to black	yellow	2 spots	white to light yellow
metanotum	black	yellow	light	spot
propodeum	black	2 spots	2 patches	black
2nd tergite				
band	broad emarginate	broad	narrow	medium emarginate
punctuation	average	2 spots	average	average

5. Black with yellow markings, little or no amber (widely distributed over northern Mexico).  
 23a. *californica californica* Cresson  
 Head and thorax light amber marked with yellow; abdomen largely yellow or with some light amber (limited to northwestern Mexico) .. 23b. *californica argyrotricha* Rohwer

## MALES

1. Tergum 2 black or with more or less ferruginous band ..... 2  
 Tergum all yellow or with a broad yellow band ..... 3  
 2. Terga 1 and 2 black, basal half of tergum 3 black; posterior half of tergum 3 and remaining posterior terga brownish yellow (widely distributed over Mexico, Central America, and into South America) ..... 24a. *dilatata dilatata* Spinola  
 Black of basal abdominal segments more or less replaced by red (north-central Mexico).  
 24b. *dilatata chisosensis* Scullen  
 3. Thorax and abdomen black except for a divided band on the pronotum, the metanotum, a broad band on tergum 2, evanescent narrow lines on terga 3-6; markings creamy white (not recorded but should be taken in northeastern Mexico) ... 25. *fumipennis* Say  
 Otherwise colored ..... 4  
 4. Bands on terga 3 to 6 deeply emarginate anteriorly in the center (widely distributed over northern Mexico) ..... 23a. *californica californica* Cresson (in part)  
 All terga of the abdomen yellow or very light fulvous except for a trace of emargination at the base ..... 5  
 5. Thorax black to dark fuscous background; first abdominal segment may show more or less red (widely distributed over northern Mexico).  
 23a. *californica californica* Cresson (in part)  
 Thoracic background fulvous ..... 6  
 6. About 10 mm in length; enclosure lightly ridged (northwestern Mexico).  
 23b. *californica argyrotricha* Rohwer  
 About 14 mm in length; enclosure relatively smooth but with a few pits in the lateral angles (northern Sonora and Baja California) ..... 26. *grandis grandis* Banks

## GROUP III

This group is distinguished by the following characters: (1) a distinct lamella (or lamellae) appears on the free margin of the medial clypeal process; (2) the extension of the medial clypeal lobe on the male is noticeably narrow, with three more or less distinct denticles on its margin; (3) mesosternal tubercles are absent from both sexes or are very small; (4) the terminal segment of the male antenna is distorted slightly; (5) Chrysomelidae are used as prey to feed the young, as recorded for three species (*C. compacta* Cresson, *C. flavofasciata* H. S. Smith, and *C. robertsonii* Fox).

## FEMALES

1. Clypeal lamella undivided; length approximately 18 mm (southern Mexico, Sinaloa to Oaxaca) ..... 38. *montealban*, new species  
 Clypeal lamella divided more or less completely into two wings ..... 2  
 2. Thorax with conspicuous stripes of black and fulvous; two prominent nipple-like elevations on inflated area of the pleuron below the wing attachments; body slender (Costa Rica and Panama) ..... 39. *rufonigra turrialba*, new subspecies  
 Thorax not striped; nipple-like elevations (mesosternal tubercles) on pleuron limited to one or none at all; body form normal ..... 3  
 3. Acute extensions at the lateral extremities of the clypeal process (Mexico: Durango, Jalisco, Morelas, Nayarit; United States: Arizona) ..... 35. *hurdi*, new species  
 Lateral borders of clypeal process smoothly rounded ..... 4  
 4. Little or no black coloration, fulvous and ferruginous (Nayarit, San Luis Potosí, Sonora, Zacatecas, Baja California Sur) ..... 27. *cochise* Scullen  
 Background color black ..... 5  
 5. Clypeal process reduced to a low carina with two very small separated lamellae (Morelos) ..... 31. *cuernavaca*, new species  
 Clypeal process distinctly elevated and with relatively large lamellae either united at their base or closely appressed ..... 6

6. Width of clypeal process subequal to one-third of the distance between the eyes at that level; five subequal denticles on the clypeal free margin; largely black; length 12 mm (Veracruz) ..... 42. *williamsi*, new species  
 Width of clypeal process equal to, or greater than, one-half the distance between the eyes at that level ..... 7
7. Two distinct denticles on the mandibles ..... 8  
 Three distinct denticles on the mandibles ..... 9
8. Mandibular denticles subequal; clypeal process yellow; metanotum black; propodeum immaculate (Central Mexico from Chihuahua to Veracruz) ..... 32. *duisi*, new species  
 Distal mandibular denticle much the larger; metanotum light yellow; propodeum with two triangular light yellow patches adjacent to the enclosure (Costa Rica).  
 29. *cooperi*, new species
9. Markings creamy white ..... 10  
 Markings yellow ..... 12
10. Length 15 mm; distal mandibular denticle very large, approximately four times the size of the other two denticles, which are subequal; a widely broken line on tergum 2.  
 33. *fortin*, new species, or 37. *mexicana* Saussure  
 Length 11 to 12 mm; distal mandibular denticle approximately twice the size of the basal one, medial denticle very small; band on tergum 2 ..... 11
11. Propodeum immaculate (south-central Mexico and Yucatan).  
 41a. *veracruz veracruz*, new subspecies  
 Propodeum with two triangular light yellow patches adjacent to the enclosure.  
 41b. *veracruz josei*, new subspecies
12. Propodeum and its enclosure heavily marked with yellow infringed upon by amber (Central America) ..... 36. *irwini*, new species  
 Propodeum and its enclosure immaculate ..... 13
13. Distal mandibular denticle large and acute ..... 28a. *compacta* Cresson  
 Distal mandibular denticle a large rounded plate ..... 14
14. Scutellum yellow; hind trochanter black (Costa Rica north to southern Mexico).  
 30a. *costarica costarica*, new subspecies  
 Scutellum black; hind trochanter yellow (south-central Mexico).  
 30b. *costarica mitla*, new subspecies

#### MALES

Many males are difficult or impossible to identify as to species except when associated with females. Although color patterns vary within species, these patterns are used in the following keys since other characters are not often evident. Genitalia have not proven of any help in separating males of closely related species.

1. Background color largely fulvous to ferruginous (Sonora south to Nayarit and east to San Luis Potosí, Baja California Sur) ..... 27. *cochise* Scullen  
 Background color black ..... 2
2. Body very slender; mandibles without denticles; heavily marked with yellow, including stripes on the scutum; extension of the medial clypeal lobe very broad with the free border sinuate, not dentate (Costa Rica and Panama).  
 39. *rufonigra turrialba*, new subspecies  
 Body average; mandible unidentate; scutum immaculate; extension of medial clypeal lobe subequal in width to epistomal suture or less and tridentate ..... 3
3. Length 13 mm; medial lobe of clypeus yellow, except the free margin; entire thorax black except the metanotum (southern Mexico, Sinaloa to Oaxaca).  
 38. *montealban*, new species  
 Length 11 mm or less ..... 4
4. Metanotum black; entire face below antennal scrobes yellow (Mexico: Durango, Jalisco, Morelos, Nayarit; United States: Arizona) ..... 35. *hurdi*, new species  
 Metanotum light; medial clypeal lobe may be partly black ..... 5
5. Propodeum immaculate ..... 6  
 Propodeum not immaculate ..... 10
6. Scutellum with more or less yellow markings ..... 7  
 Scutellum without light markings ..... 10

7. Hind trochanter immaculate .....8  
 Hind trochanter light (south-central Mexico) .....30b. *costarica mitla*, new subspecies
8. Markings distinctly yellow .....9  
 Markings white (east-central Mexico and Yucatan) 41a. *veracruz veracruz*, new subspecies
9. Two small yellow spots on the vertex of the head (Central America).  
 30a. *costarica costarica*, new subspecies  
 Vertex of head immaculate (north-central Mexico) ...28a. *compacta compacta* Cresson
10. Scutellum, metanotum, most of the enclosure, much of the propodeum, and the basal two terga of the abdomen are yellow; face creamy white (Central America).  
 36. *irwini*, new species
- Light markings on the above parts very limited, enclosure black .....11
11. Face largely yellow; first tergum of abdomen with a broad, deeply emarginate band of yellow greatly expanded laterally (El Salvador) ...41b. *veracruz josei*, new subspecies

## GROUP IV

This group is distinguished by the following characters: (1) the females have a prominent cone-shaped process on the medial clypeal lobe, which is flanked on each side by a much smaller process attached to the lateral clypeal lobe; (2) the males have the medial denticle of the three on the clypeal margin bicuspidate; (3) the pygidium of the male is very broad, almost oval; (4) the hair lobes of the male are very broad, almost meeting medially; (5) Tenebrionidae are used as prey for the larvae.

## FEMALES

1. Length 15 to 18 mm; punctation deep and close .....2  
 Length 10 to 12 mm; punctation fine and more widely scattered .....3
2. Background color light fulvous (north and central plateau of Mexico).  
 45b. *simplex macrosticta* Viereck and Cockerell  
 Background color more fuliginous (central Mexico mountains south through Central America and into northwestern South America) .....45a. *simplex graphica* F. Smith
3. Background color fuliginous to fuscous; legs fuliginous (rare near the northern border of Mexico) .....43a. *femurrubra femurrubra* Viereck and Cockerell  
 Background color dark fuscous to black .....4
4. Markings yellow and greatly expanded to include much of the propodeum, the metanotum, and broad emarginate bands on the terga of the abdomen; legs fuliginous (recorded only from the state of Chihuahua) .....43b. *femurrubra athene* Banks  
 Markings cream to white and greatly reduced; propodeum and metanotum usually immaculate (Baja California and Sonora, south and east to Oaxaca).  
 43c. *femurrubra rossi*, new subspecies

## MALES

1. Length about 15 mm .....2  
 Length about 11 mm .....3
2. Background color of head, thorax, and first abdominal tergum black; a variable amount of black on the more posterior terga; femora and much of the tibiae black (Central Mexico mountains south through Central America to northwest South America).  
 45a. *simplex graphica* F. Smith  
 Limited black areas of the thorax and head confined largely to depressed areas and sutures; abdominal terga ferruginous and fulvous, rarely a limited area black; legs ferruginous to fulvous, limited darker patches (limited records from north-central Mexico) .....45b. *simplex macrosticta* Viereck and Cockerell
3. Legs amber and yellow (Chihuahua and Coahuila).  
 43a. *femurrubra femurrubra* Viereck and Cockerell  
 43b. *femurrubra athene*<sup>5</sup> Banks  
 Legs black and cream (Baja California and Sonora southeast to Oaxaca).  
 43c. *femurrubra rossi*, new subspecies

<sup>5</sup> Males of these two subspecies are usually indistinguishable.

## GROUP V

This group is distinguished by the following characters: (1) the females have a low, cone-shaped elevation on the medial clypeal lobe, which may be reduced to slightly more than a pronounced convex surface; (2) the hair lobes of the males are very broad, almost meeting medially; (3) the male pygidium is much longer than broad; (4) there are no known prey records for this group.

## FEMALES

1. Clypeal elevation low and rounded without a distinct apex ..... 2  
Clypeal elevation not low and rounded but sides converge to a distinct apex, which may be blunt, approximately perpendicular to the surface; anterior surface of the elevation smooth and concave or flat ..... 5
2. Subequal bands on all terga; propodeum usually immaculate ..... 3  
Bands on all terga not subequal, tergum 2 immaculate or with two small yellow spots; propodeum with large yellow markings ..... 4
3. Bands on terga yellow, deeply emarginate, making them narrow medially and broad laterally (rare but should be taken in northeastern Mexico).  
46a. *compar compar* Cresson  
Bands on terga broad, slightly emarginate, and creamy white (north-central Mexico).  
46b. *compar albinota*, new subspecies
4. Length 10-11 mm; tergum 2 with large lateral yellow patches; band on tergum 3 with variable emargination (widely distributed in Mexico from Chihuahua south to Guatemala) ..... 46c. *compar geniculata* Cameron  
Length 8-9 mm; tergum 2 immaculate; band on tergum 3 rarely emarginate (widely distributed over northern Mexico, rare to the south) ..... 46d. *compar orestes* Banks
5. Entire propodeum yellow except the enclosure (Central America).  
47g. *insolita panama*, new subspecies  
Propodeum immaculate or with limited small markings ..... 6
6. Markings yellow ..... 7  
Markings white to cream white ..... 10
7. Legs largely amber (limited records from northern Mexico). 47a. *insolita insolita* Cresson  
Legs all black or with limited yellow markings ..... 8
8. Posterior femora black; propodeum immaculate (south-central Mexico).  
47e. *insolita cortezi*, new subspecies  
Posterior femora with yellow area; propodeum with an elongate yellow patch laterally and a smaller patch bordering the enclosure ..... 9
9. Tergum 3 yellow; terga 4 and 5 with broad bands deeply emarginate (two records only from northern and western Mexico) ..... 47c. *insolita atrafemori* Scullen  
Terga 3 black or with narrow band; terga 4 and 5 with evanescent narrow bands (southern Mexico south through Central America to Ecuador).  
47d. *insolita chiriquensis* Cameron
10. Legs with considerable amber; band on tergum 3 broad but deeply emarginate (recorded only from the state of Veracruz in Mexico) ..... 47b. *insolita albida* Scullen  
Legs largely black with light markings; band on tergum 3 narrow and relatively uniform in width (southern Mexico through Central America into South America).  
47f. *insolita otomia* Saussure

## MALES

1. Complete band on tergum 2; mesosternal tubercle acute and pointing caudad ..... 2  
Tergum 2 immaculate or with lateral light patches only; mesosternal tubercle present or absent ..... 3
2. Markings yellow (rare but should be taken in northeastern Mexico).  
46a. *compar compar* Cresson  
Markings creamy white (north-central Mexico) ..... 46b. *compar albinota*, new subspecies
3. With a distinct mesosternal tubercle or process ..... 4  
Without a mesosternal tubercle or process ..... 5

4. Mesosternal tubercle broad and blunt, not pointing caudad (widely distributed in Mexico from Chihuahua south to Guatemala) ..... 46c. *compar geniculata* Cameron  
 Mesosternal tubercle acute and pointing caudad (south-central Mexico).  
     47e. *insolita cortezi*, new subspecies
5. Markings creamy white ..... 6  
 Markings yellow ..... 7
6. Approximately 8 mm in length; face all white; scutellum white; tergum 3 with a broad and deeply emarginate band; terga 4, 5, and 6 with medium bands deeply emarginate (recorded only from the state of Veracruz in Mexico) ..... 47b. *insolita albida* Scullen  
 Approximately 10 mm in length; face white except black borders along the margin of the medial clypeal lobe; scutellum largely black; tergum 3 with a uniform narrow band; terga 4, 5, and 6 immaculate or with evanescent hair lines of white (southern Mexico through Central America to South America) ..... 47f. *insolita otomia* Saussure
7. Propodeum largely yellow except enclosure (Central America).  
     47g. *insolita panama*, new subspecies  
 Propodeum immaculate or with limited yellow patches ..... 8
8. Propodeum with one or two small patches of yellow variable in size; black border on the medial clypeal lobe (southern Mexico south through Central America to Ecuador).  
     47d. *insolita chiriquensis* Cameron  
 Propodeum immaculate; no black border on the medial clypeal lobe ..... 9
9. Legs largely amber; band on tergum 3 medium with little or no emargination; bands on terga 4, 5, and 6 narrow (limited questionable records from northern Mexico).  
     47a. *insolita insolita* Cresson  
 Legs black with light yellow markings; band on tergum 3 very broad with slight emargination; bands on terga 4, 5, and 6 broad and deeply emarginate (widely distributed over northern Mexico, rare to the south) ..... 46d. *compar orestes*\* Banks

#### UNGROUPED SPECIES

##### FEMALES

1. Little or no process on the surface of the medial clypeal lobe ..... 2  
 Distinct process on the surface of the medial clypeal lobe ..... 4
2. Medial clypeal lobe with two rounded, separated extensions; mandibles with one large denticle; propodeum with large, creamy-white patches; hind femori with a prominent amber distal end; pygidium without setae; metanotum light (central plateau from Durango to Oaxaca) ..... 66. *gandari* Rohwer  
 Mandibles with two subequal denticles; propodeum immaculate ..... 3
3. Clypeal margin with two widely separated large denticles between which there is a lamella-like extension; metanotum black; pygidium densely covered with short setae (central Mexico, Durango to Oaxaca) ..... 61. *durango*, new species  
 Clypeal margin with five subequal denticles; lower surface of the medial clypeal lobe with two widely separated small amber denticles connected by a low carina; metanotum yellow; pygidium without setae (one record from "Meadow Valley") 52. *boharti* Scullen
4. Clypeal process distinct and acute ..... 5  
 Clypeal process distinct but not acute ..... 6
5. Length approximately 16 mm; coloration with much ferruginous (northeastern Mexico).  
     84. *verticalis* F. Smith  
 Length approximately 10 mm, black with creamy-white markings; distal end of hind femori brown (mountains of south-central Mexico) ..... 49. *atlacomulca*, new species
6. Clypeal process more or less inverted scoop shaped ..... 18  
 Clypeal process not scoop shaped ..... 7
7. Length 14 to 15 mm ..... 8  
 Length 12 mm or less ..... 9
8. Body color with a large amount of ferruginous; mandibles with one prominent denticle; clypeal process short, sides converging, terminating as two prolonged acute processes; scutum immaculate; enclosure smooth, immaculate (Durango, Mexico).  
     53. *bolingeri*, new species

\*The male of *C. insolita atrafemori* Scullen, which has not been recognized, may run to *C. compar orestes* Banks.

- Body black and fulvous; mandibles with one broad-based denticle; clypeal process with sides converging, truncate, slightly emarginate; two parallel elongate patches on the scutum; enclosure ridged and with large light patches (southern Mexico and Central America) ..... 78. *simulans* Saussure
9. Length 12 mm; clypeal border with two prominent denticles; mandibles with one large denticle ("Mexico") ..... 54. *bothriophora* Schletterer  
Length 10 mm or less; clypeal border usually with more than two denticles; mandibles with more than one denticle ..... 10
10. Clypeal process low on the medial lobe; in the form of two small rounded processes; entire clypeus dark fuscous with a dense covering of small, silvery setae; two separate yellow patches on each side of the propodeum, one bordering the enclosure; metanotum black (central Mexico, Durango to Puebla) ..... 63. *evansi*, new species  
Clypeal process undivided ..... 11
11. Pygidium shield shaped (Figure 163*b*); mandibles with one denticle (southeastern Mexico and into Central America) ..... 74. *obsoleta* Cameron  
Pygidium not shield shaped ..... 12
12. Pygidium narrowing very little at the base or none at all ..... 13  
Pygidium very narrow at the base ..... 14
13. Mandibles unidentate; tergum 2 immaculate; enclosure heavily ridged parallel to its base; length about 9 mm (El Salvador) ..... 58. *cavagnaroi*, new species  
Mandibles bidentate; tergum 2 not immaculate; enclosure largely smooth; length 12 mm (state of Zacatecas) ..... 85. *zacatecas*, new species
14. Body entirely black except for limited light patches on face, mandibles, first tergum, first and second sterna, and fore- and hind tarsi (state of Oaxaca).  
73. *oaxaca*, new species  
Light body markings as follow: on face, propodeum, metanotum, bands on most terga 15  
Hind trochanter immaculate ..... 16  
Hind trochanter with light marks ..... 17
16. Broad divided band on sternum 3 only; propodeum immaculate; length 10-11 mm (Durango and central Mexico) ..... 80. *strigosa* Cameron  
Broad band emarginate on sternum 2 only; propodeum with large yellow patches; length 8 mm (south-central Mexico) ..... 60. *dreisbachi*, new species
17. Abdominal bands on terga 2 and 3 very broad laterally with a deep incision medially; large lateral patches of yellow on sterna 3 and 4; punctation sparse and fine (central Mexico from Mexico north to Chihuahua) ..... 69. *micheneri*, new species  
Abdominal bands on terga 2 and 3 narrow, emargination broad and shallow; venter immaculate or with small lateral patches on sternum 3; punctation coarse (states of Querétaro and San Luis Potosí) ..... 76. *queretaro*, new species
18. Pygidium not narrowing to an acute or near-acute base; sides may converge slightly ..... 19  
Pygidium narrowing basally to an acute or very narrow base ..... 23
19. Clypeal process much longer than broad; markings yellow ..... 20  
Clypeal process not longer than broad; markings creamy white ..... 21
20. Clypeal process with an acute emargination on the distal margin; head largely ferruginous above; abdominal terga with little or no black (north-central Mexico to Oaxaca) ..... 72. *morata* Cresson  
Clypeal process slightly converging distally with little or no emargination on the distal border; considerable black background on most terga (south-central Mexico).  
59. *clypeata tepaneca* Saussure
21. Length 15 to 18 mm; markings creamy white (central Mexico) ..... 79. *stigmatialis* Banks  
Length 10 to 11 mm ..... 22
22. Markings yellow; legs largely yellow; hind femori bicolor; distal end dark (Chihuahua, Mexico) ..... 75. *occipitomaculata* Packard  
Markings white; legs largely ferruginous; hind femori unicolor (central plateau of Mexico) ..... 57. *calochorti hidalgo*, new subspecies
23. Mandibles unidentate ..... 24  
Mandibles bidentate ..... 25
24. Length 11 mm; markings yellow; clypeal process little more than an arch-shaped carina; enclosure largely smooth (general over Mexico and into Central America).  
82. *tolteca* Saussure

- Length 14 mm; markings creamy white; clypeal process prominent and deeply cleft medially; enclosure finely rugose (Puebla, Mexico) ..... 56. *cacaloapana*, new species
25. Mandibular denticles subequal in size, widely separated ..... 26  
Mandibular denticles not widely separated; length 20 mm or less ..... 27
26. Length 25 mm; distance between apices of clypeal process much greater than the length of the epistomal suture; abdomen largely yellow (north-central plateau and Baja California) ..... 65. *frontata frontata* Say  
Length 18 mm; distance between apices of clypeal process subequal to epistomal suture; yellow of abdomen confined to deeply emarginate bands on one or more terga (central Mexico south into Central America) ..... 67. *imperialis* Saussure
27. Distal mandibular denticle very small; basal denticle very large; background color black, markings yellow except vertex and occiput of head, which are ferruginous; length approximately 19 mm (Nicaragua) ..... 55. *bradleyi*, new species  
Mandibular denticles subequal in size ..... 28
28. Length 9 to 10 mm; clypeal process subequal in length to the epistomal suture, terminal border emarginate (through western Mexico, in to Central America, and recorded from South America) ..... 50. *azteca* Saussure  
Length 15 to 20 mm; clypeal process much shorter than the epistomal suture ..... 29
29. Abdomen and thorax very slender; one or two prominent stripes on the scutum; prominent irregular markings on the vertex and occiput of the head ..... 30  
Abdomen and thorax average in width; scutum unmarked; vertex and occiput of head not unusually marked ..... 31
30. Scutum with one medial yellow stripe (Panama, Central America). 68. *lutzi*, new species  
Scutum with two medial parallel yellow stripes (Veracruz) ..... 77. *rostrata* F. Smith
31. Distance between apices of the clypeal process very much less than one-third the distance between the eyes; clypeal process not lunar shaped (high plateau from Chihuahua to Oaxaca) ..... 70. *mimica* Cresson  
Distance between apices of the clypeal process approximately equal to, or greater than, one-third the distance between the eyes; clypeal process somewhat lunar shaped ..... 32
32. Background color fuscous, markings mostly ferruginous (northern border states of Mexico).  
51a. *bicornuta bicornuta* Guerin  
Background color ferruginous, markings fulvous to yellow (northwestern border states of Mexico) ..... 51b. *bicornuta fidelis* Viereck and Cockerell

## MALES

1. Metanotum dark ..... 2  
Metanotum light ..... 5
2. Hair lobes joining medially (western and southern Mexico, into Central America) ..... 50. *azteca* Saussure  
Hair lobes widely separated ..... 3
3. Length 8 mm (central Mexico, Durango to Puebla) ..... 63. *evansi*, new species  
Length 12 mm ..... 4
4. Hind femori all black (central Mexico, Durango to Oaxaca) ..... 61. *durango*, new species  
Hind femori bicolor, basal third black, distal two-thirds amber (Durango to southern Mexico) ..... 64. *flavotrochanterica* Rohwer
5. One or two yellow stripes on the medial area of the scutum ..... 6  
Scutum immaculate ..... 7
6. One medial stripe on the scutum (Panama) ..... 68. *lutzi*, new species  
Two medial parallel stripes on the scutum (southern Mexico into Central America).  
78. *simulans* Saussure
7. Basal segment of hind tarsi elongate, S-shaped; prominent mass of bristles laterad of pygidium ..... 8  
Basal segment of hind tarsi not S-shaped; bristles laterad of pygidium average ..... 9
8. Background color largely black (northern border Mexican states).  
51a. *bicornuta bicornuta* Guerin  
Background color largely ferruginous (northwestern border states of Mexico).  
51b. *bicornuta fidelis* Viereck and Cockerell
9. Entire body black except for very limited light markings as follows, all of which are more or less evanescent: narrow frontal eye patches, small patches on the scutellum, the

metanotum, spots on the propodeum, most of tergum 1, sternum 1, medial part of sternum 2, and a faint line on tergum 2 (state of Oaxaca) ..... 73. *oaxaca*, new species

Much of the body with yellow or white markings ..... 10

10. Scutellum usually well marked, yellow or white ..... 11

Scutellum immaculate ..... 15

11. Hind femori black; scutellum usually with two distinct light yellow patches; tergum 2 immaculate (central Mexico south into Central America) ..... 67. *imperialis* Saussure

Hind femori not black; scutellum largely light; light bands on all terga 2 to 6 ..... 12

12. Hair lobes almost meeting on the medial clypeal lobe; pygidium almost oval (general over Mexico and into Central America) ..... 82. *tolteca* Saussure

Hair lobes limited to lateral clypeal lobes; pygidium not oval ..... 13

13. Hind femori bicolor, yellow markings extending almost half the length of the femora. 72. *morata* Cresson

Hind femori usually unicolor, if bicolor yellow markings basolaterad only ..... 14

14. Bristles on venter becoming much longer laterally on the more distal sternites; the more basal terga bands showing incisions medially (central Mexico, Chihuahua to Oaxaca). 70. *mimica* Cresson

Bristles on venter subuniform; bands of yellow on terga without incisions (northern Mexican states) ..... 65. *frontata frontata* Say

15. Hind femori not black or with only distal end black ..... 16

Hind femori half or more black ..... 20

16. Distal end of hind femori black; black of distal end of hind femori mostly on dorsal surface (Chihuahua south to state of Mexico) ..... 69. *micheneri*, new species

Hind femori without black ..... 17

17. All tergite bands of abdomen showing a distinct break medially; pygidium subequal in width to length (northeastern Mexico) ..... 84. *verticalis* F. Smith

Abdominal bands without mesal break; pygidium longer than broad ..... 18

18. Length approximately 14 to 15 mm (north-central plateau of Mexico). 79. *stigmatialis* Banks

Length 10 mm ..... 19

19. Markings white (north-central Mexico) ..... 57. *calochorti hidalgo*, new species

Markings yellow (state of Chihuahua) ..... 75. *occipitomaculata* Packard

20. Hind femori approximately half black (south-central Mexico). 59. *clypeata tepaneca* Saussure

Hind femori all black or with brown distal end ..... 21

21. Hind femori with brown distal end (central Mexico, Chihuahua to Oaxaca). 66. *gandari* Rohwer

Hind femori all black ..... 22

22. Strong bands of yellow on sternum 3, very rarely lateral spots on sternum 2 (state of Durango and central Mexico) ..... 80. *strigosa* Cameron

Sterna otherwise marked ..... 23

23. Markings white; large white lateral patches on sterna 3 and 4 (mountains, south-central Mexico) ..... 49. *atlaconomulca*, new species

Markings yellow ..... 24

24. Clypeus largely black to dark fuscous except for a patch on the medial lobe; small yellow spots laterally on sternum 3 (states of Querétaro and San Luis Potosi). 76. *queretaro*, new species

Clypeus all yellow; strong band on sternum 2, divided band on sternum 3 (south-central Mexico) ..... 60. *dreisbachi*, new species

GROUP I

1. *Cerceris acanthophila* Cockerell

FIGURES 1, 95a-c

*Cerceris acanthophila* Cockerell, 1897:135.—Ashmead 1899: 296.—Viereck and Cockerell 1904:138.—Viereck 1906b:

234.—Banks 1947:30.—Scullen 1951:1004; 1960:75; 1965a:346, 352, 355-357, figs. 1, 108a, b, c.

*Cerceris minax* Mickel, 1917a:339.—Banks 1947:34.—Scullen 1951:1009.

*Cerceris huachuca* Banks, 1947:29.—Scullen 1951:1008.

*Cerceris chilopsidis* Viereck and Cockerell, 1904:136.—Scullen 1951:1006; 1965a:346, 365-366, figs. 8, 113a, b, c.

For some years the writer has considered *C. minax* Mickel a synonym of *C. acanthophila* Cockerell as a result of an examination of the type male of the latter species. After studying many specimens of male *C. acanthophila* Cockerell from the southwestern states and after having seen only two questionable females of *C. minax* Mickel east of southern California, the writer questioned the above synonymy. More recently, the writer collected males of *C. acanthophila* Cockerell associated with the females of *C. chilopsidis* Viereck and Cockerell, a species for which the males had never been recognized. These were taken in Big Bend National Park, Texas.

*Cerceris chilopsidis* Viereck and Cockerell is, therefore, now considered a synonym of *C. acanthophila* Cockerell and *C. minax* Mickel is again accepted as a valid species. *Cerceris huachuca* Banks is retained as a synonym of *C. acanthophila* Cockerell.

**TYPES.**—A male of *C. acanthophila* Cockerell is in the Academy of Natural Sciences of Philadelphia (ANSP type 10038, from Deming, N. Mex.). This is considered the lectotype designated by Cresson in 1928. Another male, apparently from the same series, is in the National Museum of Natural History (USNM 3409). A second specimen with a blue ANSP paratype label (10038) is also in the Academy of Natural Sciences of Philadelphia.

The holotype female and allotype male of *C. minax* Mickel from Sacramento, Calif., are at the University of Nebraska. Three paratype females from Auburn, Calif., are also at the University of Nebraska.

The holotype male of *C. huachuca* Banks from Patagonia, Ariz., is in the Museum of Comparative Zoology (27636).

The type female of *C. chilopsidis* Viereck and Cockerell, taken at Rincon, N. Mex. (Cockerell), 5 July, at flowers of *Chilopsis saligna*, is at the Academy of Natural Sciences of Philadelphia (10375).

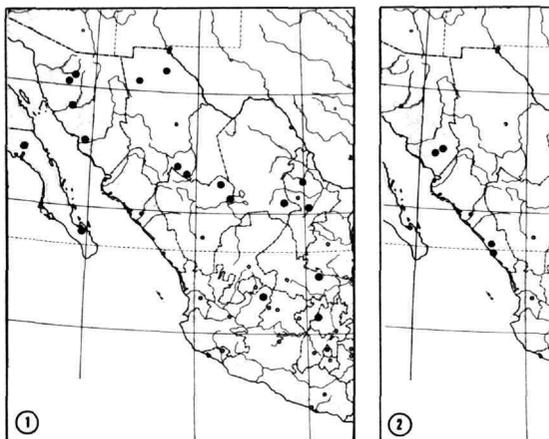
**DISTRIBUTION.**—Limited specimens have been taken throughout northern and central Mexico as follows:

**MEXICO:** BAJA CALIFORNIA SUR: 3♀, 11♂, 2 mi S La Paz, 5, 6 August 1966, at *Wislizenia refracta* var. *mimillata* (PDH); 3♀, San Angel, 28–29 July 1968 (JMD). CHIHUAHUA: ♀, 42 mi SW Camargo, 4900 ft, 15 July 1947 (CDM); ♂, 34 mi SE Ciudad Jimenez, 4450 ft, 11 September 1963 (S and B); 5♀, 13♂, 7 mi SE Galeana, 4850 ft, 13 September 1963 (S and B); ♀, 5 mi W Santa Clara Canyon, Parrita, 6 July 1932 (JWM), 2♂, Villa Ahumada, 3700 ft, 28 July 1963 (UKE). COAHUILA: ♀, Guadalupe, 23 August 1947 (MAC); ♀, 15 mi N Saltillo,

4450 ft, 9 September 1963 (S and B). DURANGO: ♂ 14 mi NW Ceballos, 4100 ft, 10 September 1963 (S and B); 4♀, 8♂, 45 mi NW Gomez Palacio, 3800 ft, 10 September 1963 (S and B). HIDALGO: ♀, 20.4 mi SE Zimapan, 5650 ft, 9 July 1961 (UKE); JALISCO: 13 mi SW Lagos de Moreno, 4 August 1954 (JWS). NUEVO LEÓN: ♀, Montemorelos, 1300 ft, 8 September 1963 (S and B); 4♀, Vallecillo, 2–5 June 1951 (PDH). SAN LUIS POTOSÍ: ♀, 17 mi W Ciudad Maiz, 3200 ft, 24 July 1962 (UKE). SONORA: ♀, Concorit, 11 June 1961 (FDP); ♀, Desemboque, 17–31 July 1953 (BM); ♂, 20 mi S Estacion Llano, 17 August 1964 (MEI); 5♂, Guaymas, 6–7 April 1921 (EDP); ♀, Hermosillo, 18 June 1961 (FDP); 2♀, 5 mi S Magdalena, 25 May 1962 (FDP and LAS); 6♀, 38 mi NW Obregon, 100 ft, 23 September 1963 (S and B).

**PREY RECORD.**—None.

**PLANT RECORD.**—None.



FIGURES 1–2.—1, *C. acanthophila* Cockerell; 2, *C. alamos*, new species.

## 2. *Cerceris alamos*, new species

FIGURES 2, 96a–f

**FEMALE.**—Length 7.5–8 mm. Black with creamy-white markings; punctation and pubescence average; clypeal process with a single acute denticle on the terminal border.

Head subequal in width to the thorax; black except for large frontal eye patches, the dorsal surface of the clypeal process, the scape of the antennae, the basal third of the mandibles, and a small spot back of the eyes, all of which are creamy white; border of the medial clypeal lobe with three low rounded denticles; clypeal process rounded termi-

nally and with a single acute denticle medially; mandibles bidentate, the more distal denticle the larger; antennae normal in form, light tan below and dark above.

Thorax black except for a divided band on the pronotum, two patches on the scutellum, the metanotum, a patch on the pleuron, and the tegulae, all of which are creamy white; tegulae smooth and slightly elevated; enclosure deeply and coarsely pitted and with the usual medial groove; mesosternal tubercle absent; legs black except for an oval patch on the fore- and midfemora, the fore- and midtibiae, and a patch on the hind tibiae, all of which are creamy white and the fore- and midtarsi, which are somewhat amber in color; wings subhyaline but clouded apically.

Abdomen black except for a patch on tergum 1, emarginate bands on terga 2, 3, 4, and 5, the band on tergum 2 somewhat the broader; venter immaculate; pygidium as illustrated (Figure 96c).

**MALE.**—Length 7 mm. Black with cream to light yellow markings; punctation average; pubescence very short.

Head subequal in width to the thorax, black except the entire face below the antennal scrobes, the scapes of the antennae, and the base of the mandibles, all of which are creamy white; medial clypeal border with three low black denticles; mandibles without denticles; antennae normal in form, tan below and darker above.

Thorax black except for a broken band on the pronotum, two patches on the scutellum, the metanotum, a patch on the pleuron, and the tegulae, all of which are cream colored; tegulae smooth and slightly elevated; enclosure coarsely punctate with a medial groove; mesosternal tubercle absent; legs black to near the distal end of the femora; fore- and midfemora with oval light patches on their distal ends, hind femora distal ends light, more distal segments of all legs light colored except for dark patches near the distal ends of the hind tibiae; wings as on the female.

Abdomen black except for a patch on tergum 1, a broad uniform band sometimes emarginate on tergum 2, and narrow, slightly emarginate bands on terga 3, 4, 5, and 6, all of which are light yellow; pygidium as illustrated (Figure 96f).

Male specimens of *C. alamos* are difficult to distinguish from closely related species except when associated with the females.

**TYPES.**—The type female and allotype male of *Cerceris alamos*, taken from 10 miles southeast of Alamos, Sonora, Mexico, 29 June 1963 (F. D. Parker and L. A. Stange), are at the California Academy of Sciences. Paratypes are as follows:

**MEXICO: SINALOA:** ♀, ♂, 8 mi SE Elota, 18 May 1962 (FDP); ♂, same location, 19 April 1962 (LAS); ♀, Mazatlan, 15–20 August 1962 (HEE). **SONORA:** 8 ♀, 17 ♂, 10 mi SE Alamos, 29 June 1963 (P and S); ♂, Cocorit, 23 May 1962 (P and S); 6 ♂, 10 mi E Navojoa, 13 August 1959 (WLN and FGW).

**DISTRIBUTION.**—Known only from southern Sonora and Sinaloa, Mexico.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

### 3. *Cerceris argia* Mickel

FIGURES 3, 97a–c

*Cerceris argia* Mickel, 1916:412; 1917b:453.—Scullen 1951:1005; 1965a:346, 357–359, figs. 2, 109a, b, c; 1968:158, figs. 5, 6.

**TYPE.**—The type female of *C. argia* Mickel, taken at Lincoln, Neb., is at the University of Nebraska.

**DISTRIBUTION.**—

**MEXICO: CHIHUAHUA:** 2 ♀, 9 mi S Hidalgo del Parral, 5200 ft, 26 July 1953, at *Asclapias* species (UKE). **DURANGO:** ♀, 8 mi S Canutillo, 9 August 1951 (HEE); 2 ♀, same locality and same date (PDH). **JALISCO:** ♀, El Tigre, 18 July 1954 (EIS). **NUEVO LEÓN:** ♀, Vallecillo, 2–5 July 1951 (PDH).

**PREY RECORDS.**—None.

**PLANT RECORDS.**—*Asclapias* species (Chihuahua).

### 4. *Cerceris bridwelli* Scullen

FIGURES 4, 98a–f

*Cerceris bridwelli* Scullen, 1965a:346, 351, 361–363, figs. 5, 111a, b, c.

**TYPES.**—The type female and allotype male, taken from Imperial Co., Calif., June 1911 (JCB), are at the National Museum of Natural History (USNM 66154).

**DISTRIBUTION.**—Previously known only from southern California and southern Arizona. Herein recorded from Mexico only in northern Baja California and extreme northwestern Sonora. Specimens are as follows:

MEXICO: BAJA CALIFORNIA (north): 12 ♀, 5 ♂, 4 mi S San Felipe, 8 June 1968 (JMD); ♀, 13 mi N San Felipe (JMD). SONORA: 2 ♀, 2 ♂, 39 mi N Puerto Penasco, 4 June 1968 (JMD); ♀, 5 mi S Riito, 5 June 1968 (JMD).

PREY RECORD.—None.

PLANT RECORD.—None.

### 5. *Cerceris butleri* Scullen

FIGURES 5, 99a-c

*Cerceris butleri* Scullen, 1965a:346, 363-364, figs. 6, 112a, b, c

TYPE.—The type female, taken 30 miles south of Safford, Ariz., 24 September 1956, on a yellow composite (*G. D. Butler*), is at the National Museum of Natural History (USNM 66155).

DISTRIBUTION.—Southern Arizona and one record from Alpine, Tex. Specimens from Mexico are as follows:

MEXICO: SONORA: ♀, 10 mi E Navojoa, 13 August 1959 (W. L. Nutting and F. G. Werner); ♀, 38 mi NW Obregon, 100 ft, 23 September 1963 (S and B); ♀, 56 mi S Santa Ana, 1 October 1968 (R. W. and J. T. Thorp). The male is unknown.

PREY RECORD.—None.

PLANT RECORD.—*Baccharis glutinosa* and *Heplopappus hartwegi* (Arizona); none from Mexico.

### 6. *Cerceris conifrons* Mickel

FIGURES 6, 100a-c

*Cerceris conifrons* Mickel, 1916:410; 1917b:450.—Banks 1947:26, 31.—Scullen 1951:1006; 1965a:346, 351, 367-369, figs. 11, 114a, b, c.

*Cerceris rufinoda crucis* H. S. Smith, 1908:370 [in part].

TYPE.—The type female of *C. conifrons* Mickel is at the University of Nebraska. The type female of *C. rufinoda crucis* Viereck and Cockerell is at the Academy of Natural Sciences of Philadelphia (10393).

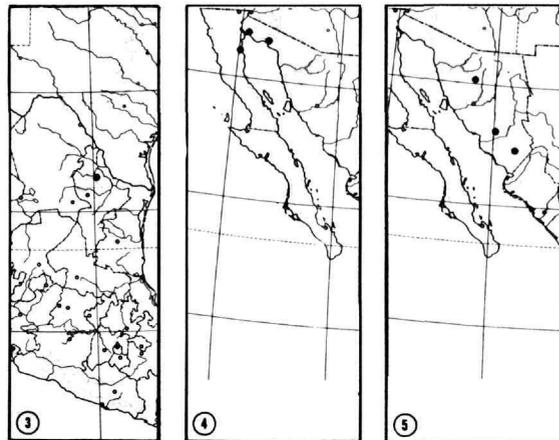
DISTRIBUTION.—North-central states in Mexico south to the state of Zacatecas. Specimens are as follows:

MEXICO: CHIHUAHUA: ♀, 8 mi S Camargo, 10 August 1951 (PDH); 2 ♀, 15 mi S Chihuahua, 16 August 1965 (HEE); ♀, 2 ♂, 34 mi S Chihuahua, 3650 ft, 25 October 1957 (HAS); ♂, Ciudad Juarez, 1 July 1947 (CDM); ♀, Colonial Dublan, July 1931 (B and C); 4 ♂, 29 mi E Hidalgo del Parral, 5000 ft, 21 June 1956 (HAS); ♀, ♂,

Moctezuma, 4 July 1954 (JWS). COAHUILA: ♂, Guadalupe, 23 August 1947 (MAC). DURANGO: ♀, 5 mi N Durango, 14 May 1962 (FDP); ♂, Gomez Palacio, 30 May 1957 (GRF). SAN LUIS POTOSI: 4 ♂, 17 mi N San Luis Potosí, 6200 ft, 6 September 1963 (S and B). ZACATECAS: 2 ♀, 9 mi S Fresnillo, 10 August 1954 (LS and M); ♂, 9 mi N Ojo Caliente, 12 May 1962 (FDP); ♀, ♂, Sombrerete, 6000 ft, 2 July 1961 (R and KD).

PREY RECORD.—None.

PLANT RECORD.—None.



FIGURES 3-5.—3, *C. argia* Mickel; 4, *C. bridwelli* Scullen; 5, *C. butleri* Scullen.

### 7. *Cerceris convergens* Viereck and Cockerell

FIGURES 7, 101a-c

*Cerceris convergens* Viereck and Cockerell, 1904:136.—Scullen 1942:188.—Banks 1947:29.—Scullen 1951:1006; 1965a:346,352,369-372, figs. 12, 115a, b, c.

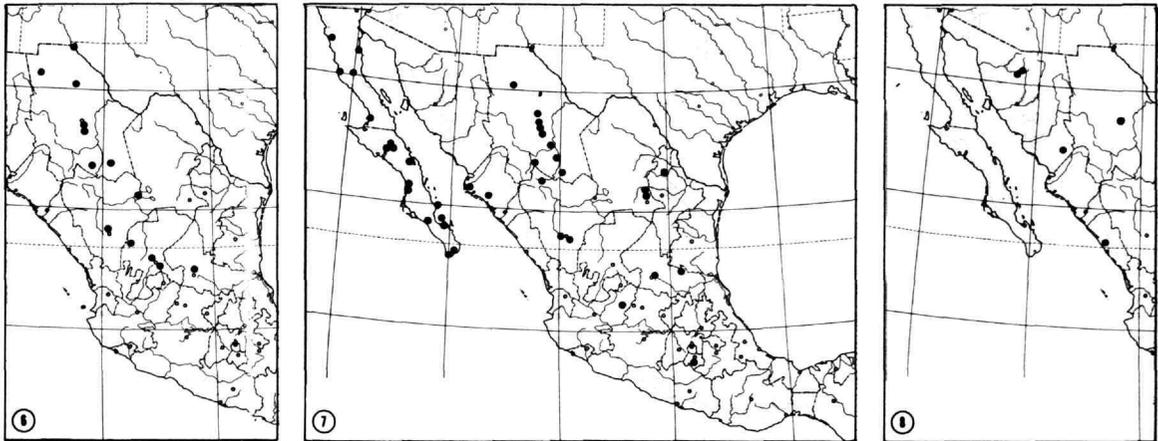
*Cerceris rinconis* Viereck and Cockerell, 1904:137.

*Cerceris hesperina* Banks, 1917:115.

*Cerceris pudorosa* Mickel, 1917a:338.

*Cerceris snowi* Banks, 1919:84.

TYPES.—The type female of *C. convergens* Viereck and Cockerell, taken from Alamogordo, N. Mex., 13 May 1902 (Viereck), is at the Academy of Natural Sciences of Philadelphia (10376). The type female of *C. hesperina* Banks, taken at Yakima, Wash., July 1882 (Samuel Henshaw), is at the Museum of Comparative Zoology (10,031). No allotype male was indicated. The type female and allotype male of *C. pudorosa* Mickel, both taken at Auburn, Calif., 20 September 1916 (L. Bruner), are at Nebraska State University. The type female of *C. rinconis* Viereck



FIGURES 6-8.—6, *C. conifrons* Mickel; 7, *C. convergens* Viereck and Cockerell; 8, *C. crandalli* Scullen.

and Cockerell, from Rincon, N. Mex., 5 July, at flowers of *Chilopsis saligna*, is at the Academy of Natural Sciences of Philadelphia (10386). The lectotype male of *C. snowi* Banks, from Tucson, Ariz. (Snow), is at the Museum of Comparative Zoology (13764).

**DISTRIBUTION.**—This species is common in the northwestern states of Mexico. The most southern records are one from each of the states of Morelos and Veracruz. Specimens are as follows:

**MEXICO: BAJA CALIFORNIA (north):** 4♂, 5 mi S Arroyo de Calamajue, 16 June 1969 (JMD and MAC); ♀, ♂, Cedros Island, 3-4 June 1925 (HHK); ♂, 13 mi SE Millers Landing, 22 June 1968 (JMD and MAC); ♂, 10 mi SE Rosario, 26 June 1957 (DS and JAR); 2♀, ♂, 20 mi W San Augustine, 24 September 1841 (R and B); ♀, ♂, San Borja, 21 June 1968 (JMD and MAC); ♂, 20 mi N San Felipe, 9 June 1968 (JMD and MAC); ♂, 9 mi S San Felipe, 10 June 1968 (JMD and MAC); ♀ 4♂, San Vicente, 8 July 1963 (PDH); 8♂, same locality and date (JDB, HG and JP); 2♂, Santa Ana, 21 June 1968 (JMD and MAC). **BAJA CALIFORNIA (south):** 2♂, Cabo San Lucas, 16 March 1953 (PHA); ♂, Cyote Canyon, Conception Bay, 29 June 1938 (M and R); 3♂, same locality, 1 October 1941 (R and B); ♂, El Pabellon, 2 July 1968 (MAC and JMD); 2♂, Isla Espiritu Santo, Gulf of California, 23 March 1953 (PHA); 5♂, Isla la Partida, 21 March 1953 (PHA); 3♂, La Paz, 29 June 1919 (GFF); 8♀, same locality, 10-12 October 1954 (FXW); ♀, 2 mi S La Paz, 31 July 1966 (EG and JML); 2♀, ♂, same locality, 4-5 August 1966 (PDH); ♀, 7 mi SW La Paz, 4 August 1966 (PDH); 3♂, 10 mi SE La Paz, 3 August 1966 (PDH); ♀, 8♂, Los Angeles Rancho, 24 June 1968 (JMD and MAC); 3♂, 3 mi SE Poza Grande,

4 July 1968 (JMD and MAC); 5♀, ♂, San Angel, 28 June 1968 (JMD and MAC); 2♂, San Domingo, 19 July 1938 (M and R); 2♀, 3♂, 10 mi E San Ignacio, 30 September 1941 (R and B); 4♀, 13♂, San Lucas, 20 July 1968 (JMD and MAC); ♀, 14♂, San Jose, 16-17 1968 (JMD and MAC); ♀, 3♂, San Juan, 29 June 1968 (JMD and MAC); ♀, Venancio, 17 July 1938 (M and R). **CHIHUAHUA:** ♂, 42 mi S Camargo, 4900 ft, 15 July 1947 (RME); ♂, same locality and date (CDM); 3♀, ♂, 4 mi N Ciudad Camargo, 29 July 1967 (RCG, CRK, KL); ♂, Chihuahua, 12 August 1951 (PDH); 4♂, 10 mi N Chihuahua, 17 August 1965 (HEE); 15 mi S Chihuahua, 16 August 1965 (HEE); ♀, 16 mi SE Chihuahua, 11 July 1947 (Schramel); ♂, 30 km N Chihuahua, 30 June 1947 (RME); 2♂, 35 mi N Chihuahua, 5400 ft, 14 September 1963 (HAS and DB); 2♀, Canyon de Bachimba, 27 mi S Chihuahua, 7 September 1950 (RFS); 4♀, 6♂, 34 mi SE Ciudad Jimenez, 4450 ft, 11 September 1963 (HAS and DB); ♂, 31 mi SE same city, elevation, date, and collectors; ♂, 239 km S Ciudad Juarez, 1 July 1947 (HEE); ♂, 7 mi SE Galeana, 4850 ft, 13 September 1963 (HAS and DB); ♂, 10 mi N Jimenez, 10 September 1950 (RFS); 2♂, 18 mi W Jimenez, 10 August 1951 (PDH); 6♂, 34 mi SE Jimenez, 4450 ft, 14 September 1963 (HAS and DB); ♂, Santa Clara Canyon, 5 mi W Parrita, 6 July 1954 (JWM). **COAHUILA:** ♂, 15 mi N Saltillo, 9 September 1963 (HAS and DB); ♂, 28 mi N Saltillo, 11 August 1961 (LAS and ASM); ♀, 61 mi N Saltillo, same date and collectors. **DURANGO:** ♂, 8 mi S Canutillo, 9 August 1951 (HEE); 2♂, same locality and date (PDH); ♂, 5 mi W Durango, 14 May 1962 (LAS); ♂, 12 mi N Durango, 6500 ft, 17 September 1963 (S and B); ♀, 3♂, Nombre de Dios, 13 July 1954 (EIS); ♂, 4 mi N same locality, date, and collector; ♀, 4 mi N Nombre de Dios, 3 May 1962 (LAS); ♂, 16 mi S same locality, 14 July 1954 (EIS). **JALISCO:** ♂, San Juan Lagos, 27 July 1951 (PDH). **MORELOS:** ♂, Alpuycra, 27 June 1951 (PDH).  **NUEVO LEÓN:** ♂, Valle-

cillo, 2-5 June 1952 (PDH). SAN LUIS POTOSÍ: ♂, 5 mi E Maiz, 4700 ft, 25 August 1954 (RED); ♂, 17 mi NE San Luis Potosí, 6200 ft, 6 September 1963 (S and B). SINALOA: ♂, Guamuchil, 6 May 1953 (RCB and EIS); ♂, Los Mochis, 25 June 1956 (R and KD). SONORA: ♂, 10 mi SE Alamos, 29 June 1963 (FDP and LAS); ♂, 10 mi S Caborca, 11 June 1962 (DHJ); 2♂, Cocorit, 23 May 1962 (FDP and LAS); ♂, 20 mi S Estacion Llano, 17 August 1964 (MEI); ♀, ♂, 32 mi SE Guaymas, 125 ft, 23 September 1963 (S and B); ♂, Hermesillo, 18 June 1961 (FDP); ♂, Kino Bay, 10 August 1960 (PHA, ER, and R); 4♂, 5 mi S Magdalena, 25 May 1962 (FDP and LAS); ♂, Navojoa, 24 June 1956 (RRD); ♀, 6 mi E Navojoa, 250 ft, 22 September 1963 (S and B); 2♂, 10 mi E Navojoa, 13 August 1959 (WLN and FGW); ♂, 15 mi N Obregon, 24 June 1956 (RRD); 2♂, 38 mi NW Obregon, 100 ft, 23 September 1963 (S and B); 2♂, Pocitas Casas, 25 October 1965 (GEB and HSB); ♂, San Luis, 18 June 1961 (FDP); 3♀, 21♂, 8 mi N Santa Ana, 2100 ft, 20 June 1964 (DB); ♀, 7♂, 17 mi S Santa Ana, 2100 ft, 20 June 1964 (DB). VERACRUZ: ♂, 7 mi NW Alazan (near Tuxpan), 11 June 1961 (UKME); ♂, Tinaja, 27 July 1956 (RR and KD).

PREY RECORD.—*Bruchus* species (California).

PLANT RECORD.—Mexico: *Baccharis glutinosa* (Chihuahua); *Colubrina globra* (Baja California, south); *Eisenhatdia polystachya* (Jalisco); *Eriogonum* species (Baja California, north); *Guardiola tulocarpa* (Durango); *Prosopis juliflora* (Baja California, north); *Wisli zeniaefracta* var. *mamillata* (Baja California, south).

### 8. *Cerceris crandalli* Scullen

FIGURES 8, 102a-c

*Cerceris crandalli* Scullen, 1965a:346, 352, 372-374, figs. 13, 116a, b, c.

TYPES.—The type female, taken from Tucson, Ariz., 13 June 1938 (R. H. Cradnall), is deposited at the National Museum of Natural History (USNM 66156). The allotype male, taken from 8 miles southeast of Elota, Sinaloa, Mexico, 1962 (F. D. Parker), is deposited at the University of California, Davis, Calif.

DISTRIBUTION.—States of Sinaloa and Sonora in Mexico with one record from Chihuahua. Specimens are as follows:

MEXICO: BAJA CALIFORNIA SUR: ♀, San Jose Viejo, 16 July 1968 (JMD and MAC). CHIHUAHUA: ♀, 10 mi N Chihuahua, 17 August 1965 (HEE). SINALOA: 5♀, 15♂, 8 mi SE Elota, 18-19 May 1962 (FDP); ♂, same locality and date (LAS); ♀, 8 mi S Elota, 2 June 1963 (P and S). SONORA: ♂, 10 mi SE Alamos, 29 June 1963 (P and S);

3♀, 10♂, Cocorit, 23 May 1962 (P and S); ♀, 2♂, 5 mi S Magdalena, 25 May 1962 (P and S); ♀, ♂, 5 mi W Santa Ana, 10 June 1961 (FDP); 5♀, 2♂, 8 mi N Santa Ana, 2100 ft, 20 June 1964 (DB).

PREY RECORD.—None.

PLANT RECORD.—None.

### 9. *Cerceris cribosa* Spinola

FIGURES 9a, b, 103a-d

*Cerceris cribosa* Spinola, 1841:119-120.—Schletterer 1887:489.—Dalla Torre, C.G., 1897:457.—Scullen 1961:46; 1962:57.

*Cerceris subpetiolata* Saussure, 1867:95-96.—Schletterer 1887:503.—Dalla Torre, C.G., 1897:478.—Cameron 1890:120-121, pl. VII, figs. 18, 18a, 18b.—Ashmead 1899:296.

*Cerceris pullatus* F. Smith, 1873: 105-106.

*Cerceris albimana* Tashenberg, 1875:395-396.

FEMALE.—Length 11 mm. Black with yellow markings, which are somewhat fulvous; punctation coarse and crowded; pubescence inconspicuous over most of the body but noticeably heavy on the 5th tergum.

Head subequal in width to the thorax; black except for large frontal eye patches, single spots back of the compound eyes, and two similar spots on the vertex, all of which are yellow; clypeal border with five low denticles on the medial lobe, the medial denticle somewhat more broad and rounded than the others; the clypeal process short and compressed, the free margin emarginate, lateral angles very acute, and the dorsal surface covered with minute punctation; mandibles with two prominent denticles and a slight elevation between the two denticles; antennae normal in form, the scape largely yellow, the remaining segments becoming darker apically.

Thorax black except for a divided band on the pronotum, two lateral spots on the scutellum, a divided band on the metanotum, the mesopleural tubercle, and a patch on the tegulae, all of which are yellow; tegulae low and smooth; enclosure with a medial groove and deep punctations laterally; propodeum immaculate; mesosternal tubercles prominent but depressed, usually yellow; legs dark fuscous except for patch near the distal ends of all femora, a stripe on all tibiae, the first tarsal segments of the mid- and hind legs, all of which are yellow to almost white; entire wings somewhat clouded but darker along the anterior margins, stigma dark.

Abdomen with the first segment subequal in width to one-half the width of the second segment; black

with narrow, broken yellow bands along the posterior margins of terga 2, 4, and 5, the band on tergum 2 extending forward laterally; 1st and 2nd sterna largely very light yellow to almost white; terga 5 and 6 covered with a dense layer of short setae; pygidium as illustrated (Figure 103*b*).

**MALE.**—Length 10 mm. Black with yellow to creamy-white markings; punctation coarse and crowded; pubescence short.

Head subequal in width to the thorax; black except for narrow frontal eye patches and small single spots back of the compound eyes, which are yellow; clypeal surface convex on the medial lobe; three denticles on the margin of the medial lobe; hair lobes indefinite and not "waxed"; mandibles with two slight elevations on the carina; antennae normal in form, scape fulvous and other segments becoming darker apically.

Thorax black except for a divided band on the pronotum, lateral spots on the scutellum, and a divided band on the metanotum, all of which are yellow; tegula low and smooth; enclosure with a medial groove and very limited, coarse punctations laterally; propodeum immaculate; mesosternal tubercles absent; legs dark fuscous except for the first tarsal segments of mid- and hind legs, which are creamy white; wings lightly clouded and darker along the anterior margins.

Abdomen black except for a small spot on tergum 1, a narrow band along the posterior margin of tergum 2, which extends forward along the lateral margins of the tergum, very narrow broken lines on terga 4 and 5, a medial spot on tergum 6, and most of sterna 1 and 2, all of which are yellow to almost white on the venter; pygidium as illustrated (Figure 103*d*).

In some respects *C. cribrosa* Spinola resembles *C. truncata* Cameron, but clypeal processes of the females are quite distinct. The presently known distribution of the two species does not overlap.

**TYPES.**—A female apparently determined by Spinola as *C. cribrosa* Spinola is in the Instituto e Museo di Zoologia, Turin, Italy. It has been designated a neotype by the present author. It is from Cayenne (French Guiana, Inini), South America.

The holotype female of *C. subpetiolata* Saussure, in the Naturhistorisches Museum, Vienna, Austria, is from "America: Mexico." The holotype female of *C. pullatus* F. Smith, in the British Museum (Natural History) (21.1,409), is from St. Paul, Brazil.

The original cotype series of *C. albimana* Taschenberg consists of two females. The first of the two was selected as the "lectotype" by the present author. These types are in the Zoologisches Institut, Martin-Luther-Universität, Halle (Saale), East Germany. The lectotype is from Venezuela.

**DISTRIBUTION.**—Southern Mexico through Central America into South America. The northernmost record is from San Luis Potosí. Specimens are as follows:

**MEXICO:** COMPECHE: ♀, 10 mi N Hopelchen, 17 April 1962 (LAS). CHIAPAS: ♂, Ixtapa, 11 April 1962 (FDP); ♀, 4 mi SW Simojovel, 18 March 1953 (EIS); ♂, 15 mi SE Simojovel, 8–15 July 1958 (JAC); ♀, Solusuchiapa, 18 July 1957 (PDH). DURANGO: ♂, San Juan del Río, 5200 ft, 30 July 1947 (CDM). OAXACA: ♀, 23 mi S Matias Romero, 5 April 1962 (LAS); 2 ♀, 15 ♂, Temascal, 16 July 1966 (JSB, MRG, and RCG). SAN LUIS POTOSÍ: 2 ♀, El Salto, 1800 ft, 8 June 1961, at *Lythrum* species (UKE); ♂ 3 mi E El Salto Falls, 21 July 1962 (O and R). TAMAULIPAS: 3 ♂, Tampico, 5 December (FCB). VERACRUZ: ♀, 2 ♂, 30 mi S Acayucan, 5, 21 April 1962 (LAS); 2 ♂, same locality, 21 April 1962 (FDP); 6 ♂, Atoyac, April–May (HHS); ♀, ♂, Cordoba (C); ♀, ♂, same locality, 13, 14 May 1946 (JP and DP); 2 ♂, Fortin de las Flores, 14–21 September 1954 (FXW); ♀, Jalapa (C); 16 ♀, Orizaba, 1960, 1962 (LB); 2 ♀, 11 ♂, April, May, July, September, October 1914 (RB); ♀, S Lucrecia (C); 2 ♂, Minatitlan, 26 August–1 September 1961 (RD); ♂, Veracruz (C); ♂, same locality, 28 July–11 August 1956 (RD and KD). YUCATÁN: ♀, 2 ♂, North Yucatan (Gamer); 2 ♀, Chichen Itza.

**CENTRAL AMERICA:** COSTA RICA: ♀, Filadelfia, Guanacaste, 1 August 1962 (W and CDM); 2 ♂, 3 mi NW Liberia, 400 ft, 28 July 1963 (S and B); ♂, 8 mi NW Liberia, 400 ft, 28 July 1963 (S and B); ♀, 7 mi SE Liberia, 400 ft, 29 July 1963 (S and B); ♀, ♂, 6 mi SE Liberia, 300 ft, 26–27 July 1963 (S and B); ♀, 2 ♂, Playa del Coco, Guanacaste, 5 August 1964 (MN); ♂, same locality and date (R and GR); ♀, ♂, Puerto Viejo, 100 m, 1 August 1964 (R and GR). EL SALVADOR: 2 ♀, Quezaltepeque, 30 June, 2 August 1961 (MEI); 5 ♀, 16 ♂, same locality, 500 m, 17–19, 21–23 June, 6 July 1963 (C and I); 4 ♂, same locality, 3 July 1963 (S and B); ♂, 5 mi N Quezaltepeque, Hacienda Capolinas, La Lib, 450 m, 21 December 1964 (MEI); 2 ♀, 4 ♂, Mount San Salvador, 8 July 1963 (C and I). GUATEMALA: ♂, "Guatemala," 300 m, 23 May; ♀, ♂, Santa Emilia, Pochuta, 1000 m, February–March 1931 (JB). HONDURAS: 2 ♂, Amopala, 29 March (B); 2 ♂, Prieta, 5 April 1924. NICARAGUA: ♀, Chinandega (CFB). PANAMA: 5 ♂, Barro Colorado Island, 15 August–26 September 1928 (PR); 3 ♀, same locality, 26–27 February, 18 March 1933 (FEL); ♂, same locality, 24 March 1933 (HES); 7 ♀, same locality, 8 March, 8, 21, 22, 25 April, 26 May 1952 (CWR); ♀, same locality, 23 July 1963 (C and I).

**PREY RECORD.**—*Amblycerus* species near *A. champi-*

oni Pic (Barro Colorado Island, determined by J. M. Kingsolver).

PLANT RECORD.—*Lythrum* species (San Luis Potosí).

### 10. *Cerceris crotonella* Viereck and Cockerell

FIGURES 10, 104a-c

*Cerceris crotonella* Viereck and Cockerell, 1904:139.—Scullen 1951:1007; 1965a:346, 351, 374-376, figs. 14, 117a, b, c.

TYPES.—The type female of *C. crotonella* Viereck and Cockerell, taken at Las Cruces, N. Mex., 25 September 1895, on *Croton neomexicanum* (Cockerell), is at the Academy of Natural Sciences of Philadelphia (10039).

DISTRIBUTION.—Known in Mexico only from one record of each from northern Sonora and north-central Chihuahua as follows:

MEXICO: CHIHUAHUA: ♀, Villa Ahumada, 3700 ft, 28 July 1953 (UKE). SONORA: ♀, 20 mi SW Sonoyta, 17 June 1956 (EO).

PREY RECORD.—None.

PLANT RECORD.—None

### 11. *Cerceris echo echo* Mickel

FIGURES 11, 105a-c

*Cerceris echo* Mickel, 1916:412.—Mickel 1917b:453.—Scullen 1951:1007.

*Cerceris echo echo*.—Scullen 1965a:346, 376-377, figs. 15, 118a, b, c.

*Cerceris rufinoda crucis* H. S. Smith, 1908:370 [in part].—Scullen 1951:1010.

TYPE.—The type female of *C. echo* Mickel, taken at Monroe Canyon, Sioux Co., Nebr., 4 August 1908 (C. H. Gable), is at the University of Nebraska.

DISTRIBUTION.—The north-central plateau area of Mexico south to the state of Aguascalientes. Specimens are as follows:

MEXICO: AGUASCALIENTES: ♂, 12 km N Rincon de Romos, 28 July 1951 (PDH). CHIHUAHUA: ♂, Villa Ahumada, 28 June 1947 (RME); 2♂, same locality, 28 July 1953 (UKE); ♂, 16 mi SE Chihuahua, 11 July 1947 (RME); 3♂, 239 mi S Ciudad Juarez, 1 July 1947 (RME); ♂, 29 mi E Hidalgo del Parral, 5000 ft, 21 June 1956 (HAS). COAHUILA: ♀, ♂, Guadalupe, 23 August 1947 (RME). DURANGO: ♀, 14 mi NE Durango, 6200 ft, 17 June 1956 (HAS); 2♂, Nombre de Dios, 1, 5 August 1951 (PDH); ♂, same locality, 5 August 1951 (HEE). ZACATECAS: ♂, Fresnillo, 15 August 1947 (RME).

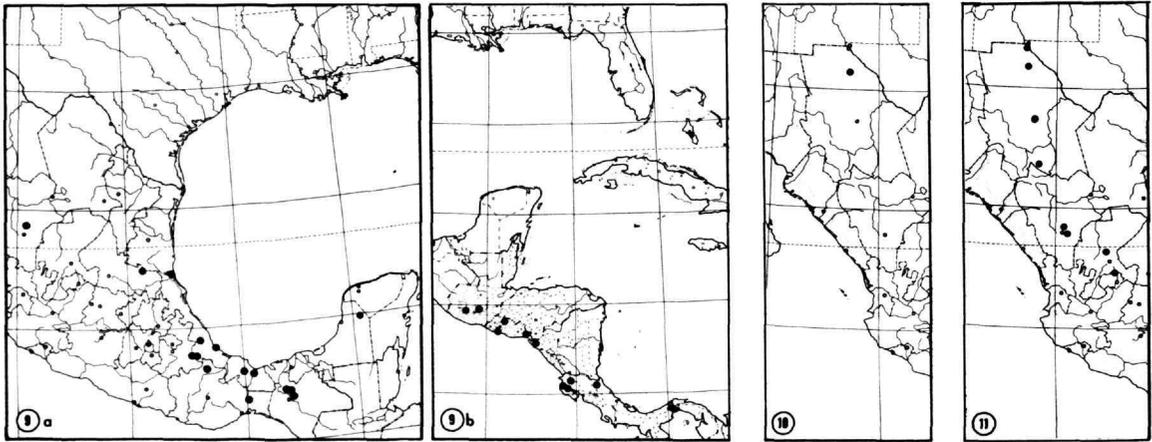
PREY RECORD.—None.

PLANT RECORD.—None

### 12a. *Cerceris finitima finitima* Cresson

FIGURES 12, 106a-c

*Cerceris finitima* Cresson, 1865:125.—Packard 1866:61.—Cresson 1887:282.—Schletterer 1887:491.—Robertson 1890:200; 1891:570; 1892a:108; 1892b:274; 1894:455, 457.—Dalla Torre, C. G., 1897:460.—Bridwell 1898:209.—Ashmead 1899:295.—Viereck and Cockerell 1904:138.—Smith, H. S., 1908:370.—Banks 1912:27.—Stevens,



FIGURES 9a-11.—9a, 9b, *C. cribosa* Spinola; 10, *C. crotonella* Viereck and Cockerell; 11, *C. echo* Mickel.

1917:422.—Rohwer 1917:244.—Mickel 1917b:453.—Rau 1928:338.—Strandtmann 1945:312.—Scullen 1951:1007. *Cerceris finitima* var. *nigroris* Banks, 1912:27.—Mickel 1917b:453.—Scullen 1951:1008. *Cerceris finitima finitima*.—Scullen, 1965a:347, 352, 378–380, figs. 17, 119a, b, c.

**TYPES.**—The type female of *C. finitima* Cresson from Illinois (Dr. Lewis) is at the Philadelphia Academy of Natural Sciences (1948). The type male of *C. finitima* var. *nigroris* Banks, from Falls Church, Va., is at the Museum of Comparative Zoology (13768).

**DISTRIBUTION.**—Limited records from north and central Mexico. Specimens are as follows:

**MEXICO:** CHIAPAS: ♂, Suchiapa, 18 August 1957 (PDH). CHIHUAHUA: ♀, Bachimba, 7 September 1950 (RFS); 5 ♀, 7 ♂, 35 mi N Chihuahua, 5400 ft, 4 September 1963 (S and B); 2 ♀, Colonia Juraze (DEB); ♀, Cynde Santa Clara, 5 mi W Parrita, 31 August 1956 (JWM); ♀, Garcia, 1931 (B and C); ♀, ♂, Hidalgo del Parral, 5000 ft, 21 June 1956 (HAS); 3 ♂, 29 mi E Hidalgo del Parral (HAS); 2 ♀, 18 mi W Jimenez, 10 August 1951, at *Baccharis* (PDH); ♀, 2 ♂, Samalayuca, 6 August 1950 (RFS); 3 ♂, Santa Clara Canyon, 5 mi W Parrita, 6 July 1954 (EIS); 2 ♂, same locality, 6 July, 1 October 1956 (JWM). COAHUILA: ♂, 15 mi N Saltillo, 4450 ft, 9 September, 1963 (S and B). DURANGO: 3 ♀, 14 mi NE Durango, 6200 ft, 17 June 1956 (HAS); 3 ♀, 28 mi NE Durango, 6400 ft, 17 June 1956 (HAS); ♀, 156 mi N Durango, 6400 ft, 20 June 1956 (HAS). JALISCO: ♂, Lagos de Moreno, 4 August 1954 (EGL); 3 ♂, SE Plan de Barraneas, 8 July, 25 August 1963 (P and S). NAYARIT: 10 ♂, Jesus Maria, 26–27 June, 6 July 1955 (BM). NUEVO LEÓN: ♀, Monterrey, 5 July 1908. SINALOA: ♂,

4.6 mi E Chupaderos, 22 August 1964 (MEI); 2 ♂, 8 mi S Elota, 2 July 1963 (P and S). SONORA: ♀, ♂, Alamos, 1200 ft, 22 September 1963 (S and B); ♂, Cocorit, 28 June 1963 (P and S); 4 ♂, 38 mi NW Obregon, 100 ft, 23 September 1963 (S and B).

**PREY RECORD.**—None.

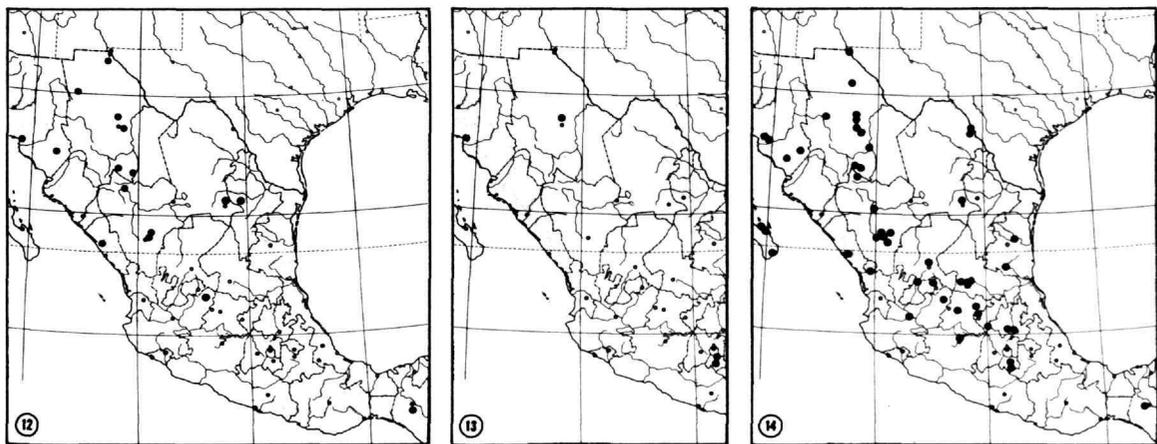
**PLANT RECORD.**—*Baccharis* (Chihuahua).

### 12b. *Cerceris finitima morelos*, new subspecies

#### FIGURE 13

**FEMALE.**—Length 7 mm. Black with light yellow and white markings. The color pattern in general is similar to that of *C. finitima vierecki* Banks except that the light band on the abdominal terga 1, 2, and 3 are distinctly light yellow and the bands on terga 4 and 5 are white. The abdominal bands on *C. finitima vierecki* Banks are all white, and the same bands on *C. finitima finitima* Cresson are all yellow. Also the light area on the distal end of the hind femori of the subspecies *C.f. morelos* is greatly reduced compared with the subspecies *C.f. vierecki* and the nominate subspecies. The tegulae of *C.f. morelos* are low and smooth as on *C.f. vierecki*, while on the nominate subspecies they are punctate and elevated. In other respects the structure and coloration of the female of the subspecies *C.f. morelos* are similar to those of the subspecies *C.f. vierecki*.

**MALE.**—Length 7 mm. The male of *C. finitima morelos* Scullen is, in most respects, like the male of *C. finitima vierecki* Banks except that the light bands



FIGURES 12–14.—12, *C. finitima finitima* Cresson; 13, *C. f. morelos*, new species; 14, *C. f. vierecki* Banks.

of the terga are definitely light yellow on *C.f. morelos* while the corresponding bands on *C.f. vierecki* are white.

**TYPES.**—The type female and allotype male of *C. finitima morelos* Scullen, taken from 14 miles south of Cuernavaca, Morelos, Mexico, at 3600 feet elevation, 28 August 1963 (H. A. Scullen and Duis Bolinger), are at the National Museum of Natural History (USNM 71066). Paratypes are as follows:

**MEXICO: CHIHUAHUA:** ♂, 35 mi N Chihuahua, 5400 ft, 14 September 1963 (HAS and DB). **MORELOS:** 3 ♀, 24 ♂, 14 mi S Cuernavaca, 3600 ft, 28 August 1963 (HAS and DB). **SONORA:** ♀, 38 mi NW Obregon, 100 ft, 23 September 1963 (S and B).

**DISTRIBUTION.**—Most records are from the state of Morelos with the two widely separated records from the far north and northwest. A few specimens from Arizona and New Mexico show a yellowing of the abdominal bands.

**PREY RECORD.**—None.

**PLANT RECORD.**—None

### 12c. *Cerceris finitima vierecki* Banks

#### FIGURE 14

*Cerceris vierecki* Banks, 1947:30.—Scullen 1951:1011.  
*Cerceris finitima vierecki*.—Scullen, 1960:80; 1965a:347, 352, 382–383, fig. 19.

**TYPE.**—The type female of *C. vierecki* Banks, taken at Temple, Ariz., 1 August (Bequaert), is at the Museum of Comparative Zoology (23544).

**DISTRIBUTION.**—Widely distributed over Mexico but far more common in the north-central section. Specimens are as follows:

**MEXICO: AGUASCALIENTES:** 2 ♂, 40 mi N Aguascalientes, 6600 ft, 15 June 1956 (HAS). **BAJA CALIFORNIA SUR:** ♀, La Paz, 11 October 1955 (FXW); 5 ♂, 10 mi SE La Paz, 3 August 1966 (PDH); ♀, San Jose Viejo, 17 July 1968 (D and C). **CHIAPAS:** 2 ♀, Suchiapa, 17 July 1957 (JAC and BJR); ♂, 5 mi E Tuxtla, 13 July 1957 (JAC and BJR). **CHIHUAHUA:** 4 ♀, 4 ♂, 10 mi N Chihuahua, 17 August 1965 (HEE); 2 ♀, 2 ♂, 15 mi N Chihuahua, 5350 ft, 14 September 1963 (S and B); 17 ♀, 3 ♂, 15 mi S Chihuahua, 16 August 1965 (HEE); 16 ♀, 11 ♂, 35 mi N Chihuahua, 5400 ft, 14 September 1963 (S and B); 2 ♂, 4 mi N Ciudad Camargo, 29 July 1967 (RCG and party); 3 ♂, Colonia Juarez (DEB); 11 ♀, 11 ♂, 9 mi S Hidalgo del Parrall, 19, 26, 31 July, 5, 26 August 1967 (RCG, CRK, KL); 2 ♀, ♂, 29 mi E Hidalgo del Parrall, 5000 ft, 21 June 1956 (HAS); ♀, ♂, 8 mi W Matachie, 6400 ft, 8 July 1947 (CDM); ♂, 3 mi NW Meoqui, 13 July 1964 (JP); ♂, Montezuma, 4 July 1954 (JWM); ♀, Salaicas,

20 August 1941 (GMB); 4 ♀, 2 ♂, Santa Clara Canyon, 5 mi W Parrita, 6 July 1954, 3 August, 1 September, 1 October 1956 (JWM); ♂, same locality, 6 July 1954 (EIS). **COAHUILA:** ♂, 20 mi S Piedras Negras, 10 August 1959 (LAS and ASM); ♀, 30 mi S Piedras Negras, 10 August 1959 (LAS and ASM); ♂, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B); ♀, 6 mi S Villa Matamoros, 8 August 1967 (RCG and party). **DURANGO:** 2 ♂, Durango, 6300 ft, 18 June 1956 (HAS); ♂, 10 mi W Durango, 12 July 1954 (JWM); ♀, 25 ♂, same locality, 6600 ft, 16 June 1964 (DB); 22 ♀, 31 ♂, 20 mi W Durango, 7100 ft, 16 June 1964 (DB); 31 ♀, 195 ♂, 4 mi W Durango, 6300 and 5100 ft, 18–19 September 1963 (S and B); 2 ♀, 13 ♂, 15 mi N Durango, 6550 ft, 17 September 1963 (S and B); 2 ♂, 16 mi N Durango, 5900 ft, 16 June 1964 (DB); ♀, ♂, 156 mi N Durango, 6400 ft, 20 June 1956 (HAS); 5 ♀, 27 ♂, 28 mi NE Durango, 6400 ft, 17 June 1956 (HAS); 3 ♀, 6 ♂, 14 mi NE Durango, 6200 ft, 17 June 1956 (HAS); 9 ♂, 15 mi SE Durango, 6100 ft, 19 September 1963 (S and B); 2 ♀, 42 mi S Hidalgo del Parral, 6050 ft, 24 October 1957 (HAS); 2 ♂, Nombre de Dios, 5–6 August 1951 (PDH); ♂, same locality and date (HEE); ♂, 16 mi S Nombre de Dios, 14 July 1954 (JWM). **GUANAJUATO:** ♀, Guanajuato (ED); ♂, same locality, 15 August 1953 (C and PY). **HIDALGO:** 4 ♀, 22 mi SW Actopan, 6850 ft, 27 August 1962 (O and N); ♀, ♂, 12 mi W Del Parral, 6200 ft, 14 July 1964 (C and P); ♂, 8 ♂, 3 mi W Pachuca, 24 June 1953 (UKE); ♀, 8 mi W Pachuca, 24 June 1954, at pepper (UKE). **JALISCO:** ♂, El Tigre, 18 July 1954 (EIS); ♀, Guadalajara, 17 September 1957 (R and KD); ♀, ♂, 9 mi S Guadalajara, 24, 29 July 1965 (HEE); 3 ♂, Villa Guadalupe, 26 July 1951 (PDH); ♂, same locality and date (HEE); ♂, Lagos de Moreno, 6400 ft, 19 August 1954 (JGC); ♀, ♂, same locality, 21 August 1954 (CDM); ♀, 6 mi SE Lagos de Moreno, 5900 ft, 27 July 1962, at *Helenium* species (UKE); 2 ♂, 22 mi NW La Piedad, 23 July 1954 (EIS); ♂, same locality and date (JWM); 2 ♂, 3 mi SE Plan de Barrancas, 8 July 1963 (P and S). **MEXICO:** 2 ♂, Teotihuacán Pyramid, 7 July 1951 (PDH). **MICHOACÁN:** 4 ♂, 4 mi N Morelia, 6000 ft, 28 July 1962, at pepper tree (UKE). **MORELOS:** ♀, Cuernavaca, 12–19 July 1961 (R and KD); ♀, 10 mi SE La Cueva, 9 July 1959 (RFS); 2 ♂, 6 mi S Temixco, 16 July 1963 (P and S); ♂, Tetecala, 2800 ft, 10 August 1962 (HEE); ♀, 11 mi S Tlaltizapan, 16 August 1962 (R and M). **NAYARIT:** 3 ♂, Acapulpaneta, 4 May 1953 (RCB and EIS); 2 ♂, Ahuacatlan; 3 ♂, Jesus Maria, 26 June 1955 (BM). **QUERÉTARO:** ♀, ♂, 41 mi N Querétaro (near San Luis de la Paz, Guanajuato) 6500 ft, 19 September 1963 (S and B); ♀, San Juan del Rio, 6 October 1962 (CGM). **SAN LUIS POTOSÍ:** 3 ♀, 4 ♂, 17 mi NE San Luis Potosí, 6200 ft, 6 September 1963 (S and B); ♂, 29 mi SW San Luis Potosí, 6800 ft, 25 July 1962 (UKE); ♀, 3 ♂, 31 mi S San Luis Potosí, 5900 ft, 5 September 1963 (S and B); 2 ♀, 2 ♂, 40 mi S San Luis Potosí, 5700 ft, 5 September 1963 (S and B). **SINALOA:** 4 ♂, 4.6 mi E Chupaderos, Rt 40, 22 August 1964 (MEI); 2 ♂, 25 mi E Mazatlan, 6100 ft, 19 June 1964 (DB); ♀, 20 mi E Villa Union, 235 m, 20 August 1964 (EIS). **SONORA:** 14 ♀, 10 ♂, 10 mi SE Alamos, 25 June 1963

(P and S); 6♀, 4♂, 10 mi E Navojoa, 13 August 1959 (WLN and FGW); ♂, 15 mi N Obregon, 24 June 1956 (R and KD); ♀, 38 mi NW Obregon, 100 ft, 23 September 1963 (S and B). TAMAULIPAS: ♀, 18 mi E Ciudad Monte, 13 August 1959 (LAS and ASM); ♂, Padilla, 15 June 1953 (UKE). ZACATECAS: ♀, 9 mi S Fresnillo, 20 August 1956 (JWM); ♂, 5 mi S Fresnillo, 7 August 1954 (EGL and party); ♂, 11 mi N Tabasco, 12 August 1965 (HEE).

PREY RECORD.—None.

PLANT RECORD.—*Helenium* species (Jalisco).

### 13. *Cerceris flavida* Cameron

*Cerceris flavida* Cameron, 1890:116–117.—Dalla Torre, C. G., 1897:460.—Ashmead 1899:296.

#### DESCRIPTION.—

Eyes slightly diverging beneath. Hinder ocelli separated from the eyes by the length of the second and third antennal joints united, and from each other by the length of the fourth. Third antennal joint twice the length of, the fourth hardly one half longer than, the second. Clypeus in the middle sharply convex; the convex portion triangular, gradually (but slightly) produced to the apex, from which it slopes down obliquely. Punctuation of the head moderate; there is a transverse depression behind the ocelli; the hair is longish and griseous. Punctuation of the mesonotum and median segment weaker and more scattered than on the head; the mesopleurae coarsely rugose; the heart-shaped area of the median segment impunctate, with a crenulated furrow down its center, the pleurae densely covered with long griseous hair.

Abdomen shining; the punctuation as on the mesonotum; the petiole as long as broad; pygidial area elongate, narrowed at the base and apex, the surface rough; lateral hair-fringe pale, moderate; incision in the hypopygium short, not reaching to the middle, the hypopygium finely and closely punctured. The face (except the oblique lower part of the clypeus), an interrupted line on the pronotum, the tegulae, the metanotum, a line on all the abdominal segments (except the last), two lines on the third and fourth ventral segments, the apex of the femora, and tibiae and tarsi, yellow; the apex of the hinder tibiae marked with black, the tarsi infuscated. Wings almost hyaline; the second transverse cubital nervure obsolete, the cubitus being thus continuous with the third cubital cellule. (Cameron 1890:116–117.)

TYPES.—No types of this species were found in the British Museum by the author in 1959.

From the inadequate description, I am unable to recognize this species; however, from the size of the female, 7 mm, the species probably belongs to Group I. It is not illustrated in the *Biologia Centrali-Americana*. Cameron gives a brief description of a male, which he says "is apparently the male of this species."

DISTRIBUTION.—*C. flavida* Cameron is known only from the type-locality, "Cordova, Mexico (Saussure)."

PREY RECORD.—None.

PLANT RECORD.—None

### 14. *Cerceris flavomaculata* Cameron

*Cerceris flavomaculata* Cameron, 1890:115–116, pl. vii: fig. 9.—Dalla Torre, C. G., 1897:461.—Ashmead 1899:296.

#### FEMALE.—

Eyes nearly parallel. Ocelli almost in a triangle; the posterior pair separated from the eyes by a little more than the length of the third antennal joint, and by nearly the same length from each other. Third antennal joint nearly one half the length of the fourth. Clypeus broadly convex, projecting gradually to the apex, which projects obliquely over the labium. Head above the antennae rugosely punctured; below it aciculate, marked with scattered punctures. Thorax rugosely punctured; the punctures on the median segment large and deep; the heart-shaped area rugosely striolate laterally, the centre aciculate, and with a narrow not very distinct central furrow; scutellum convex. Mesopleural furrow not very distinct; propleura aciculate, hollowed, with a few striae in the centre; the hollow on the metapleurae wide and deep, slightly aciculate. Median segment with a gradual rounded slope.

Abdomen not much longer than the head and thorax united, strongly punctured throughout. Pygidial area straight; aciculate, the base with a few large punctures; hollowed towards the apex; slightly narrowed at the base; the apex almost transverse. Hypopygium with the incision extending to the basal third; sharply triangular at the base. The clypeus, the inner orbits of the eyes, the scape beneath, a small mark behind the eyes, a broad interrupted line on the pronotum, a mark on either side of the scutellum, the metanotum, an oblique mark on either side of the apex of the heart-shaped area, a stripe down the side of the median segment, the sides and the greater part of the petiole above, a narrow band on the third segment, a much narrower one on the apex of the fourth and fifth segments, and the second and third ventral segments at the apex, clear yellow; the greater part of the pygidial area fulvous. All the femora at the apex, the tibiae in front, and the anterior four tarsi in front, white; the spurs and spines pale testaceous. (Cameron 1890:115–116.)

#### MALE.—

The male has the clypeus convex, but not largely so, rounded at the apex, the extreme middle of the apex with a small projection, apparently incised; rugosely punctured. Pygidial area finely and irregularly punctured. The clypeal projections, the antennal tubercle, the scutellum entirely, the metanotum, two oblique marks on the middle of the median segment and a small irregular mark on the side, the greater part of the petiole, an interrupted band on the second segment, a well-marked one on the fourth, a

narrower one on the fifth, and a still narrower one on the sixth, yellow. Legs as in the female. (Cameron 1888:116).

TYPE.—The only type in the British Museum is a male. Cameron's illustration appears to be a female, as he states. It is from Costa Rica, Rio Sucio, Cache (Rogers). The type in the British Museum of Natural History is 21.1,376.

The abdomen is lost from the above type. From the remaining parts of the type and the descriptions given by Cameron, positive identification is not possible. It belongs to Group I as recognized by the present author. The length is 7 mm. Until a more positive determination is possible, the species will be retained but unrecognized.

### 15. *Cerceris irene* Banks

FIGURES 15, 107a-c

*Cerceris irene* Banks, 1912:26.—Scullen 1951:1008; 1965a:346, 383-384, figs. 20, 120a, b, c.

TYPE.—The type female, taken from Fedor, Lee Co., Tex., 25 June (Birkman), is at the Museum of Comparative Zoology (13781).

DISTRIBUTION.—One very dark specimen has been recorded from Mexico by the present author as follows: ♂, Playa Altamira, Tampaulipas, 3 July 1968 (M. S. Wasbauer and J. E. Slansky). Since this species is not uncommon in southern Texas, it should be recorded from northeastern Mexico. The male of *C. irene* Banks has not been isolated.

PREY RECORD.—None.

PLANT RECORD.—None

### 16a. *Cerceris kennicottii kennicottii* Cresson

FIGURES 16, 108a-c

*Cerceris kennicottii* Cresson, 1865:128.—Packard 1866:63.—Cresson 1872:231; 1887:282.—Schletterer 1887:495.—Robertson 1890:200; 1894a:457, 471; 1896b:73.—Dalla Torre, C. G., 1897:464.—Bridwell 1898:209.—Ashmead 1899:295.—Banks 1912:25.—Mickel 1917b:452.—Hendrickson 1930:159.—Banks 1947:30.—Scullen 1951:1008; 1965a:346, 352, 384-386, figs. 21, 121a, b, c. *Cerceris eriogoni* Viereck and Cockerell, 1904:139.—Banks 1947:30.—Scullen 1951:1007.

TYPES.—The type male of *C. kennicottii* Cresson, from Louisiana (Robert Kennicott), is at the Philadelphia Academy of Natural Sciences (1952). The type male of *C. eriogoni* Viereck and Cockerell, from Dripping Springs, Organ Mountains, N. Mex., at

flowers of *Eriogonum* (Cockerell), is at the Philadelphia Academy of Natural Sciences (10377).

DISTRIBUTION.—Single specimens of females most nearly representing the nominate subspecies of *C. kennicottii* Cresson are recorded from the following locations:

MEXICO: JALISCO: ♀, 9 mi S Autlan, 30 July 1965 (HEE). MORELOS: ♀, 5 mi S Cuernavaca, 4000 ft, 23 March 1959 (HEE). VERACRUZ: ♀, Puente Nation [sic], 9 August 1961 (R and KD).

The males, which in many instances cannot be segregated into subspecies, are widely distributed over Mexico and Central America.

Owing to the great variation in the extent of the light markings of the males of subspecies of *C. kennicottii*, it is often difficult or impossible to recognize subspecies of males unless they are associated with females. The extent of the light marks on the surface of the clypeal process, the scutellum, and the light band on the third tergum of the abdomen are all quite variable even within one subspecies. It is also difficult or impossible to separate some male specimens from males of some closely related species.

PREY RECORD.—None.

PLANT RECORD.—*Cucurbita moschata* (Tabasco).

### 16b. *Cerceris kennicottii bakeri* Cameron

FIGURE 17

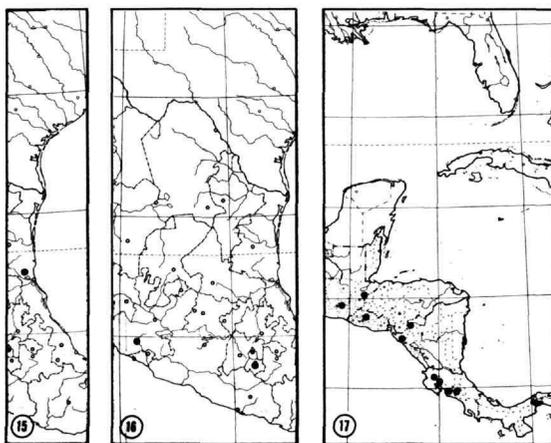
*Cerceris bakeri* Cameron, 1904:67.

*Cerceris chinandegaensis* Cameron, 1904:66-67.

*Cerceris iresinides* Rohwer, 1914:522-3.

FEMALE.—Length 8 mm. Black with light yellow markings. Structurally this subspecies is very close to the nominate subspecies. The female of *C. kennicottii bakeri* Cameron is distinguished by the greatly extended yellow that embodies most of the scutellum, metanotum, the propodeum, including the triangular enclosure, the first tergum of the abdomen, and most of the second tergum exclusive of a deep emargination; terga 3, 4, and 5 with narrow posterior lines; sterna largely dark except for sternum 1, an interrupted band on sternum 2, and small lateral spots on sterna 3 and 4.

MALE.—The males that appear to be associated with the subspecies *C. kennicottii bakeri* Cameron and that were described by Cameron as *C. chinandegaensis* from the same locality are much less distinctive and more variable than the females. A few



FIGURES 15–17.—15, *C. irene* Banks; 16, *C. kennicottii kennicottii* Cresson; 17, *C. k. bakeri* Cameron.

show small yellow marks on the propodeum, including the triangular enclosure.

Although the description of the male of *C. chinandegaensis* Cameron precedes that of the female of *C. bakeri* Cameron, the latter name is used because the females of the genus *Cerceris* are far more dependable in taxonomic characters, are used by the present author.<sup>1</sup>

**TYPES.**—The present author has examined two females that appear to belong to the original cotype series of *C. bakeri* Cameron collected by Baker at Chinandega, Nicaragua. One of these females is at the British Museum of Natural History (21.1,371). The second specimen, with the same locality label, is at Pomona College, Claremont, Calif. Four male specimens that also appear to belong to the original cotype series have been examined by the present author. These males also were taken at Chinandega, Nicaragua, by Baker. One of these male specimens is at the British Museum (Natural History) (21.1,374), one specimen is at Cornell University (lot 546: subject 207), and two are at Pomona College, Claremont, Calif. One of the specimens at Pomona has what appears to be an original determination label by Cameron.

The type male of *C. iresinides* Rohwer is a male at

<sup>1</sup> The males of *C. kennicottii* are extremely variable in regard to the amount of color on the face of specimens from Mexico and Central America. Many males can be determined as to subspecies only by their association with the females.

the National Museum of Natural History (USNM 16024). Rohwer calls this a “female” by error. It is from Gualan, Guatemala, taken on *Iresine paniculata*.

**DISTRIBUTION.**—Central America with one record from Brazil. Specimens are as follows:

**COSTA RICA:** ♀, 9 mi NW Esparta, 22 July 1965 (PJS); ♀, Santa Ana, San Jose Province, 3000 ft, 24 February 1964 (HEE); ♀, 12 mi SW Canas, Guanacaste Province, 25 ft, 27 February 1964 (HEE). **EL SALVADOR:** 2♀, Quezaltepeque, 17, 22 June 1963 (C and I); ♀, same locality, 3 July 1963 (S and B). **GUATEMALA:** ♂, Guatemala City (WPC); ♂, Gualan, 18 February 1912 (WPC). **NICARAGUA:** ♀, Chinandega (B); 2♀, 28 mi S Somota, 2000 ft, 31 July 1963 (S and B). **PANAMA:** ♂, Ancon, Canal Zone, 13 January 1916 (THH); ♀, Barro Colorado Island, Canal Zone, 5 March 1939.

**PREY RECORD.**—None.

**PLANT RECORD.**—*Iresine paniculata* (Guatemala).

#### 16c. *Cerceris kennicottii smithiana* Cameron

FIGURE 18

*Cerceris smithiana* Cameron 1890:119, pl. vii: figs. 17, 17a, b, c, d.—Dalla Torre, C. G., 1897: 477.—Ashmead 1899:296.

**FEMALE.**—Length 8 mm. Black with creamy-white to very light yellow markings; closely pitted; pubescence very short.

Head subequal in width to the thorax; black except for small frontal eye patches and a small spot on the mandibles near the base, all of which are white to yellow; clypeal border with five indistinct denticles,

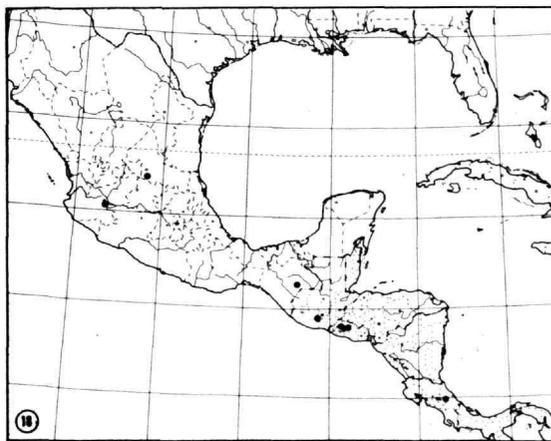


FIGURE 18.—*C. kennicottii smithiana* Cameron.

the mesal one much the smallest; clypeal process truncate with three low, rounded denticles on its free margin; mandibles with one small denticle, distad of which there is a slightly elevated carina; antennae normal in form with a light patch on the scape.

Thorax black except for a band on the pronotum, the scutellum, the metanotum, a triangular area with a smaller, more lateral patch on the propodeum, all of which are creamy white to light yellow; tegulae normal; enclosure nearly smooth and with a medial groove; mesosternal tubercle small with a minute light spot; legs dark fuscous except for an elongate patch on the hind femora and elongate patches on all tibiae; wings subhyaline, but darker along the anterior borders.

Abdomen dark fuscous to black except for a wide band on tergum 1, a medium band becoming greatly expanded laterally on tergum 2, a narrow band on tergum 4, and a broken line on tergum 5, all of which are very light yellow to white; venter immaculate; pygidium as illustrated (Figure 108c).

**MALE.**—Length 7 to 8 mm. Black with creamy-white to light yellow markings; closely pitted; pubescence very short.

Head subequal in width to the thorax; black except frontal eye patches and an evanescent spot on the medial lobe of the clypeus, all of which are white to light yellow; mandibles with a small acute denticle; antennae normal in form.

Thorax black except for a broken band on the pronotum, a band on the scutellum, the metanotum, a triangular area on the propodeum, and the tegulae, all of which are creamy white to light yellow; tegulae normal in form; enclosure with the usual medial groove and deeply pitted along the lateral borders; mesosternal tubercle absent; legs black except for elongate patches on all tibiae and most tarsi; wings normal.

Abdomen black except tergum 1, a band on tergum 2 that extends forward along the lateral margins of the tergum, an evanescent line on tergum 3, solid narrow lines on terga 4, 5, and 6, sternum 1, basal portion of sternum 2, and evanescent lateral spots on other sterna, all of which are white to light yellow.

**TYPES.**—The type female of *C. smithiana* Cameron from Atoyac, Veracruz, Mexico (H. H. Smith), is at the British Museum of Natural History (21.1,369).

**DISTRIBUTION.**—Scattered records from southern Mexico, but more common in Central America. Specimens are as follows:

**CENTRAL AMERICA: COSTA RICA:** 6♂, Turrialba, 2080 ft, 12, 24 July 1963 (S and B); 59♂, 6 mi W Turrialba, 3800 ft, 13–15, 23 July 1963 (S and B). **EL SALVADOR:** 4♂, Mount San Salvador, 8 July 1963 (DC and MEI); ♀, Quezaltepeque, 17 June 1963 (DC and MEI). **GUATAMALA:** ♀, 5 mi E Escuintla, 2500 ft, 1 July 1963 (S and B); 2♀, Moca Guatalon, 1000 m, March–April 1931 (JB).

**MEXICO: CHIAPAS:** ♀, Comitán, 3 March 1953 (RCB and EIS). **JALISCO:** ♂, 9 mi S Guadalajara, 29 July 1965 (HEE). **SAN LUIS POTOSÍ:** 3♂, 40 mi S San Luis Potosí, 5700 ft, 5 September 1963 (S and B).

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

#### 16d. *Cerceris kennicottii zapoteca* Saussure

FIGURES 19, 109a, b

*Cerceris zapoteca* Saussure, 1867:89.—Schletterer 1887:506.—Cameron 1890:118.—Dalla Torre, C. G., 1897:481.—Ashmead 1899:296.

*Cerceris montivaga* Cameron, 1900:119, pl. vii: fig.16.—Dalla Torre, C. G., 1897:468.—Ashmead 1899:296.

*Cerceris kennicottii beali* Scullen, 1965a:346, 386–388, fig. 22.

**FEMALE.**—Length 7 to 8 mm. Black with creamy-white to light yellow markings; deeply and closely punctate.

Head slightly wider than the thorax; black except for large frontal eye patches, a patch on the clypeal process, a small patch on the frons, basal half of the mandibles, and the scape, all of which are creamy white to light yellow; mandibles bidentate; antennae normal in form.

Thorax black except for a broken band on the

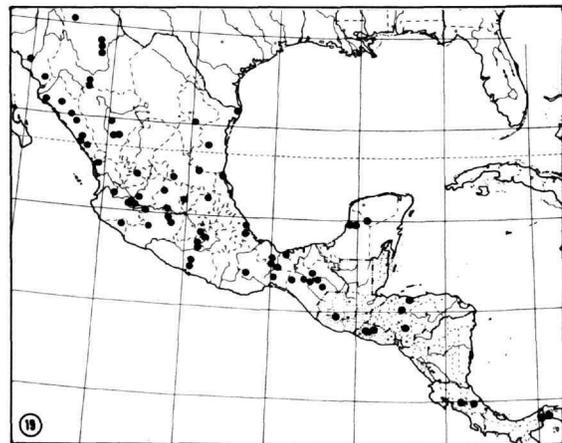


FIGURE 19.—*C. kennicottii zapoteca* Saussure.

pronotum, an unbroken band on the scutellum, and evanescent mark on the metanotum and tip of the mesosternal tubercle, all of which are very light yellow; enclosure smooth except for the medial groove; legs black to distal ends of femora; more distal segments of all legs more or less light colored.

Abdomen black except for narrow bands on terga 1, 2, 4, and 5, that on tergum 2 wider but deeply emarginate; tergum 3 black but with lateral light patches; venter immaculate; pygidium as illustrated (Figure 109*b*).

**MALE.**—Length 7 mm. Color and punctuation as on the female, except the light patch on the medial lobe of the clypeus varies from none to quite large, there is a narrow band on tergum 6, and the male has no mesosternal tubercle.

The male type of *C. zapoteca* Saussure has no light marks on the medial lobe of the clypeus but otherwise agrees well with the large series taken in south-eastern Mexico. See the male description under *C. kennicottii kennicottii* Cresson (species number 16a) for more complete detail.

**TYPES.**—The type male of *C. zapoteca* Saussure taken at "Mexico calida. Prope Tampico" is at the Naturhistorisches Museum, Vienna, Austria. The type female of *C. montivaga* Cameron, taken at Chilpancingo in Guerrero, Mexico, at 4600 feet (H. H. Smith), is at the British Museum of Natural History (21.1.379).

The holotype female and the allotype male of *C. kennicottii beali* Scullen from Scottsdale, Ariz., 13 May 1961 (R. S. Beal), taken in copula, are deposited at the National Museum of Natural History (USNM 66157).

**VARIATION.**—The extent of the light coloration varies. A small amount of yellow may appear on the medial lobe of either sex. On many males the medial lobe is largely light. The light marks of either sex will vary from light yellow to almost white. Markings on the nominate form are more yellow.

**DISTRIBUTION.**—Recorded from northwestern border of Mexico to the southwestern states of Mexico. A limited number of borderline males have been taken in Central America. Specimens are as follows:

**MEXICO:** BAJA CALIFORNIA SUR: ♂, Big Canyon, Sierra Laguna, 13 October 1941 (R and B). CAMPECHE: 70♂, 20 mi E Campeche, 13, 16 August 1963 (S and B); 11♂, 31 mi E Campeche, 16 August 1963 (same collectors); 2♂, 35 and 39 mi E Campeche, 13, 16 August 1963 (same collectors). CHIAPAS: ♂, Cintalapa, 555 m, 14 November 1948 (HOW); 20♂, 5 mi E Cintalapa, 3 April 1953 (EIS

and RCB); ♀, Comitán, 3 March 1953 (RCB); ♂, 13 mi E Comitán, 3 August 1952 (EEG and CDM); 6♂, Ixtapa, 11 April 1962 (FDP); 4♂, 20 mi W San Cristóbal las Casas, 6000 ft, 3 May 1959 (HEE); ♂, Sinojovel, 18–31 July 1958 (JAC); ♂, 15 mi SE Simojovel, 8–15 July 1958 (JAC); ♀, 8♂, 7 mi SE Soyalo, 27 March 1953 (RCB and EIS); 4♂, 2 mi E Suchiapa, 25 March 1953 (EIS); 5♂, 3 mi E Tuxtla Gutierrez, 28 February 1953 (EIS and RCB); 2♂, 20 and 25 mi S Textla Gutierrez, 12 August 1963 (FDP and LAS); ♀, 2♂, 6 mi NW Villa Flores, 10 April 1962 (FDP). CHIHUAHUA: ♂, 15 mi N Chihuahua, 5350 ft, 14 September 1963 (S and B); 3♂, 35 mi N Chihuahua, 5400 ft, 14 July 1963 (S and B); ♀, 15 mi S Chihuahua, 16 August 1965 (HEE); ♀, 19 km S Chihuahua, 3047 ft, June (CDM); ♂, 7 mi SE Galeana, 4850 ft, 3 September 1963 (S and B); ♀, 2♂, 66 mi S Hidalgo del Parral (in Durango), 6350 ft, 20 June 1956 (HAS); ♀, ♂, 29 mi E Hidalgo del Parral, 5000 ft, 21 June 1956 (HAS); ♂, 42 mi S Hidalgo del Parral (in Durango), 6050 ft, 4 October 1957 (HAS); ♂, Santa Clara Canyon, 5 mi W Parrita, 21 June 1956 (JWM and DDL); ♀, 6 mi S Villa Matamoros, 4 July 1967 (RCG, CRK, and KL). COLIMA: 3♀, Colima, 1500 ft, 9 February 1954 (RRD). DURANGO: ♂, 6 mi SE Durango, 6200 ft, 19 September 1963 (S and B); 2♂, 12 mi N Durango, 6500 ft, 17 September 1963 (S and B); ♀, 5 mi S Durango, 6500 ft, 16 June 1956 (HAS); ♀, 10 mi W Durango, 6600 ft, 16 June 1964 (DB). GUANAJUATO: ♀, Leon, 5800 ft, 19 August 1954 (RRD); ♂, 13 mi SE Leon, 6000 ft, 19 August 1954 (CDM); ♂, 25 mi NW Salvatierra, 28 July 1954 (EIS). GUERRERO: ♀, Acaguizotla, 3500 ft, October (HHS); ♂, Chilpancingo, 4600 ft, June (HHS); 2♂, 8 mi S Chilpancingo, 4400 ft, 19 May 1959 (HEE); ♂, 18 mi S Iguala, 18 July 1963 (FDP and LAS); 2♀, ♂, 1.5 mi W Mochitlan, 6 August 1962 (UKE); ♂, 8 mi NE Taxco, 5450 ft, 8 August 1954 (JGC); ♂, 8 mi N Taxco, 5500 ft, 1 July 1959 (HEE); 3♂, 33 mi N Taxco (in Guerrero), 5700 ft, 29 August 1963 (S and B); ♂, Tierra Colorada, 2000 ft, October (HHS); ♂, 9 mi S Tierra Colorada, 21 July 1963 (FDP and LAS). HIDALGO: 3♀, 5♂, Jacala, 31 August, 1 September 1963 (S and B). JALISCO: ♂, 80 km, Arago Plano, 5 June 1962 (F. Pacheco); ♀, 6♂, Chapala, 5000 ft, 22 May 1956 (HAS); ♂, same locality, 19 June 1963 (S and B); 2♂, Guadalajara (C); ♀, 20 mi S Guadalajara, 5000 ft, 19 June 1963 (S and B); ♂, 65 mi E Guadalajara, 5100 ft, 20 June 1963 (S and B); ♀, 3♂, Villa Guadalupe, 26 July 1951 (HEE); ♂, same locality and date, on *Asclepias* species (PDH); ♀, 5 mi SE Plan de Barrancas, 3 May 1953 (RCB and EIS). MICHOACÁN: ♀, 11 mi E Apatzingan, 20 August 1954 (L, S, and M); ♂, Ixtlan, 9 June 1950 (DSE); 2♂, Jacona, 10 June 1950 (DSE); ♂, Jungapee, 2 June 1963 (FMP); ♂, 4 mi N Morelia, 6000 ft, 28 July 1962 (UKE); ♀, 3 mi N Tzitzio, 5500 ft, 29 July 1962 (UKE); 7♂, Zamora, 20 June 1963 (S and B). MORELOS: 8♂, 2 mi S Alpuyecá, 18, 28 May, 19 June 1959 (HEE); ♀, 2♂, 3 mi N Alpuyecá, 3400 ft, 4, 9 May 1959 (HEE and DMA); ♂, 14 mi S Antique, Tarnaulipas, 21 July 1954 (UKE); 6♂, Atotonilco, 13 May 1961 (FMP); ♂, Canyon de Lobos, Yauatepec, 4000 ft,

13 March 1959 (HEE); ♀, Cuautla, 22 August 1961 (FMP); 9♀, 5♂, Cuernavaca, 27 March 1962 (FDP); ♀, 5♂, 3 mi NW Cuernavaca, 6500 ft, 24, 29 May, 3, 27 June 1959 (HEE); 2♂, 4 mi NW Cuernavaca, 7500 ft, 12, 29 May 1959 (HEE); 7♀, 8♂, 5 mi E Cuernavaca, 22, 28–29 March, 5 May 1962 (LAS); 8♀, 17♂, same locality, 26, 29 March, 5 May 1962 (FDP); ♂, 3–6 mi S Cuernavaca, 4000 ft, 1 April 1959 (HEE); ♀, 5 mi E Cuernavaca, 29 March 1962 (FDP); ♂, 35 mi S Cuernavaca, 2600 ft, 4 July 1954 (CDM); ♂, 14 mi S Cuernavaca, 3600 ft, 28 August 1963 (S and B); ♀, 2♂, Huajintlan, 2800 ft, 11 August 1959 (HEE); ♀ 3♂, Las Estacas, 3000 ft, 6 April 1959 (HEE); ♂, same locality, 28 April 1963 (FMP); ♀, 2♂, Lake Tequesquitengo, 2800 ft, 16 March 1959 (HEE); ♂, Tetecala, 3500 ft, 25 March 1959 (E and A); 2♂, 6 mi S Tomixco, 30 March 1962, 16 July 1963 (P and S); ♀, 2♂, Xochicalco Pyramid, 16 July 1963 (P and S); ♂, 4 mi SW Yautepec, 3800 ft, 2 July 1961, on *Euphorbia* species (CDM); 8♂, Yautepec, 26 March 1962, 13, 31 July 1963 (P and S); ♀, ♂, same locality, 26 March 1962 (P and S); 2♀, 2♂, Canyon de Lobos, Yautepec, 4000 ft, 7, 13, 18 May 1959 (HEE); ♂, mountains near Cuernavaca (C). NAYARIT: ♂, Acaponeta, 4 May 1953 (B and S); ♂, Acapuneta, 4 May 1953 (RCB); ♂, 14 mi S Acapuneta, 14 June 1962 (OHJ); ♂, Ahuacatlan, 18–22 July 1951 at *Donnellsmithia Hintonii* (PDH); ♂, La Mesa de Nayar, 19 July 1955 (BM). NUEVO LEÓN: ♂, S of Montmorelos, 19 July 1954 (RRD). OAXACA: ♀, 11 mi N junction of Highways 190 and 185, 100 ft, 11 August 1963 (S and B); ♀, 14♂, Mitla, 27, 28 June, 20 August 1963 (S and B); 4♂, Oaxaca, 5068 ft, 24 August 1963 (S and B); ♂, 5 mi SE Oaxaca, 6150 ft, and ♂, 7 mi SE Oaxaca, same elevation, 21 August 1963 (S and B); ♂, 25 mi SE Oaxaca, 5600 ft, 26 June 1963 (S and B); ♀, 2♂, Tuxtepec (MF). QUERÉTARO: 3♂, 41 mi N Querétaro, 6500 ft, 19 September 1963 (S and B); ♀, 12 mi N Querétaro, 9 May 1962 (P and S). SAN LUIS POTOSÍ: ♂, 5 mi E Ciudad del Maiz, 4700 ft, 25 August 1954 (RRD); ♂, 9 mi E same locality, 3975 ft, 23 July 1962 (UKE); 5♂, El Salto, 1800 ft, 8 June 1961 (UKE); 7♂, 40 mi S San Luis Potosí, 5700 ft, 5–6 September 1963 (S and B). SINALOA: ♂, 10 mi W Concordia, 30 October 1965 (GE and ASB); ♀, Culiacan, to Los Mochis, 21 July 1957 (OS and JAR); ♂, 11 mi N Culiacan, 20 May 1962 (FDP); 6♂, 40 mi SE Culiacan, 5 May 1953, at *Asclepias* species (RCB and EIS); ♂, Elota, 5 May 1953 (B and S); ♀, ♂, Guamuchil, 6 May 1953 (B and S); ♂, Las Mochis, 25 June 1956 (R and KD); ♀, ♂, same locality, 50 ft, 13 June 1964 (DB); 17♂, 8 mi S Las Mochis, 50 ft, 13 June 1964 (DB); ♂, 15 mi N Las Mochis, 50 ft, 13 June 1964 (DB); 5♂, 4 mi N Mazatlan, 150 ft, 14 June 1964 (DB); 42♂, 50 mi N Mazatlan, 250 ft, 14 June 1964 (DB); 4♀, 20♂, 75 mi N Mazatlan, 19 June 1964 (DB); ♀, ♂, Topolobampo, 27 October 1965 (GE and ASB). SONORA: ♂, Aduana, 15 March 1962 (FDP); 10♂, 10 mi SE Alamos, 29 June 1963 (P and S); ♀, 2♂, Cocorit, 26 October 1965, on *Helianthus* species (GE and ASB); 3♂, Colima, 1500 ft, 9 February 1954 (R and KD); 3♂, Conejus, 26 October 1934; 2♂, 10 mi E Navajoa, 13 August

1959 (WLN and FGW); 3♂, 12 mi N Obregon, 25 April 1961 (RH and EMP); 2♀, 4♂, 38 mi NW Obregon, 100 ft, 23 September 1963 (S and B). TAMAULIPAS: ♀, 15 mi S Matamoros, 6 June 1951 (UKE); ♂, Padilla, 15 June 1953 (UKE). VERACRUZ: ♂, Acayucan, 23 October 1957 (R and KD); ♂, 10 mi NW Acayucan, 21 April 1953 (B and S); 2♀, 11♂, 30 mi S Acayucan, 21, 22 April 1962 (FDP); 2♂, Cotaxtla, 10 February 1962 (FMP); 2♂, 2 mi N Jesus Carranza, 150 ft, 25 June 1961 (UKE); ♂, 7 mi NW Alzan (near Tuxpan), 11 June 1961 (UKE); 2♀, 2♂, Cotaxtla Experimental Station, Cotax, 12, 24 July, 18 August 1962 (OHJ); 3♂, Minatitlan, 22 August, 1 September 1961 (R and KD); ♂, 4 mi W Puente Nacional, 900 ft, 22 June 1961 (UKE); ♂, 4 mi NW Rinconada Antqua, 1350 ft, 22 June 1961 (UKE); 3♂, Santa Lucrecia (C); ♂, 3 mi W Santa Lucrecia, 17 April 1953 (B and S); 5♂, 13 mi NW Santa Lucrecia, 17 April 1953 (B and S); 4♂, 3 mi N Sayula, 18 April 1953 (RCB and EIS); ♂, 5 mi NE Tinajas, 18 August 1963 (P and S); ♀, 29 mi N Tela, 16 August 1962 (JKD); ♀, 9 mi S Tuxpan, 11 June 1961 (CDM and EO); 2♂, 15 mi W Veracruz, 50 ft, 30 June 1953 (UKE). YUCATÁN: ♀, 3♂, Kabah Ruins, 10 ft, 13 August 1963 (S and B). ZACATECAS: ♂, 11 mi N Tabasco, 5500 ft, 12 August 1965 (HEE).

CENTRAL AMERICA: COSTA RICA: ♂, Pacure, 7 August 1949 (KWC); 6♂, Santa Ana, San José Province, 3000 ft, 24 February 1964 (HEE); ♂, Turrialba, 11 June 1949 (KWC). EL SALVADOR: 3♂, Quezaltepeque, 500 m, 19 June, 6 August, 1963 (C and I); ♂, 2.5 mi N Quezaltepeque, 6 July 1963 (MEI); ♂, 3 mi NW same locality, Hacienda Capolinas, 450 m, 28 December 1964 (MEI); 3♂, Mount San Salvador, 8 July 1963 (C and I). GUATEMALA: 3♂, Moca, Guatalon, 1000 m, March–April 1931 (JB); ♂, Los Amalea (JB); 2♂, Station Emilea Pochuta, 1000 m, February–March 1931 (JB). HONDURAS: 2♂, La Ceiba, 15 August, 16 September 1918 (FJD); 2♂, Prieta, 5, 7 April 1924; ♂, Santa Cruz, Porriiba, 13 March 1953 (MSV); ♂, Tegucigalpa, March 1918 (FJD). PANAMA: ♂, Corozal, Canal Zone, 12 March (A. Busck); 2♂, Old Panama, 11 February 1945 (CDM); ♂, Panama City, 25 December 1944 (CDM); ♂, Pueblo Nuevo, 22 February 1945 (CDM).

PREY RECORD.—None.

PLANT RECORD.—*Asclepias* species (Jalisco, Sinaloa); *Cucurbita moschata* (Morelos, Mexico); *Donnellsmithia Hintonii* (Nayarit); *Euphorbia* species (Morelos, Mexico); *Helianthus* species (Sonora).

### 17. *Cerceris marginula* Dalla Torre

FIGURES 20, 110a–e

*Cerceris marginula* Dalla Torre, C. G., 1897:467.

*Cerceris marginata* Cameron, 1900:117, pl. 7: figs. 11, 11a, b.—Ashmead 1899:296. [*C. marginata* Cameron preoccupied by *C. marginata* F. Smith, 1856:460, a species from Brazil.]

**FEMALE.**—Length 10 mm. Black with light yellow to creamy-white markings, pubescence generally short but longer on limited lateral areas; punctation generally coarse and crowded; body slender.

Head subequal in width to the thorax; black except frontal eye patches, a large part of the lateral clypeal lobe, the base of the mandibles, and a large patch on the scape of the antennae, all of which are creamy white; clypeal border with five distinct denticles, the medial and the two most lateral denticles much smaller than the other two; the clypeal process very slender with a truncate end that may be slightly rounded; mandibles bidentate, the more apical denticle slightly the larger; antennae normal in form, black to dark fuscous except for the patch on the scape.

Thorax black except for a band on the pronotum semidivided mesally, the entire metanotum, which may show a medial dark dividing line, and a small spot on each side of the pleuron, all of which are creamy white; enclosure rugose with the usual medial groove; tegulae smooth and black; mesosternal tubercle absent; legs black except for indistinct lines on the foretibiae; wings subhyaline but darker than normal for the genus, veins and stigma black.

Abdomen black except for a distinct band on tergum 1, which extends cephalad along the dorsopleural line, a patch on tergum 2 on the dorsopleural area at the basal end and a small spot laterally on the distal border (a solid line may appear on the distal margin of tergum 2 on Mexican specimens), a distinct band on the distal margin of tergum 3, most of sternum 1, and an evanescent patch on sternum 2, all of which are creamy white; first abdominal segment twice as long as broad; pygidium as illustrated (Figure 110c).

**MALE.**—Length 9 mm. Black with creamy-white markings; pubescence and punctation as on the female; body slender.

Head subequal in width to the thorax; black except for narrow frontal eye patches, a patch on the lateral clypeal lobe, and a patch on the scape, all of which are creamy white; border of the medial clypeal lobe a carina-like extension without denticles; hair lobes not waxed; mandibles without denticles; antennae normal in form, colored as on the female.

Thorax black except band on the pronotum sometimes broken medially, a spot on the pleuron, the metanotum sometimes broken medially; and evanescent spots on the propodeum, all of which are creamy white; tegulae smooth and black; enclosure heavily

rugose with the usual medial groove; mesosternal tubercle absent; legs all black except for a limited stripe of clouded white on all tibiae; wings subhyaline with all veins and stigma black.

Abdomen black except for a band on tergum 1, which extends cephalad along the dorsopleural line, one small lateral spot and a larger lateral patch on tergum 2, narrow bands on terga 3, 4, 5, and 6, the latter three becoming more or less broken, all of sternum 1, bands on sternum 2 and 3, lateral spots on sternum 4, 5, and 6, the last very small and evanescent, all of which are creamy white; length of first abdominal segment subequal to three times its width; pygidium as illustrated (Figure 110e).

Both females and males from Cerro Verde National Park, El Salvador, 6450 feet elevation, where a large series of *C. marginula* Dalla Torre were taken by the author and other collectors, differ from specimens taken 26 miles west of Tuxpan, Michoacán, Mexico, in that they show no yellow band on the second tergum. Small light spots, however, do appear laterally on both sexes from Central America. The type in the British Museum is in very poor condition; abdominal markings are faint and difficult to distinguish. The metanotum of the type female shows only two spots. Females from both Central America and Mexico show a solid creamy-white metanotum that, in a few cases, does show a medial dark division line. A variable amount of creamy white may appear on some hind trochanters, but usually they are immaculate. Markings on Mexican material are more yellow.

**TYPE.**—The type female of *Cerceris marginata* Cameron taken in Costa Rica at Volcan de Irazu, 6000 to 7000 feet elevation (Rogers), is at the British Museum (21.1.375).

**DISTRIBUTION.**—Southern Mexico into Central America to Panama. Specimens are as follows:

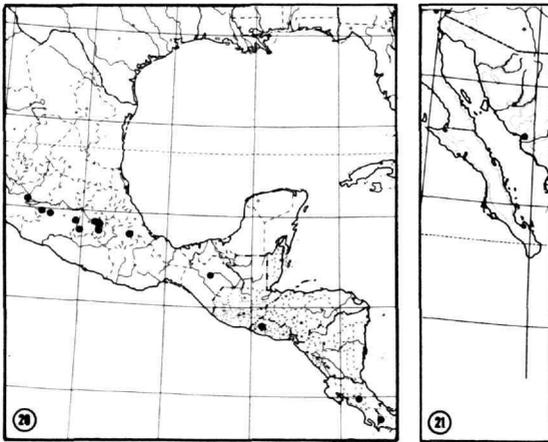
**CENTRAL AMERICA: COSTA RICA:** ♀, San Jose, San Jose Province, 7 July 1963 (CD and DRM). **EL SALVADOR:** 4 ♀, 17 ♂, Cerro Verde National Park, 6810 ft, 29 June 1963 (DC and MEI); 58 ♀, 180 ♂, Cerro Verde National Park, 6450 and 6800 ft, 5 July, 2 August 1963 (S and B). **PANAMA:** ♀, El Volcan, Chiriqui River, 25 February 1936 (WJG).

**MEXICO: CHIAPAS:** ♀, San Cristobal, 10 July 1956 (JWM); ♂, 7 mi E San Cristobal, 1 August 1952 (EEG and CDM); 2 ♂, 39 mi E same locality, same date, same collectors; ♂, 16 mi W same locality, 16 July 1957 (PDH); ♀, 9 mi S same locality, 30 July 1957 (JAC and BJR); 2 ♂, Nachic, 8000 ft, 27 April 1959 (HEE). **DISTRITO FEDERAL:** ♂, Desiertos de los Leones, 26 May, 1946 (J and DP). **JALISCO:** ♀, Guadalajara, 23 July 1951 (PDH).

MEXICO: ♀, west slope, Cortez Pass, 9000 ft, 13 July 1954 (UKE); ♀, same locality, 8500 ft, same date (RRD); 4 ♀, Real de Arriba, Temascaltepec, 12–13 July 1933 (HEH and RLU). MICHOACÁN: ♀, 3 mi E Carapan, 6500 ft, 10 July 1959 (HEE); ♀, Patzcuaro, 15 July 1965 (HEE); ♂, 8 km E Quiroga, 7500 ft, 6 August 1962 (HEE); ♀, 4 ♂, 26 mi W of Tuxpan, 7950 ft, 9 August 1957 (HAS); ♀, 60 mi E Zamora, 24 June 1957 (JAC and BJR). MORELOS: ♀, 15 km N Cuernavaca, 26 June 1951 (HEE); ♀, 8 mi N Cuernavaca, 8800 ft, 23 May 1959 (HEE). PUEBLA: ♂, Chautapehual, N of Zacapoaxtla, 5300 ft, 19 June 1961 (UKE); ♀, 14 mi W Huauchinango, 17 June 1951 (HEE). VERACRUZ: ♀, Orizaba, 1862 (Bart); ♀, same locality, 19 March 1908 (FK).

PREY RECORD.—*Apion chrysocomum* Gerstaecker, *Apion* species and *Polydrosus* species. All were taken in association with *C. marginula* Dalla Torre at Cerro Verde National Park, El Salvador.

PLANT RECORD.—None



FIGURES 20–21.—20, *G. marginula* Dalla Torre; 21, *C. obregon*, new species.

### 18. *Cerceris obregon*, new species

FIGURES 21, 111a–d

FEMALE.—Length 7 mm. Black with creamy-white markings; punctation average; pubescence very short.

Head slightly wider than the thorax; black except the entire face below the antennal scrobes, the basal three-fifths of the mandibles, and the scape, all of which are creamy white; clypeal border with four low indistinct denticles, fuscous in color, the two mesal denticles connected by a carina, above which there are two low denticle-like processes on the surface of

the medial clypeal lobe, which are also fuscous in color; mandibles with two subequal denticles; antennae normal in form.

Thorax black except for a divided band on the pronotum, two oval patches on the scutellum, the metanotum, a patch on the tegulae, and a patch on the pleuron, all of which are creamy white; tegulae normal; enclosure smooth except for light punctation laterally and along the meson; propodeum immaculate; mesosternal tubercle small but very distinct; all legs black to midfemoral area, beyond which all parts are creamy white except the hind tarsi and distal end of the hind tibiae, which are very dark; wings subhyaline, stigma dark.

Abdomen black except for a winged patch on tergum 1, subequal emarginate bands on terga 2, 3, 4, and 5 (the band on tergum 2 of some specimens shows evidence of a double break); venter immaculate; pygidium as illustrated (Figure 111b).

MALE.—Length 7 mm. Black with creamy-white markings; punctation average; pubescence average.

Head slightly wider than the thorax; black except for large frontal eye patches, the clypeus, a small spot on the frons, the basal two-thirds of the mandibles, and the scape, all of which are creamy white; free margin of the medial clypeal lobe dark with three low denticles; mandibles with a slightly elevated carina; hair lobes extending over the lateral half of the lateral clypeal lobes; antennae normal in form.

Thorax black except for a divided band on the pronotum, two lateral patches on the scutellum; the metanotum, a small spot on the pleuron, and most of the tegulae, all of which are creamy white; tegulae normal; enclosure smooth except for slight punctations laterally and along the meson; mesosternal tubercle absent; all legs black to the distal third of the femora, beyond which they are creamy white with a small dark patch on the distal end of the hind femora; wings subhyaline, stigma dark.

Abdomen black except for small winged patch on tergum 1, broad band on tergum 2, and narrow bands on terga 3, 4, 5, and 6; all of which are creamy white; venter immaculate; pygidium as illustrated (Figure 111d).

TYPES.—The type female and allotype male, taken 38 miles northwest of Obregon, Sonora, Mexico, 100 feet elevation, 3 September 1963 (H. A. Scullen and Duis Bolinger), is at the National Museum of Natural History (USNM 71070). Paratypes are listed below.

DISTRIBUTION.—Known only from the following records:

MEXICO: SONORA: 4 ♀, 7 ♂, 38 mi NW Obregon, 100 ft, 3 September 1963 (S and B).

PREY RECORD.—None.

PLANT RECORD.—None.

### 19. *Cerceris parkeri*, new species

FIGURES 22, 112a-d

FEMALE.—Length 9-10 mm. Black with dull yellow-brown (testaceous) markings; punctuation crowded; pubescence very short.

Head one-sixth wider than the thorax; black except for short but broad frontal eye patches, a small patch on the clypeal process, a small patch on the mandibles, and a small patch on the scape, all of which are yellow brown; clypeal border with a sinuate mesal carina the width of the mesal clypeal lobe, laterad of which are single low denticles on the lateral lobes of the clypeus; clypeal process scoop shaped, which is somewhat broader than long, with the free border slightly emarginate and rounded at the lateral angles, mandibles with a low rounded denticle on the upper margin distad of which there is a low carina-like elevation and a similar carina-like elevation on the lower margin; antennae normal in form.

Thorax black except the metanotum and the tip of the mesosternal tubercle; tegula normal; enclosure surface covered with minute punctuation and a distinct medial groove; legs all black except for a stripe along each tibia and along the fore- and midtarsi, all of which are testaceous; wings subhyaline but clouded along the anterior border of the forewing, stigma dark.

Abdomen black except broad patch covering the basal half of tergum 2, all of terga 4, 5, and 6 exclusive of the pygidium, wedge-shaped lateral patches on sternum 4, most of sternum 5, all of which are testaceous; pygidium as illustrated (Figure 112b).

MALE.—Length 9 mm. Black with yellow-brown (testaceous) markings; punctuation and pubescence as on the female.

Head slightly wider than the thorax; black except for small frontal eye patches, and the scape, all of which are testaceous; clypeal margin with three low denticles on the medial lobe; hair lobes covering approximately two-thirds of the lateral clypeal lobes; mandibles with two low carina-like elevations; antennae normal in form.

Thorax black except for divided band on the scutellum and a limited patch near the basal end of the mid- and hind tibiae, a stripe on the foretibia, and a small area on the basal segment of the foretarsus, all of which are testaceous; wings subhyaline but clouded along the anterior margins of the forewings.

Abdomen black except for a large patch covering most of tergum 2, the posterior half of tergum 4, and most of terga 5, 6, and 7 including the pygidium, all of which are testaceous; venter black; pygidium as illustrated (Figure 112d).

TYPES.—The type female, taken 48 miles northwest of Tehuantepec, Oaxaca, Mexico, 2400 feet elevation, 19 August 1963 (H. A. Scullen and Duis Bolinger), and the allotype male, taken 45 miles northwest of Tehuantepec, Oaxaca, Mexico, 2300 feet elevation, on the same date as the female (H. A. Scullen and Duis Bolinger), are at the National Museum of Natural History (USNM 71071). Paratypes are as follows:

MEXICO: CHIHUAHUA: ♂, 12 mi S Villa Matamoros, 26 July 1967 (SG, CRK, KL). CHIAPAS: ♀, ♂, 28 mi W Cintalapa, 9 April 1962 (FDP); 2 ♂, 7 mi SE Soyalo, 27 March 1953 (RCB and EIS); ♀, 6 mi NW Villa Flores, 10 April 1962 (FDP). COLIMA: ♀, 10 August 1962 (CGM); ♂, Colima, 1500 ft, 9 February 1954 (RRD); Manzanillo, 31 July 1965 (HEE). DURANGO: ♂, Durango, 6300 ft, 18 June 1956 (HAS); ♂, 10 mi W Durango, 12 July 1954 (JWM); ♂, 42 mi S Hidalgo del Parral (Chihuahua), 6050 ft, 24 October 1957 (HAS). GUANAJUATO: ♂, 1 mi NW Leon, 6700 ft, 9 August 1954 (UKE). GUERRO: ♀, Acapulco, 21 March 1957 (GF); 2 ♀, same locality, 19 July 1963 (P and S); 4 ♂, 9 mi W Acapulco, 10 August 1962 (UKE); ♀, 5 mi S, 2.5 mi E Chilpancingo, 6 August 1962 (UKE); ♀, Iguala, 2000 ft, 4 February 1954 (RRD); ♀, 3 ♂, 18 mi S Iguala, 18 July 1963 (P and S); ♂, Tierra Colorado, 2000 ft, October (HHS); 5 ♂, 9 mi S Tierra Colorado, 21 July 1963 (P and S); 2 ♀, ♂, Zumpango, 22 July 1963 (P and S). JALISCO: ♂, Chapala, 5000 ft, 22 May 1956 (HAS); ♀, Guadalajara, 9 March 1903 (McClendon); ♀, 9 mi S Guadalajara, 29 July 1965 (HEE); ♂, 54 mi NE Guadalajara, 6650 ft, 23 May 1956 (HAS); ♂, La Primavera, 8 July 1956 (R and KD); ♂, Plan de Barrancas, 24 March 1962 (P and S); ♂, same locality, 9 August 1965 (HEE and MAE); ♀, ♂, 3 mi and 5 mi SE Plan de Barrancas, 8 May 1953 (RCB and EIS). MICHOACAN: ♂, 18 mi E Moralia, 7200 ft, 21 June 1963 (S and B); ♂, Tuxpan, 6000 ft, 31 May 1956 (HAS). MORELES: ♀, Alpuyecá, 27 June 1951 (PDH); 2 ♂, 2 mi S Alpuyecá, 3000 ft, 18, 28 May 1959 (HEE); 5 ♂, 3 mi N Alpuyecá, 3400 ft, 4, 9 March, 13, 18 April, 9 May, 5 June 1959 (HEE and DMA); ♂, Cautda, 28 July 1938 (LJL); 3 ♂, Canyon de Lobos, Yautepec, 4000 ft, 25 May 1959 (HEE); ♂, Cuernavaca,

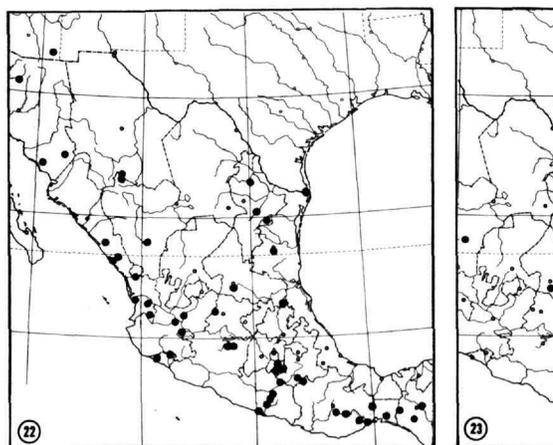
27 March 1962 (FDP); 4♂, same locality, 4500–5500 ft, 8 May 1964 (MAE); 3♂, 3 mi NW Cuernavaca, 6500 ft, 17, 20, 26 May 1959 (HEE); 2♂, 5 mi E Cuernavaca, 26 March, 5 May 1962 (FDP); 2♂, 14 mi S Cuernavaca, 3600 ft, 28 August 1963 (S and B); 2♂, Lake Tequesquitengo, 2800 ft, 16, 22 March 1959 (HEE); ♂, Nuajintlar, 2800 ft, 1 June 1959 (HEE); 27♂, 6 mi S Temixco, 30 March 1962, 5 May 1963 (P and S). NAYARIT: ♂, Acapuneta, 4 May 1953 (RCB); ♂, 4 mi S Acapuneta, 14 June 1962 (DHJ); ♀, Ahuacatlan, 18 July 1951 (HEE); ♂, Pichon, 5 July 1956 (R and KD); ♂, San Blas, on beach, 17 June 1963 (HAS); 2♂, 4 mi E San Blas, 5 February 1964 (MEI); ♀, Tepic, 25 July 1963 (PJS). NUEVO LEÓN: ♂, 13 mi W Linares, 4600 ft, 7 September 1963 (S and B); ♂, Montemorelos, 1300 ft, 8 September 1963 (S and B); ♀, Vallecillo, 2 June 1951 (PDH). OAXACA: ♀, El Camaron, 20 mi E Oaxaca, 22 July 1956 (JWM); ♂, same locality and date (DDL); 2♂, same locality, 24 April 1962 (FDP); ♂, same locality, 29 September 1961 (FMP); ♀, 19 mi SE El Camaron, 2800 ft, 19 August 1963 (S and B); 2♀, 6♂, 23 mi S Matias Romero, 6 April 1962, 14 August 1963 (P and S); ♀, 3♂, 12 mi E Mitla Junction, 5400 ft, 11 February 1965 (DB); ♂, Tehuantepec, 15 June 1964 (PJS); ♂, 10 mi SE Tehuantepec, 8 August 1963 (P and S); ♀, 10♂, 45, 48, and 55 mi NW Tehuantepec, 2300–3050 ft, 19 August 1963 (S and B); ♂, 5 mi W Zanatepec, 700 ft, 26 January 1965 (DB); 2♂, 3 mi W Zanatepec, 100 ft, 9 February 1965 (DB). PUEBLA: ♀, Cacaloapan, 20 August 1963 (P and S); ♀, 10♂, 3 mi NW Petalcingo, 2–3 April 1962, 2–3 August 1963 (P and S); 3♂, Tehuiztingo, 27 February 1953 (RCB and EIS). SAN LUIS POTOSÍ: 4♂, 31 mi S San Luis Potosí, 5900 ft, and 40 mi S same locality, 5700 ft, both 5 September 1963 (S and B); ♂, 30 mi S Tamazunchale, 5 January 1941 (GEB). SINALOA: 3♀, 3♂, 9 mi E Chupaderos, 19 March, 15 May 1962 (P and S); 2♂, Elota, 5 May 1953 (RCB and EIS); ♀, ♂, 3 mi N Elota, 18–19 March 1962 (P and S); 3♀, 17♂, 8 mi SE Elota, 18 May 1962 (P and S); 3♂, 50 mi E Mazatlan, 3500 ft, and 3♂, 60 mi E Mazatlan, 5300 ft, all 19 June 1964 (DB); ♂, Walamo, 27 June 1956 (RD). SONORA: 23♂, 10 mi SE Alamos, 29 June 1963 (P and S); ♂, La Aduana, 22 May 1962 (P and S); ♂, 5 mi S, Magdalena, 25 May 1962 (P and S); 2♂, 10 mi E Navajoa, 13 August 1959 (WLN and FGW). TAMAULIPAS: ♀, Llera, 19 July 1954 (UKE); ♂, Pakilla, 15 June 1953 (UKE).

UNITED STATES: ARIZONA: ♂, Bernardino, Cochise Co., 23 July 1966 (JMD and MAC). TEXAS: ♂, Brownsville, (JCB); ♀, Dimmit Co., 27 July 1934, at purple hull peas (SEJ); ♂, 25 mi SW Harlington, Laguna Madre, 16 April 1945 (DEH).

DISTRIBUTION.—Scattered records over most of Mexico except Baja California and the extreme southeastern area.

PREY RECORD.—None.

PLANT RECORD.—Purple hull peas (Texas).



FIGURES 22–23.—22, *C. parkeri*, new species; 23, *C. rufinoda rufinoda* Cresson.

## 20. *Cerceris rufinoda rufinoda* Cresson

FIGURES 23, 113a–c

*Cerceris rufinoda* Cresson, 1865:121.—Packard 1866:61.—Cresson 1887:286.—Schletterer 1887:491.—Robertson 1889:303.—Ashmead 1890:32.—Bridwell 1898:209.—Ashmead 1899:295.—Viereck and Cockerell 1904:138.—Smith, H. S., 1908:370.—Banks 1912:26.—Stevens 1917:422.—Mickel 1917b:452.—Strandtmann 1945:311.—Scullen 1951:1010; 1965a:346, 351, 392–395, figs. 27, 125a, b, c.

TYPE.—The type male of *C. rufinoda* Cresson, taken from the Rocky Mountains, “Colorado Territory” (Riding), is in the Academy of Natural Sciences of Philadelphia (1955).

DISTRIBUTION.—Known only from the following two records:

MEXICO: DURANGO: ♀, Durango, 6200 ft, 14 August 1947 (CDM). SAN LUIS POTOSÍ: ♀, ♂, 40 mi S San Luis Potosí, 5700 ft, 5 September 1963 (S and B).

PREY RECORD.—None.

PLANT RECORD.—None.

## 21. *Cerceris truncata* Cameron

FIGURES 24a, b, 114a–c

*Cerceris truncata* Cameron, 1890:121.—Dalla Torre, C. G., 1897:479.—Ashmead 1899:296.—Werner 1960:43–44.—Scullen 1965a:345, 351, 396–398, figs. 28, 126a, b, c.

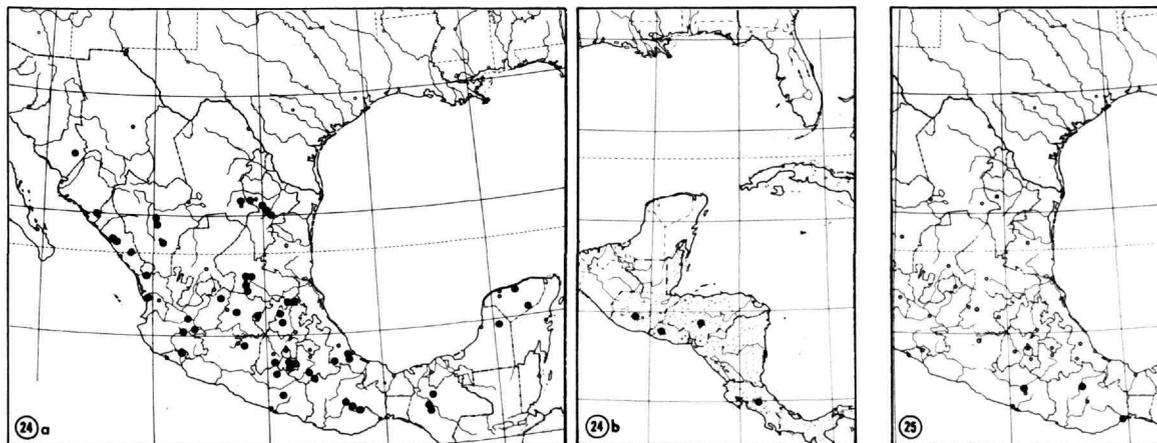
TYPES.—The female type of *Cerceris truncata*

Cameron, taken from Temax, Yucatán, Mexico (Gaumer), is at the British Museum (21.1,433).

DISTRIBUTION.—Scattered records throughout Mexico exclusive of Baja California, limited records from Central America, and the United States border states of Arizona, New Mexico, and Texas. Specimens from Mexico and Central America are as follows:

MEXICO: CAMPECHE: ♀, ♂, 10 mi N Hopelchen, 17 April 1962 (LAS). CHIAPAS: ♀, 4 mi SW Simojovel, 18 March 1953 (RCB and EIS); ♀, 4 mi SE Soyalo, 15 March 1953 (B and S); ♂, 12 mi E Tuxtla Gutierrez, 2 August 1957 (JAC and BJR); ♂, 20 mi S Tuxtla Gutierrez, 12 August 1963 (FDP and LAS). COAHUILA: ♂, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B). COLIMA: ♀, July (G); ♂, Colima, 1500 ft, 9 November 1954 (RRD). DURANGO: ♀, 15 mi SE Durango, 6100 ft, 19 September 1963 (S and B); ♂, 58 mi N Durango, 6200 ft, 16 September 1963 (S and B); ♂, 30 mi S Rodeo, 5650 ft, 16 September 1963 (S and B); ♀, San Juan del Rio, 7 August 1951 (PDH). GUANAJUATO: ♂, Guanajuato, 15 August 1953 (C and PV). GUERRERO: ♂, 6.7 mi E Chilpancingo, 4850 ft, 2 August 1963 (UKE); ♂, 20 mi S Taxco, 6 November 1954 (RRD). HIDALGO: ♂, Ixmiquilpan, 5200 ft, 29 July 1954 (UKE); ♀, 4♂, same locality and collector, 5300 ft, 23 June 1953; ♂, Jacala, 4500 ft, 1 September 1963 (S and B). JALISCO: ♂, Chapala, 5000 ft, 22 May 1956 (HAS); ♂, Cocula, 4450 ft, 27 September 1957 (HAS); ♀, El Tigre, 18 July 1954 (JWM); ♂, Guadalajara, 8 July 1951 (PDH); 2♀, same locality, 17 July 1951 (HEE); ♀, ♂, same locality, 27 August (Mc); ♂, Lagos de Moreno, 6300 ft, 12 August 1954 (RRD); ♂, La Primavera, 8 July 1956 (R and KD); 2♂, Plan de Barrancas, 24 March 1962 (FDP); ♂, 5 mi SE Plan de Barrancas, 15 May 1953 (RDB and EIS). MEXICO: ♂, 33 mi N Taxco, 5700 ft, 29 August 1963 (S and B). MICHOACÁN: ♂, San José Parma, near

Tuxpan, 5500 ft, 1 June 1956 (HAS). MORELOS: 2♂, 3 mi N Alpuyecá, 3400 ft, 18 April 1959 (HEE); 7♂, Canyon de Lobos, Yautepec, 4000 ft, 7, 13, 18 March 1959 (HEE); ♂, 26 mi S Cuernavaca, 3150 ft, 28 August 1963 (S and B); ♂, Hujintlan, 8 July 1956 (R and KD); 2♂, 6 mi S Temixco, 30 March 1962 (P and S); 2♂, Tequesquitengo, 15 July 1961 (R and KD); ♂, Toll Road, 8000 ft, 5 July 1961 (same collectors). NAYARIT: 6♂, 14 mi S Acaponeta, 14 June 1962 (DHJ); 4♂, Pinchon, 5 July 1956 (R and KD); ♂, San Blas, 22 March 1962 (FDP); ♂, same locality, 17 June 1963 (S and B). NUEVO LEÓN: ♀, 4 mi W El Cercado, 6 June 1951 (PDH); ♂, 31 mi NW Linares, 1500 ft, 12 October 1957 (HAS); 2♂, Montemorelos, 1300 ft, 8 September 1963 (S and B); ♀, 20 mi W Monterrey (GWF); 2♂, 50 mi SE Monterrey, 1700 ft, 3 October 1957 (HAS). OAXACA: 2♂, El Camaron, 29 September 1961 (FMP); 2♂, Mitla, 5600 ft, 17 June, 20 August 1953 (S and B); ♀, Oaxaca (C). PUEBLA: 2♂, 3 mi NW Petalcingo, 2, 3 April 1962 (FDP); 2♂, Tehuiztzingo, 27 February 1953 (RCB and EIS). QUERÉTARO: 9♂, 41 mi N Querétaro, 6500 ft, 19 September 1963 (S and B). SAN LUIS POTOSÍ: ♀, 10 mi N San Luis Potosí, 6200 ft, 22 August 1954 (RRD); ♀, 15 mi S San Luis Potosí, 6500 ft, 3 October 1957 (HAS); ♀, ♂, 31 mi S San Luis Potosí, 5900 ft, 5 September 1963 (S and B); 14♂, 40 mi S San Luis Potosí, 5700 ft, 5 September 1963 (same collectors); ♀, 18♂, 17 mi NE San Luis Potosí, 6200 ft, 6 September 1963 (same collectors); ♀, Tamazunchale, 20 July 1946 (J and DP); ♂, Xilitla, 1450 ft, 23 July 1954 (UKE). SINALOA: ♀, 9 mi E Chupaderos, 18 March 1962 (FDP); ♀, ♂, 13 mi N Culican, 17 March 1962 (FDP); 4♂, 8 mi SE Elota, 18, 19 May 1962 (FDP); ♀, 5♂, 60 mi E, 5300 ft, ♂, 50 mi E, 3500 ft, and ♂, 75 mi N, 300 ft, all of Mazatlan, 19 June 1964 (DB). SONORA: ♀, 7 mi W Alamos, 27 November 1960 (WLN and party). VERACRUZ: 3♀, ♂, 30 mi S Acajucan, 21–22 April 1962 (P and S); ♂, Atoyac, April (HHS); ♀, Cotaxtla Experiment Station, Cotaxtla, 12 July 1962



FIGURES 24a–25.—24a, 24b, *C. truncata* Cameron; 25, *C. zumpango*, new species.

(DHJ); ♂, Orizaba, 1862 (LB); ♀, 5 mi NE Tinajas, 18 August 1963 (P and S); ♂, 10 mi W Veracruz, 30 December 1940 (GEB). YUCATÁN: 2♀, Chichen Itza, 29 June (JB); ♀, same locality, 18 April 1962 (P and S); ♀, 4♂, Temax (Gaumer); 11♀, 4♂, N Yucatán (Gaumer).

CENTRAL AMERICA: COSTA RICA: ♂, San Fernando, 22 December 1959 (AW); ♂, San José, March 1932 (SS). EL SALVADOR: 3♂, 23 mi N San Salvador, 2100 ft, 4 July 1963 (S and B). GUATEMALA: 2♂, Santa Emilia, Pochuta, 1000 m, February, 31 March (JB); 2♀, Moca, Guatolon, 1000 m, March, 31 April (JB); ♀, S Geronimo (Champion). HONDURAS: ♂, 29 April (Ba); ♀, Belize; ♂, Zambrano, 20 mi from Tegucigalpa (Cismeros).

PREY RECORD.—None.

PLANT RECORD.—None.

## 22. *Cerceris zumpango*, new species

FIGURES 25, 115a-d

FEMALE.—Length 10 mm. Black with yellow markings; punctation average; pubescence very short.

Head slightly wider than the thorax; black except for large frontal eye patches, most of the dorsal surface of the clypeal process, a small spot on the lateral lobes of the clypeus (absent from some specimens), a spot back of the eye, and a patch on the mandibles, all of which are yellow; clypeal border with two lateral more distinct denticles and two indistinct more medial denticles on the medial lobe; clypeal process scoop shaped with a prominent denticle at each lateral angle, free border and denticles black to dark fuscous; mandibles with two subequal denticles; antennae normal in form.

Thorax black except for a broadly emarginate and divided band on the pronotum; two lateral spots on the scutellum, the metanotum, and most of the tegulae, all of which are yellow; tegulae normal; enclosure smooth except for limited lateral punctation and the usual medial groove; mesosternal tubercle small but very distinct; coxae, trochanters, and femora black except for a yellow patch near the distal end of the forefemora and fuscous distal ends of the mid- and hind tibiae, all tarsi largely yellow on the forelegs but darker on the mid- and hind legs; wings subhyaline becoming darker along the anterior margins and apically; stigma dark.

Abdomen black except for a winged patch on tergum 1, broad but deeply marginate bands on terga 2, 3, 4, and 5; venter immaculate; pygidium as illustrated (Figure 115d).

MALE.—Unknown.

TYPES.—The type female of *Cerceris zumpango* taken at Zumpango, Guerrero, Mexico, 22 July 1963 (F. D. Parker and L. A. Stange), is at the University of California at Davis. Paratypes are as follows:

MEXICO: GUERRERO: 2♀, Zumpango, 22 July 1963 (FDP and LAS). OAXACA: ♀, 5 mi NW Cuicatlan, 22 July 1966 (JSB, MR, and RCG); ♀, 6 mi S Tehuantepec, 200 ft, 8 July 1953 (UKE).

The very unique denticle on the lateral angles of the clypeal process makes this species distinct.

DISTRIBUTION.—South-central Mexico as indicated above.

PREY RECORD.—None.

PLANT RECORD.—None.

## GROUP II

### 23a. *Cerceris californica californica* Cresson

FIGURES 26, 116a-c

*Cerceris californica* Cresson, 1865:128.—Packard 1866:60, 63.—Cresson 1887:282.—Schletterer 1887:487.—Dalla Torre, C. G., 1897: 454.—Ashmead 1899:295.—Woodworth 1913:94.—Rohwer 1917:244.—Banks 1947:20.—Scullen 1951:1006.—Linsley and MacSwain 1956:71-84.—Krombein 1958:197.—Scullen 1960:75-77.

*Cerceris ferruginior* Viereck and Cockerell, 1904:134.—Viereck 1906:234.—Johnson and Ledig 1918:24.—Banks 1947:25.—Scullen 1951:1007.

*Cerceris garciana* Viereck and Cockerell, 1904:135.—Scullen 1951:1008.

*Cerceris populorum* Viereck and Cockerell, 1904:135.—Banks 1947:25.—Scullen 1951: 1009.

*Cerceris cognata* Mickel, 1916:408.—Scullen 1951:1006.

*Cerceris denticularis* Banks, 1917:113; 1947:10.—Scullen 1951:1007.

*Cerceris interjecta* Banks, 1919:84.—Scullen 1951:1009.

*Cerceris calodera* Banks, 1947:22-23.—Scullen 1951:1006.

*Cerceris illota* Banks, 1947:23.—Scullen 1951:1008.

*Cerceris isolde* Banks, 1947:24.—Scullen 1951:1008.

*Cerceris californica californica*.—Scullen, 1961:46; 1965a: 347, 353, 401-404, figs. 31, 128a, b, c.

TYPES.—

The type male of *C. californica* Cresson, from California is at the Philadelphia Academy of Natural Sciences, no. 1953. The type male of *C. ferruginior* Viereck and Cockerell, from Deming, N. Mex., is at the Philadelphia Academy of Natural Sciences, no. 10378. The type male of *C. garciana* Viereck and Cockerell, from New Mexico, is at the Philadelphia Academy of Natural Sciences, no. 10380. The type male of *C. populorum* Viereck and Cockerell, from New Mexico, is at the Philadelphia Academy of Natural Sciences, no. 10385. The type female of *C. cognata* Mickel, from Worland, Wyo., July 10, 1911 (L. Bruner), is at the University of Nebraska. The type female and allotype male

of *C. denticularis* Banks, from Umatilla, Oreg. June 1882 (Samuel Henshaw), are at the Museum of Comparative Zoology, Harvard, no. 10028. The type male of *C. interjecta* Banks, from Utah, is at the Museum of Comparative Zoology, Harvard, no. 13767. The type male of *C. calodera* Banks, from Jacumba, Calif., Aug. 12, 1917 (W. M. Wheeler), is at the Museum of Comparative Zoology, Harvard, no. 27622. The type male of *C. illota* Banks, from Arizona, is at the Museum of Comparative Zoology, Harvard, no. 23541. The type male of *C. isolde* Banks, from Arizona, is at the Museum of Comparative Zoology, Harvard, no. 23540 (Scullen 1965:402-403).

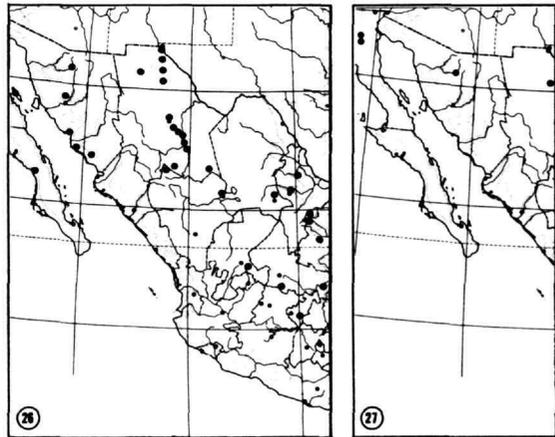
**DISTRIBUTION.**—Widely distributed over northern Mexico from the east coastal area west to and including, Baja and south to the state of Querétaro. Specimens are as follows:

**MEXICO: BAJA CALIFORNIA** (north): ♀, Angel de la Guardia Isla, Pond Island Bay, 1 July 1921 (EPD); ♀, Santo Domingo, 19 July 1938 (M and R); 2♂, San Vicente, 8 July 1963 (PDH). **BAJA CALIFORNIA SUR:** ♂, 20 mi N Comondu, 2 July 1938 (M and R); ♂, Los Animas, Sierra Laguna, 12 September 1941 (R and B); 6♂, Rancho Santa Marguerita, 28 mi S El Arco, 3 July 1960 (AEM). **CHIHUAHUA:** 3♂, Ciudad Camargo, 3950 ft, 20 June 1956 (HAS); ♀, 20 mi SW Camargo, 4500 ft, at *Cevallia sinuata*, 13 July 1947 (CDM); ♀, same locality and date (S); ♂, 42 mi SW Camargo, 4900 ft, 15 July 1947 (MAC); 5♂, same locality and date (CDM); ♂, 23 mi S Chihuahua, 9 July 1954 (EIS); ♀, 3♂, 10 mi N Chihuahua, 17 August 1965 (HEE); ♂, 16 km S Chihuahua, 30 June 1947 (CDM); ♀, 27 mi SE Chihuahua, 23 August 1960 (PHA, ER, R); ♀, 34 mi S Chihuahua, 3650 ft, 25 October 1957 (HAS); ♂, Colonia Dublin, July; ♀, 9 mi NW Galeana, 4800 ft, 13 September 1963 (S and B); 5♂, 29 mi E Hidalgo del Parral, 5000 ft, 21 June 1956 (HAS); 2♂, 34 mi SE Jimenez, 4450 ft, 11 September 1963 (S and B); ♂, 239 km S Ciudad Juarez, 1 July 1947 (CDM); ♂, Moctezuma, 4 July 1954 (EIS); 2♂, same locality and date (JWM); ♂, Santa Clara Canyon, Parrita, 6 July 1954, at *Baccharis* (JWM); 2♂, same locality and date (EIS); ♂, Samalayuca, 24 June 1947 (GMB); ♀, same locality and date (MAC); 2♀, 4♂, Villa Ahumada, 27 June 1947 (CDM); ♂, same locality, 3700 ft, 28 July 1953 (CDM and party); ♂, 10 mi S Villa Ahumada, 4 July 1954 (JWM); ♂, same locality and date (EIS). **COAHUILA:** 2♂, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B). **DURANGO:** ♀, 8 mi S Canutillo, 9 August 1951 (HEE); ♀, 2♂, 7 mi SE Ceballos, 3900 ft, 9 September 1963 (S and B); 2♂, 30 mi NW Ceballos, 4400 ft, 10 September 1963 (S and B); 6♀, 8♂, 4 mi NW Gomez Palacio, 3700 ft, 10 September 1963 (S and B); ♀, 15 mi W Verde, 20-26 August 1948. **NUEVO LEÓN:** ♂, Apodaca, May 1955 (AE); ♀, 31 mi NW Linares, 1500 ft, 12 October 1957 (HAS); 2♂, 20 mi W Monterrey (GRF); 5♀, 13♂, Vallecillo, 2-5 June 1951 (PDH); ♀, 2♂, same locality and date (HEE). **QUERÉTARO:** ♂, 5 mi W San Juan del Rio, 6300 ft, 2 September 1963 (S and B). **SAN LUIS POTOSÍ:** 2♂, 40 mi

S San Luis Potosí, 5700 ft, 5 September 1963 (S and B); ♂, Valles, 7 April 1955 (AE). **SONORA:** ♀, ♂, 16 mi S Empalme, 7 May 1953 (REB and EIS); ♂, 32 mi SE Guaymas, 125 ft, 23 September 1963 (S and B); ♂, 29 mi N Hermosillo, 9 August 1960 (PHA, ER, R); 2♂, 5 mi S Magdalena, 25 May 1962 (FDP and LAS); ♀, ♂, 15 mi N Obregon, 24 June 1956 (R and KD); 2♂, San Luis, 22 June 1953 (RRS); ♂, Valle del Yagui, 16 April 1957 (FMP). **TAMAULIPAS:** ♀, Llera Mesa, 1800 ft, 7 June 1961 (UKE); ♂, Santa Teresa, 15 May 1952 (MAC and WJG); ♂, Ciudad Victoria, 2 July 1965 (HEE); 2♀, 2♂, Villagran, 7 June 1951 (PDH); ♀, ♂, same locality and date (HEE). **ZACATECAS:** 2♂, 9 mi N Ojo Caliente, 12 May 1962 (LAS); ♂, 1 mi N San Jose de Felix, 14 July 1954 (EIS).

**PREY RECORD.**—None.

**PLANT RECORD.**—*Baccharis* species (Chihuahua), *Cevallia sinuata* (Chihuahua).



FIGURES 26-27.—26, *C. californica californica* Cresson; 27, *C. californica argyrotricha* Rohwer.

### 23b. *Cerceris californica argyrotricha* Rohwer

FIGURE 27

*Cerceris argyrotricha* Rohwer, 1908:324.—Scullen 1951:1005.

*Cerceris arno* Banks, 1947:19.—Scullen 1951:1005.

*Cerceris californica*.—Scullen, 1960:75-77.

*Cerceris californica arno*.—Scullen, 1965a:347-353, 404-405.

Through error the writer (1965a:404-405) used the name *C. californica argo* Banks, 1957, for this subspecies. *Cerceris californica argyrotricha* Rohwer has priority and is so used in this publication.

**TYPES.**—The type female of *C. argyrotricha* Roh-

wer, taken from Las Cruces, N. Mex., 11 August (C. T. Townsend), is at the National Museum of Natural History (USNM 28485). The type female of *C. arno* Banks, from Colton, Calif., is at the Museum of Comparative Zoology (23541).

**DISTRIBUTION.**—Limited records are from northwestern Mexico. Specimens are as follows from Mexico:

**BAJA CALIFORNIA** (north): 2 ♀, Sierra de Juarez, Santa Catalina foothills, 43 mi E Ensandad, 3600 ft, 18 August 1962 (DBr); ♂, Las Arrastras del Arriola, 29 June 1961 (M and H). **CHIHUAHUA**: ♀, Moctezuma, 4 July 1954 (JWM); ♀, Santa Clara Canyon, 5 mi W Parrita, 6 July 1954, at *Baccharis* species (EIS); ♀, same locality and date (JWM). **SONORA**: ♀, 32 mi SE Guaymas, 125 ft, 23 September 1963 (S and B); 2 ♀, 3 ♂, 17 mi S Santa Ana, 2100 ft, 20 June 1964 (DB).

**PREY RECORD.**—None.

**PLANT RECORD.**—*Baccharis* species (Chihuahua).

#### 24a *Cerceris dilatata dilatata* Spinola

FIGURES 28a, b, 117a-c

*Cerceris dilatata* Spinola, 1841:118.—Smith, F., 1856:464.—Schletterer 1887:490.—Dalla Torre, C. G., 1897:457.—Bodkin 1917:316.—Scullen 1961:46; 1962:57-58; 1965a:347, 353, 407-409, figs. 130a, b, c.

*Cerceris maximiliani* Saussure, 1867:94-95, pl. 1.—Schletterer 1887:497.—Cameron 1890:111-112, pl. vii: figs. 6, 6a, b, c.—Dalla Torre, C. G., 1897:467.—Ashmead 1899:296.

*Cerceris contracta* Taschenberg, 1875:396.—Schletterer 1887:489.—Dalla Torre, C. G., 1897:456.

*Cerceris oymponis* Strand, 1910:140.

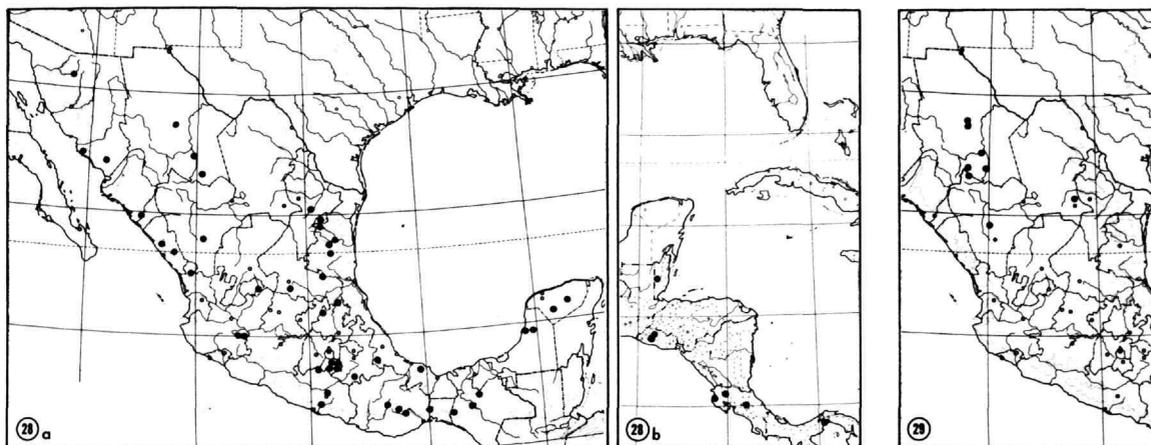
*Cerceris semiatra* Banks, 1947:6, 25-26.—Scullen 1951:1005.

**TYPES.**—A neotype male of *C. dilatata* Spinola, designated by the writer, is at the Instituto e Museo di Zoologia, Università di Torino, Italy. The male and a female, both apparently determined by Spinola, are from Cayenne, French Guiana. A lectotype female of *C. maximiliani* Saussure, from Mexico, designated by the writer, is at the Museum Historique Naturelle, Geneva, Switzerland. A lectotype female of *C. contracta* Taschenberg, from Brazil, designated by the writer, is at the Zoologisches Institut, Martin-Luther-Universität, Halle (Saale), Germany. The holotype female of *C. oymponis* Strand, from Paraguay, is at the Zoologisches Museum, Humboldt Universität, Berlin. The type male of *C. semiatra* Banks, from Patagonia, Ariz., is at the Museum of Comparative Zoology (27620).

**DISTRIBUTION.**—Widely distributed over Mexico and Central America. Specimens are as follows:

**CENTRAL AMERICA: BRITISH HONDURAS**: ♀, Benque Viejo (Father Stanton). **COSTA RICA**: ♀, El Coco, Guanacaste Province, 21 June 1963 (CDM); 2 ♂, Heredia Puerto Viejo, 1 August 1964 (MN); ♂, 12 mi NW Liberia, 400 ft, 28 July 1963 (S and B). **EL SALVADOR**: ♀, Cerro Verde, 29 June 1963 (C and I); ♂, Puente Coascoran, La Uron [sic], 200 ft, 24 July 1958 (N and M); 2 ♂, 5 mi W Quezaltepeque, 18, 22 June 1963 (C and I); ♀, same locality, 29 August 1961 (HEI); ♀, San Salvador, 7 June 1958 (OLC). **HONDURAS**: 2 ♂, 20 mi from Zamorano (TDAC). **PANAMA**: ♀, Balboa, Canal Zone, 12 June 1914 (THH); 3 ♀, Barra Colorado Island, Canal Zone, 8 April 1956 (CWR and MR); ♀, Culebra, Canal Zone, 4 July 1914 (THH).

**MEXICO: AGUASCALIENTES**: 2 ♂, Aguascalientes, 28 July 1951 (HEE); ♀, same locality, 26 June 1952 (EEG, CDM). **CAMPECHE**: 2 ♂, E Campeche, 10 ft, 13 August 1963 (S and B); ♂, 31 mi E Campeche, 10 ft, 16 August 1963 (S and B). **CHIAPAS**: ♂, 28 mi W Cintalapa, 9 April 1962 (LAS); ♂, same locality and date (FDP); ♀, Francia, 5 April 1953 (RCB and EIS); ♂, Ixtapa, 11 April 1962 (FDP); ♀, 2 ♂, Santa Domingo, 15 mi S Simojovel, 8-15 August 1958 (JAC); ♀, Simojovel, 18-31 July 1958 (JAC); ♀, 6 mi E Tuxtla Gutierrez, 14 July 1956 (DDL). **CHIHUAHUA**: 2 ♂, 42 mi SW Camargo, 15 July 1947 (CDM); ♀, Chihuahua, 12 August 1951 (PDH); ♂, 18 mi W Jimenez, 10 August 1951 (HEE); 2 ♀, Temoris, 26 July, 23 August 1965 (RCG, TAS, CSG). **DURANGO**: 2 ♂, 4 mi W Durango, 6300 ft, 8 September 1963 (S and B). **GUERRERO**: 2 ♀, ♂, Mexicala, 29 June 1951 (PDH); ♀, 3 mi N Taxco, 5500 ft, 1 June 1959 (HEE); 2 ♂, 9 mi S Tierra Colorado, 21 July 1963 (P and S); ♂, Zumpango, 22 July 1963 (P and S). **HIDALGO**: 3 ♂, Jacala, 4500 ft, 31 August 1963 (S and B). **JALISCO**: ♂, 5 mi SE Plan de Barrancus, 3 May 1953 (RCB and EIS); ♀, 10 mi W Tizapan, 18 July 1953. **MICHOACÁN**: 2 ♂, 32 mi W Jiquilpan, 5200 ft, 25 September 1957 (HAS). **MORELOS**: 3 ♂, 3 mi Alpuyeka, 3400 ft, 8 April 1959, 10 April 1962 (HEE); ♂, Cuernavaca, 15 July 1961 (R and KD); 3 ♂, 6 mi S Temixco, 20 March 1962 (LAS); ♀, 3 ♂, Tequesquitengo, 15 July 1961 (R and KD); ♀, 2 ♂, Canyon de Lobos, Yautepec, 4000 ft, 25 May 1959 (HEE). **NAYARIT**: ♂, 14 mi S Acaponeta, 14 June 1962 (DHJ); 2 ♂, Tepec, 15-17 September 1953 (BM); ♀, same locality, 13 September 1957 (R and KD). **NUevo LEÓN**: ♂, Hacienda Vista Harmosa, Villa Santiago, 1500 ft, 16 June 1940 (K and H); ♀, 13 mi W Linares, 4600 ft, 7 September 1963 (S and B); ♀, Montemorelos, 1300 ft, 8 September 1963 (S and B); ♂, 50 mi SE Monterrey, 1700 ft, 13 October 1957 (HAS). **OAXACA**: ♂, El Camaron, 29 September 1961 (FMP); 2 ♀, 23 mi S Matias Romero, 14 August 1963 (P and S); 4 ♂, Mitla, 5600 ft, 20 August 1953 (S and B); ♂, Oaxaca, 5068 ft, 24 August 1957 (HAS). **PUEBLA**: ♂, 8 mi SE Tehuiztzingo, 4100 ft, 29 June 1961 (UKE). **SAN LUIS POTOSÍ**: 3 ♂, 5 mi E Ciudad del Maiz, 4700 ft, 22, 23 August 1954 (UKE); ♂, El Salto, 1700 ft, 16 July 1963 (UKE); ♂, 31 mi S San



FIGURES 28a-29.—28a, 28b, *C. dilatata dilatata* Spinola; 29, *C. d. chisosensis* Scullen.

Luis Potosí, 5900 ft, 5 September 1963 (S and B); ♂, Tamazunchale, 11 June 1951 (PDH); 2♂, Valles, 29 August 1956 (R and KD). SINOLOA: ♂, Elota, 5 May 1953 (B and S); 11♂, Guamuchil, 6 May 1953 (B and S); ♂, 50 mi E Mazatlan, 3500 ft, 19 June 1964 (DB). SONORA: ♂, Aduana, 15 March 1962 (FDP); ♂, La Aduana, 22 May 1962 (FDP and LAS); ♂, Conorit, 23 May 1962 (FDP and LAS); 4♂, 32 mi SE Guaymas, 125 ft, 23 September 1963 (S and B); 5♂, 5 mi S Magdalena, 25 May 1962 (FDP and LAS); ♂, 10 mi E Navojoa, 13 August 1959 (WLN and FGW); ♂, 5 mi W Santa Ana, 10 June 1961 (FDP); 3♂, 8 mi N Santa Ana, 2100 ft, 20 June 1964 (DB). TAMAULIPAS: 2♂, Ciudad Victoria, 2 July 1965 (HEE); ♀, 4♂, Llera Mesa, 1800 ft, 7 June 1961 (UKE); 3♂, Padilla, 15 June 1953 (UKE); 2♀, ♂, Villagran, 7 June 1951 (HEE); 5♀, ♂, same locality and date (PDH). VERACRUZ: ♂, Fortin de las Flores, 11-17 September 1954 (FXW); ♀, S Lucrecia (C); 8♀, 7♂, Orizaba, 1862 (LB); 2♂, 17 mi NW San Andres Tuxtla, 900 ft, 24 June 1961 (UKE). YUCATÁN: 2♀, 3♂ Chichen Itza, 19 July 1929; ♀, 9 mi E Chichen Itza, 10 ft, 13 August 1963 (S and B); ♀, ♂, 8 km N Muna, 22 July 1962 (HEE); 2♀, Yaxche, 10 September 1964 (JC and DP).

PREY RECORD.—None.

PLANT RECORD.—None.

#### 24b. *Cercheris dilatata chisosensis* Scullen

FIGURE 29

*Cercheris dilatata chisosensis* Scullen, 1965a:347, 353, 407-409, figs. 34, 130a, b, c.

TYPE.—The type female and allotype male, taken from the Chisos Mountains, Big Bend National Park, Tex., 6 July 1942 (H. A. Scullen), are in the National

Museum of Natural History (USNM 66161).

DISTRIBUTION.—North-central Mexico. Specimens are as follows:

MEXICO: CHIHUAHUA: ♀, Chihuahua, 12 August 1951, *Baccharis glutinosa* (PDH); ♂, 10 mi N Chihuahua, 17 August 1965 (HEE); 3♂, 4 mi N Ciudad Camargo, 29 July 1967 (RCG, CRK, and KL); 2♂, 18 mi W Jimenez, 10 August 1951 (HEE); ♂, Hidalgo del Parral, 10 August 1967 (RCG, CRK, and KL); ♀, 10 mi W Namiquipa, 6600 ft, 3 July 1947 (CDM); ♀, ♂, Santa Clara Canyon, 5 mi W Parrita, 6 July 1954 (JWM); ♂, same locality and date (EIS). COAHUILA: ♀, ♂, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B). DURANGO: ♂, 33 mi S Hidalgo del Parral (Chihuahua), 6400 ft, 24 October 1957 (HAS); ♀, San Juan Del Rio, 5200 ft, 30 July 1947 (CDM). ZACATECAS: ♀, 1 mi N Jose de Felix, 14 July 1954 (JWM).

PREY RECORD.—None.

PLANT RECORD.—*Baccharis glutinosa* (Chihuahua).

#### 25. *Cercheris fumipennis* Say

FIGURES 118a-c

*Cercheris fumipennis* Say has not been recorded from Mexico, but it is included in the keys to Group II since it is taken in Texas; it should occur in north-eastern Mexico. An extended record of the literature and the biology will be found in Scullen (1965a: 410-414).

#### 26. *Cercheris grandis grandis* Banks

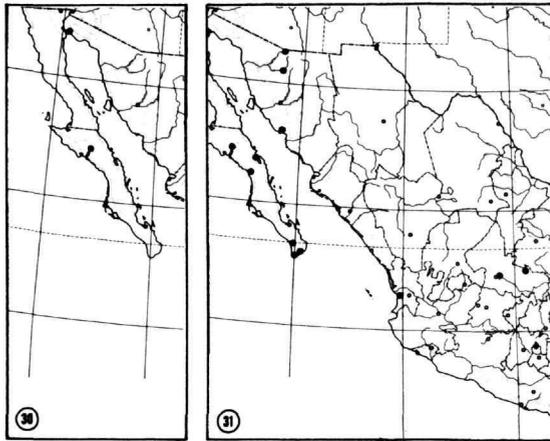
FIGURES 30, 119a-c

*Cerceris grandis* Banks, 1913:423; 1947:10.—Scullen 1951:1008; 1965a:347, 353, 414–415, figs. 37, 132a, b, c.

TYPE.—The type female of *C. grandis* Banks, taken at Fort Yuma, Ariz., is in the American Museum of Natural History (21181).

DISTRIBUTION.—Known only from Sonora and Baja California in Mexico. Three records are as follows:

MEXICO: BAJA CALIFORNIA SUR: ♂, San Angel, 28 June 1968 (JMD). SONORA: ♀, 2 mi N El Doctor, 6 June 1968 (JMD); ♂, 5 mi S Rito, 5 June 1968 (JMD).



FIGURES 30–31.—30, *C. grandis grandis* Banks; 31, *C. cochise* Scullen.

### GROUP III

#### 27. *Cerceris cochise* Scullen

FIGURES 31, 120a–d

*Cerceris cochise* Scullen, 1965a:416–418, fig. 39 [♀, ♂].

TYPES.—The type female, taken at Lordsburg to Silver City, N. Mex., 5000 feet elevation, 17 June 1942 (H. A. Scullen), and the allotype male, taken 2 miles northeast of Portal, Ariz., 5 June 1961, at *Condalia lycioides* (H. A. Scullen), are both at the National Museum of Natural History (USNM 66163).

DISTRIBUTION.—

MEXICO: BAJA CALIFORNIA SUR: ♂, Mulege, 14 May 1921 (ECD); 2♂, San Angel, 28 June 1968 (JMD and MAC); 4♂, San Jose Viejo, 16–17 July 1968 (JMD and MAC); 3♀, 18♂, San Lucas, 21, 22 July 1968 (JMD and MAC); ♂, 5 mi W San Miguel, 4 July 1968 (JMD

and MAC); ♂, Todos Santos, 24 July 1968 (JMD and MAC). NAYARIT: ♀, San Blas, 17 June 1963 (S and B). SAN LUIS POTOSÍ: ♂, 17 mi NE San Luis Potosí, 6200 ft, 6 September 1963 (S and B); ♂, 17 mi SW Ciudad del Maiz, 3200 ft, 24 July 1962 (UKE). SONORA: 2♂, 16 mi S Empalme, 7 May 1953 (RCB and EIS); ♀, 32 mi SE Guaymas, 25 ft, 23 September 1963 (S and B); ♂, Nogales, 5 March 1951; ♂, 8 mi N Santa Ana, 2100 ft, 20 June 1963 (S and B); 6♂, 17 mi S Santa Ana, 2100 ft, 20 June 1963 (S and B). ZACATECAS: ♀, 1 mi N San Jose de Feux, 14 July 1954 (JWM).

PREY RECORD.—None.

PLANT RECORD.—None.

#### 28a. *Cerceris compacta compacta* Cresson

FIGURES 32, 121a–e

*Cerceris compacta* Cresson, 1865:127.—Packard 1866:63.—Cresson 1872:230; 1887:282.—Robertson 1887:201.—Schletterer 1887:488.—Robertson 1889:297–304; 1891:570–571; 1894a:439, 455, 464; 1894b:112.—Dalla Torre, C. G., 1897:456.—Ashmead 1899:295.—Smith, J. B., 1900:519; 1910:519.—Banks 1912:17; 1912b:107.—Viereck 1916:695, 696.—Mickel 1917b:448.—Scullen 1951:1006; 1960:77.—Carrillo and Gibson 1966:110.  
*Cerceris aureofascialis* Cameron, 1890:112.—Dalla Torre, C. G., 1897:453.—Ashmead 1899:296.  
*Cerceris solidaginis* Rohwer, 1908:323.—Banks 1947:15.—Scullen 1951:1010.  
*Cerceris belfragei* Banks, 1917:114.—Scullen 1951:1005.

Specimens south of the United States–Mexican border are inclined to show smaller yellow markings.

TYPES.—The type female of *C. compacta* Cresson, from Illinois, is at the Academy of Natural Sciences of Philadelphia (1940). The type male of *C. aureofascialis* Cameron from Orizaba, Mexico, is at the British Museum of Natural History (21.1,367). The type male of *C. solidaginis* Rohwer, from Las Cruces, N. Mex., is at the National Museum of Natural History (USNM 28486). The type female of *C. belfragei* Banks, from Texas, is at the Museum of Comparative Zoology (10029).

DISTRIBUTION.—Throughout Mexico but most common in the central states of Mexico. Specimens are as follows:

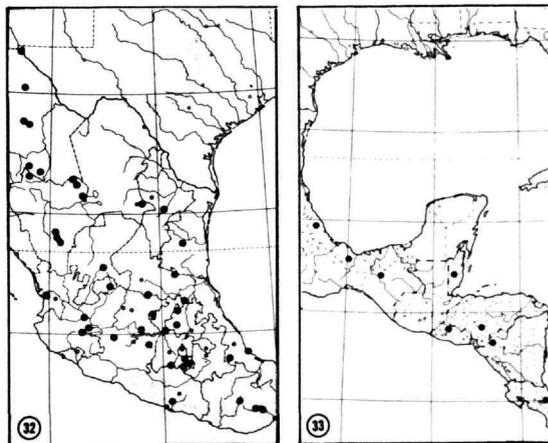
MEXICO: AGUASCALIENTES: ♂, Aguascalientes, at *Aclepias* species, 28 July 1951 (PDH); ♂, 5 mi N Aguascalientes, 17 July 1954 (EIS). BAJA CALIFORNIA (north): ♀, 47 km SE Mexicali, 30 June 1953 (RRSn). CHIAPAS: 2♀, 9 mi N Flores, 12 August 1963 (FDP, LAS); ♂, 18 mi W Jimenez, 10 August 1951 (PDH); 3♀, Suchiapa, 18 July 1957 (PDH). CHIHUAHUA: ♂, Catarinas, 5800 ft, 25 July 1947 (RME); ♀, same locality, 26 July 1947 (S);

♂, same locality and date (MAC); 4♂, 3 mi NW Chihuahua, 4900 ft, 27 July 1953, on *Asclepias* species (UKE); 4♂, 30 mi NW Chihuahua, 4900 ft, 27 July 1953 (UKE); ♂, Colonia Dublan, July 1931 (B and C); ♂, Delicias, 13 July 1947 (RME); ♂, Escuintla (C); ♂, Garcia, July 1931 (B and C); 2♀, 4♂, 29 mi E Hidalgo del Parral, 5000 ft, 20, 21 June 1956 (HAS); ♂, 18 mi W Jimenez, 10 August 1951, at *Baccharis* (PDH); ♂, Juarez (DEB); ♂, Moctezuma, 4 July 1954 (JWMc). COAHUILA: ♀, 23 mi E Saltillo, 4200 ft, 15 October 1957 (HAS). DURANGO: 6♂, 7 mi SE Ceballos, 3900 ft, 9 September 1963 (S and B); 7♂, 14 mi NW Ceballos, 4100 ft, 10 September 1963 (S and B); ♂, 30 mi NW Ceballos, 4400 ft, 10 September 1963 (S and B); ♂, 4 mi W Durango, 6300 ft, 18 September 1963 (S and B); 18♀, 40♂, 23 mi N Durango, 6300 ft, 17 June 1956 (HAS); 2♀, ♂, 40 mi NW Gomez Palacio, 3700 ft, 10 September 1963 (S and B); ♀, 65 mi S Hidalgo del Parral (Chihuahua) 6350 ft, 20 June 1956 (HAS); 2♂, Nombre de Dios, 5–6 August 1951 (PDH); ♂, same locality, 13 July 1954 (EIS); ♂, same locality, 13 August 1965 (HEE, MAE). GUANAJUATO: ♂, Salvatierra, 7 August 1962 (HEE); 2♂, Yuriria, 7 August 1962 (HEE). GUERRERO: 2♂, 41 mi N Querétaro, 6500 ft, 19 September 1963 (S and B); ♂, 12 mi N Tierra Colorado, 2600 ft, 23 August 1954 (UKE); 2♀, Mexicala, 29 July 1951 (PDH). HIDALGO: 8♀, 13♂, Jacala, 4500 ft, 31 August 1963 (S and B); ♀, 11 mi W Junction 45 and 85, 6500 ft, 3 September 1963 (S and B). JALISCO: 3♀, 2♂, Chapala, 5000 ft, 22 May 1956 (HAS); 2♀, 6♂, same locality, 19 June 1963 (S and B); 2♀, 2♂, Guadalajara, 17, 23 July 1951, 24 July 1965, on *Baccharis* (HEE); ♀, ♂, same locality, 13 July, 20 August 1903 (Mc); ♂, Jocotepec, 5000 ft, 11 July 1965 (HEE); 2♀, Lagos de Moreno, 6300 ft, 12 August 1954 (RRD); ♀, 15.5 mi NE Lagos de Moreno, 6200 ft, 26 July 1962 (UKE); 2♂, La Primavera, 8 July 1956 (R and KD); 3♀, 3 mi SE Plan de Barrancas, 8 July 1963 (FDP; LAS); ♀, Villa Guadalupe, 26 July 1951 (PDH). MEXICO: ♀, 10 mi S Junction 55 and 45, 7400 ft, 30 August 1963 (S and B); ♂, Cote Occid, 1864 (LB); 2♀, 33 mi N Taxco, Guerrero, 5700 ft, 29 August 1963 (S and B). MICHOACÁN: 2♀, Tuxpan, 11 July 1951 (PDH); ♂, Zamora, 5200 ft, 20 June 1963 (S and B); 4♀, 10 km W Zitacuaro, 11 July 1951 (PDH); ♀, same locality and date, at *Guardiola mexicana* Humboldt and Bonpland (HEE). MORELOS: ♂, Alpuyecá, 3 July 1951 (PDH); ♀, 3 mi NW Cuernavaca, 7 June 1959 (HEE); ♂, 11 mi E Cuernavaca, 20 June 1959 (HEE); ♂, 4 mi E Cuernavaca, 6000 ft, 2 June 1959 (HEE); ♀, 6 mi S Temixco, 16 July 1963 (FDP; LAS); ♀, Yautepec, 13 July 1963 (FDP, LAS). NAYARIT: 2♂, Pichon, 5 July 1956 (R and KD); ♀, 10 mi E San Blas, 500 ft, 17 June 1963 (S and B); ♀, 12.3 mi NE San Blas, 21 July 1963 (RLW); ♀, 14 mi E San Blas, 2 July 1954 (EIS). NUEVO LEÓN: ♂, 9 mi S Ciudad Valles, 600 ft, 2 September 1962 (UKE); ♀, ♂, 4 mi W El Cercado, 6 June 1951 (PDH); 2♂, 31 mi NW Linares, 1500 ft, 12 October 1957 (HAS); 3♂, Montemorelos, 1300 ft, 8 September 1963 (S and B); ♀, 50 mi SE Monterrey (HAS). OAXACA: ♀, 45 mi NW Tehuantepec, 2300 ft,

19 August 1963 (S and B); ♂, El Camaron, 3000 ft, 19 August 1963 (S and B); ♂, Mitla, 5600 ft, 20 August 1963 (S and B); ♂, Oaxaca, 8 July 1952 (EEG, CDMc). QUERÉTARO: 2♂, 41 mi N Querétaro, 6500 ft, 19 September 1963 (S and B). SAN LUIS POTOSÍ: ♀, 5 mi E Ciudad del Maiz, 4700 ft, 25 August 1954 (RRD); ♂, 15 mi E Ciudad del Maiz, 3400 ft, 23 August 1954 (UKE); 2♂, 6.5 mi E Ciudad del Maiz, 3800 ft, 23 July 1962 (UKE); 6♂, 40 mi S San Luis Potosí, 5700 ft, 5 September 1963 (S and B); ♂, 14 mi W Xilitla, 22 July 1954 (JGC). SINALOA: ♂, Los Mochis, 7 July 1922 (CTD); ♀, Topolobampo, 27 October 1965 (GEB, ASB). SONORA: ♂, 10 mi S Caborca, 11 June 1962 (DHJ). VERACRUZ: ♀, 7♂, Orizaba, 1862 (LB); ♀, 18 mi NW Santa Lucrecn, 17 April 1953 (RCB, EIS); 3♂, Santiago Tuxtula, 11 August 1956 (R and KD); 4♂, Veracruz, 28 July–11 August 1956 (R and KD). ZACATECAS: 2♂, 55 km along Route 45 from Zacatecas, 3 July 1961 (RRD). UNKNOWN STATE: ♀, Teotihuacan, 21 July 1956 (R and KD); 2♀, same locality, 16 June, 6 July 1957 (HEE).

PREY RECORD.—None.

PLANT RECORD.—*Asclepias* species (Aguascalientes, Chihuahua), *Baccharis* species (Chihuahua, Jalisco), *Guardiola mexicana* Humboldt and Bonpland (Michoacan).



FIGURES 32–33.—32, *C. compacta compacta* Cresson; 33, *C. cooperi*, new species.

### 29. *Cerceris cooperi*, new species

FIGURES 33, 122a–d

FEMALE.—Length 11 mm. Black with light yellow markings; punctation coarse and pubescence average except on the fifth and sixth abdominal terga,

where punctations are smaller and pubescence more abundant.

Head slightly wider than the thorax; black except for a narrow frontal eye patch, an elongate patch on the frons, and a patch on the mandibles, all of which are light yellow; clypeal border with two pairs of subequal denticles at the margin between the lateral and medial lobes of the clypeus; clypeal process lunar shaped with two large separated lamella on its free margin; mandibles bidentate, the more distal denticle large and acute, the more basal one very small; antennae normal in form and immaculate.

Thorax black except for a small patch on the cervix, a narrow band on the prothorax, which may be divided, two patches on the scutellum, the metanotum, two triangular patches on the propodeum bordering the enclosure, all of which are light yellow; tegulae normal; enclosure rugose with the ridges at an angle to the base; mesotubercles small but conspicuous; legs immaculate except for dark fuscous areas near the distal ends of the femori; wings subhyaline but clouded along the anterior margins of the forewings.

Abdomen black except for a broad band on tergum 1, lateral patches on tergum 2, tergum 3 immaculate, narrow band on tergum 4, and two lateral patches on sternum 2, all of which are light yellow; terga 5 and 6 pubescent; pygidium as illustrated (Figure 122*b*).

**MALE.**—Length 10 mm. Black with light yellow markings; punctuation and pubescence as on female.

Head subequal in width to thorax; black except for narrow frontal eye patches and a small patch on the frons, which are light yellow; clypeal margin with three subequal small denticles on the medial lobe; mandibles unidentate; hair lobes narrow; antennae immaculate and normal in form.

Thorax black except for evanescent small spots on the pronotum, two small spots on the scutellum; the metanotum; two triangular patches on the propodeum bordering the enclosure; two patches on the propodeum separated from the above triangular patches, all of which are light yellow; tegulae normal; enclosure smooth except for a slight medial groove; mesopleural tubercle absent; legs immaculate except for small stripes on the fore- and midtibiae and a small dark fuscous area on the distal end of the hind femori; wings subhyaline with a darkened area along the anterior border of the forewings.

Abdomen black except for a broad band on tergum

1, a broken narrow band on tergum 2, narrow bands on terga 4, 5, and 6, most of sternum 1 and a band on sternum 2, all of which are light yellow; pygidium as illustrated (Figure 122*d*).

The more lateral yellow patch on the propodeum of the male may disappear and may appear on some females. A yellow patch may appear on the pleuron below the wing attachment on the male. *Cerceris cooperi* is closely related to several other species of the *compacta* group. The bidentate mandibles will separate it from all other species of this group except *C. veracruz veracruz*, new subspecies, in which the mandibular denticles are subequal in size and the hind trochanter is yellow. In *C. cooperi* the more distal mandibular denticle is much larger than the more basal denticle and the hind trochanter is immaculate.

**TYPES.**—The type female and allotype male of *C. cooperi*, taken 6 miles west of Turrialba, Costa Rica, at 3800 feet elevation on 17 and 23 July 1963, respectively (H. A. Scullen and Duis Bolinger), are at the National Museum of Natural History (USNM 71060). Paratypes are as follows:

**CENTRAL AMERICA: BRITISH HONDURAS:** ♀, Augustine Mountain, Pine Ridge, 3–7 July 1963 (CCP). **COSTA RICA:** ♀, 4 km E Ignacio de Acosta, San José Province, 8 July 1963 (CDM); 4♂, Pacure, 6 July 1949 (KWC); 2♀, 6♂, Turrialba, 2080 ft, 18, 22, 24 July 1963 (S and B); 9♂, same locality, 14–15, 24, 28 June, 10 July 1949 (KWC); 41♀, 173♂, 6 mi W Turrialba, 3800 ft, 13–17, 21, 23 July 1963 (S and B). **HONDURAS:** ♀, Prieta, 4 June 1924; ♀, Tegucigalpa, 25 July 1917 (FJD). **NICARAGUA:** ♂, 28 mi S Somoto, 2000 ft, 31 July 1963 (S and B). **SAN SALVADOR:** 2♂, Quezaltepeque, 3 July 1963 (S and B).

**MEXICO: CHIAPAS:** ♀, 4 mi SW Simojovel, 18 March 1953 (RCB and EIS). **OAXACA:** ♀, Donaji, 17 April 1953 (RCB and EIS). **VERACRUZ:** ♀, ♂, 35 mi W Acayucan, 18 August 1959 (ASM and LAS); ♀, Jalapa (C).

**DISTRIBUTION.**—Largely a Central American species with limited records from southern Mexico.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

### 30a. *Cerceris costarica costarica*, new subspecies

FIGURES 34, 123*a–d*

**FEMALE.**—Length 13 mm. Black with yellow markings; punctuation average; pubescence very short.

Head slightly wider than the thorax; black except for large frontal eye patches, upper surface of the clypeal process, the frons, and upper basal half of the mandibles, all of which are yellow; clypeal margin

with four somewhat indistinct denticles; clypeal process very prominent with two separate oval lamellae (similar to *C. compacta* Cresson); mandibles with three denticles, the distal one broad and rounded, the two more basal denticles shorter, acute, and subequal in form and size; antennae immaculate and normal in form.

Thorax black except for a broken band on the pronotum, the scutellum, the metanotum, and small spots on the tegulae, all of which are yellow; tegulae normal; enclosure heavily ridged at a slight angle to the base and with a medial groove; mesopleural tubercle absent; legs black except for large yellow areas on the first two tibiae and the first two tarsi; wings subhyaline except the anterior margins of the forewings are clouded.

Abdomen black except for the following yellow markings: small spot on terga 1, a broad, slightly emarginate band on terga 2, narrow broadly emarginate bands on terga 3, 4, and 5; venter immaculate; pygidium as illustrated (Figure 123*b*).

MALE.—Length 11 mm. Black with yellow markings; punctation and pubescence average.

Head slightly wider than the thorax; black except for large frontal eye patches, the upper portion of the medial clypeal lobe, the frons, two small evanescent spots on the vertex (sometimes greatly expanded), and small spots on the mandibles, all of which are yellow; three low denticles on the medial clypeal margin; medial clypeal lobe very convex; mandibles unidentate; hair lobes confined to the lateral clypeal lobes; antennae normal in form.

Thorax black except for a broken band on the prothorax, the scutellum, the metanotum, and the tegulae, all of which are yellow; tegulae normal; enclosure ridged at an angle to the base; mesopleural tubercles absent; legs black to distal ends of all femora, all tibiae with more or less yellow, fore- and hind tarsi largely yellow, hind tarsi all dark; wings subhyaline with the anterior border of the forewing clouded.

Abdomen black except for an evanescent variable spot on tergum 1, a broad band on tergum 2, and narrow bands on terga 3–6, all of which are yellow; pygidium as illustrated (Figure 123*d*).

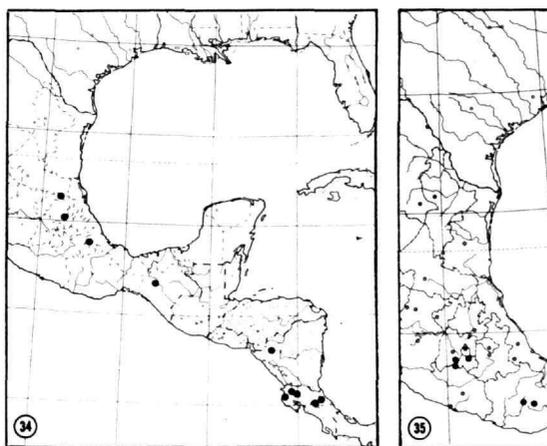
The yellow spots on the vertex of the male head may be enlarged to form converging patches, and yellow patches may appear back of the compound eyes. The hind trochanter may become more or less yellow. The taxonomic status of the males is some-

times uncertain except when associated with the females.

This species belongs to the *compacta* Cresson group. The female of *C. costarica costarica* is best distinguished by the broad plate-like distal denticle on the mandible.

TYPES.—The female type and male allotype of *C. costarica* Scullen, taken from 3 miles northwest of Liberia, Costa Rica, 400 feet elevation, 28 July 1963 (H. A. Scullen and Duis Bolinger), are at the National Museum of Natural History (USNM 71061). Paratypes are as follows:

CENTRAL AMERICA: COSTA RICA: ♂, Heredia, Puerto Viejo, 100 m, 1 August 1964 (MGN); 2♂, Golfito, 11 July 1957 (ASM); 3♂, same locality, 20 July 1957 (T and ASM); 2♀, 48♂, Liberia, 400 ft, 28–29 July 1953 (S and B); ♀, 10♂, 3 mi NW Liberia, 400 ft, 28 July 1963 (S and B); 3♂, 12 mi NW Liberia, 400 ft, 28 July 1963 (S and B); 3♀, 132♂, 7 mi SE Liberia, 400 ft, 27, 29 July 1963 (S and B); 27♂, 16 mi SE Liberia, 300 ft, 26–27 July 1963 (S and B); ♀, Playas del Coco, Guanacaste, 5 August 1964 (RB and GR); ♂, same locality, 5 August 1964 (MGN); ♂, Rio Amarillo, 8 km SW Guapiles, Limon Province, 20 August 1964 (RB and GR); 4♀, 2♂, San José, 15 June, 7 July 1963 (CDM and DRM); ♀, same locality, 3 August 1964 (RB and GR); ♂, same locality, 26 June 1963 (CDM and K); ♂, same locality, 9 November 1963 (AEM). EL SALVADOR: 2♂, Quezaltepeque area, 3 July 1963 (S and B); 2♂, same locality, 21 June 1961, 16 July 1963 (MEI); ♂, 4 km W Quezaltepeque, 450 m, 16 December 1964 (MEI). NICARAGUA: ♂, Condega, 2050 ft, 7 July 1963 (S and B); ♀, ♂, 8 mi S Condega, 2200 ft, 7 July 1963 (S and B).



FIGURES 34–35.—34, *C. costarica costarica*, new subspecies; 35, *C. costarica mitla*, new subspecies.

MEXICO: CHIAPAS: ♂, Finca Cucalhuitz, 19 km NE Bochil, 28 September 1961 (FMP); ♀, Tuxtla Gutierrez, 11 July 1952 (EEG and CDM). HIDALGO: ♀, Pachuca, 6 July 1937 (GEB). SAN LUIS POTOSI: ♀, 8 mi W Xilitla, 3200 ft, 22 July 1954 (UKE). VERACRUZ: ♀, Orizaba, 12 August 1961 (R and KD).

SOUTH AMERICAS BRAZIL: ♀, Baixa Verde, Rio Grande Norte (WMM).

DISTRIBUTION.—This species is abundant in Costa Rica and nearby parts of Central America. Limited specimens have been taken in southeastern Mexico. One record from Brazil is of interest because it is so far beyond the known range.

PREY RECORD.—None.

PLANT RECORD.—None.

### 30b. *Cerceris costarica mitla*, new subspecies

FIGURES 35, 124a, b

FEMALE.—Length 13 mm. Black with yellow markings; punctuation average; pubescence very short.

Head in all respects like that of the nominate subspecies, *C. costarica costarica*, new subspecies, including the characteristic enlarged distal denticle on the mandible.

Thorax like that of the nominate subspecies except the scutellum is black and the hind trochanter is yellow.

The abdomen in all essential respects is like that of the nominate subspecies.

MALE.—Length 10 mm. Black with yellow markings; punctuation and pubescence average.

Head in all respects like that of the nominate subspecies.

Thorax similar to that of the nominate subspecies except the scutellum is black and the hind trochanter is yellow.

The abdomen is similar in all respects to that of the nominate subspecies.

The males of this species are difficult to distinguish from closely related species except when associated with the females.

TYPES.—The type female and allotype male, taken from Mitla, Oaxaca, Mexico, 5600 feet elevation, 27 June and 20 August 1963 respectfully, are at the National Museum of Natural History (USNM 71062). Paratypes are as follows:

MEXICO: GUERRERO: ♂, Almolongo, 6000 ft, 29 July 1962 (HEE); 2♂, 3 mi N Taxco, 5500 ft, 1 June 1959 (HEE). MEXICO: ♂, 33 mi N of Taxco (Guerrero), 5700 ft, 29 August 1963 (S and B). MORELOS: ♀, 2♂, Cuernavaca, 12 July 1961 (R and KD); 3♂, 4 mi E Cuernavaca,

6000 ft, 2, 16, 29 June 1959 (HEE). OAXACA: 3♀, ♂, Mitla, 5600 ft, 27–28 June, 20 August 1963 (S and B); ♀, 5 mi S Oaxaca, 6150 ft, 21 August 1963 (S and B); ♂, 12 mi SE Oaxaca, 5350 ft, 21 August 1963 (S and B); ♂, 38 mi SE Oaxaca, 5600 ft, 19 August 1963 (S and B).

DISTRIBUTION.—South-central Mexico.

PREY RECORD.—None.

PLANT RECORD.—None.

### 31. *Cerceris cuernavaca*, new species

FIGURES 36, 125a–c

FEMALE.—Length 11 mm. Black with light yellow markings; punctuation average; pubescence very short.

Head subequal in width to the thorax; black except for large frontal eye patches, a small spot on the frons, and the basal half of the mandibles, all of which are very light yellow; clypeal free margin with four denticles on the medial lobe, the two medial denticles connected by a lamella; the clypeal process with two separated lamellae on its free margin; the lateral lobes and lateral portions of the medial lobe covered with a silvery pubescence; mandibles with small denticles; antennae normal in form, immaculate but dark above and lighter below.

Thorax black except for a widely divided band on the pronotum, the metanotum, a pair of small patches on the propodeum bordering the enclosure, two large patches more laterad on the propodeum, and a patch on the tegulae, all of which are very light yellow; tegulae smooth; enclosure ridged and with a medial groove; mesosternal tubercle small but acute; legs black except hind trochanter, stripe on fore- and midtibiae, small patch on the hind tibiae, and most of the fore- and midtarsi, all of which are very light yellow; wings subhyaline except for the anterior part of the forewings, which are clouded.

Abdomen black except for a broad band on tergum 1, narrow bands on terga 2 to 5, lateral patches on sterna 2, 3, and 4, all of which are light yellow; pygidium as illustrated (Figure 125c).

Distinguished from closely related species by the much smaller lamellae on the clypeal process.

MALE.—Unknown.

TYPE.—The female holotype, taken at Cuernavaca, Morelos, Mexico, 9 July 1961, by R. and K. Dreisbach, is at the National Museum of Natural History (USNM 71063).

DISTRIBUTION.—Known only from the above holotype.

PREY RECORD.—None.

PLANT RECORD.—None.

### 32. *Cerceris duisi*, new species

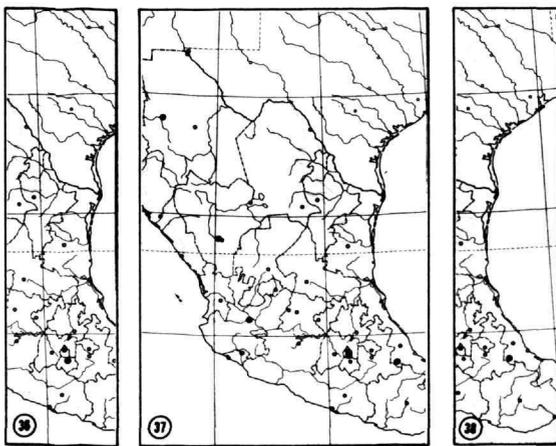
FIGURES 37, 126a-c

FEMALE.—Length 11 mm. Black with yellow markings; punctation and pubescence average.

Head subequal in width to the thorax; black except for large frontal eye patches, a small spot on the frons, the clypeal process, spot back of eye, and the basal half of mandibles, all of which are yellow; clypeal free margin with five denticles, the medial one somewhat smaller than the others and more rounded; clypeal process subequal to one-half the distance between the compound eyes, the surface yellow, and the free margin with two semioval lamella, which are fused at their base; mandibles with two subequal denticles; antennae normal in form, immaculate, and uniformly dark.

Thorax black except for a widely divided band on the pronotum, a divided wide band on the scutellum, and a patch on the tegulae, all of which are yellow; tegulae normally smooth; enclosure lightly ridged; mesopleural tubercle small but distinct; legs black to the distal ends of all femori, which are amber, and the hind trochanters, which are yellow; tibiae and tarsi yellow infringed with amber; wings subhyaline but clouded along the anterior borders of the forewings.

Abdomen black except for a broad patch on terum



FIGURES 36-38.—36, *C. cuernavaca*, new species; 37, *C. duisi*, new species; 38, *C. fortin*, new species.

1, broad but deeply emarginate bands on terga 2, 3, 4, and 5, and lateral patches on sterna 3 and 4, all of which are yellow; pygidium as illustrated (Figure 126c).

MALE.—Unknown.

TYPES.—The holotype female of *Cerceris duisi* Scullen, which was taken 10 miles southwest of Mendoza, Veracruz, Mexico, at 5300 feet elevation, 25 August 1963, by H. A. Scullen and Duis Bolinger, is at the National Museum of Natural History (USNM 71064). Paratypes are as follows:

MEXICO: CHIHUAHUA: ♀, 8 mi W of Matachic, 7200 ft, 8 July 1947 (CDM). DISTRITO FEDERAL: ♀, Atzacapotzalco, 5-31 July 1921. DURANGO: ♀, 10 mi W Durango, 12 July 1954 (EIS). JALISCO: ♀, 20 mi S Guadalajara, 19 July 1963 (S and B). MEXICO: ♀, Teoihuacan, 6 July 1951 (HEE); ♀, same locality and date (PDH). VERACRUZ: 4 ♀, 10 mi SW Mendoza, 5300 ft, 25 August 1963 (S and B); 3 ♀, Orizaba, 12 August 1961 (R and KD). STATE UNKNOWN: ♀, Atzacapico, 31 August 1922 (EGS).

DISTRIBUTION.—Scattered records but apparently more common in state of Veracruz.

PREY RECORD.—None.

PLANT RECORD.—None.

### 33. *Cerceris fortin*, new species

FIGURES 38, 127a-c

FEMALE.—Length 15 mm. Black with very limited very light yellow markings; punctation coarse; pubescence short.

Head subequal in width to the thorax; black except for large frontal eye patches, a triangular patch on the frons, basal two-thirds of the mandibles, and a patch on the scape, all of which are very light yellow; clypeal free border with five low denticles connected by indistinct carinae; clypeal process very broad, lunar in shape with two separated semioval lamellae attached to its free border; mandibles very long, with three denticles, the most apical one very large, the two more basal ones small; antennae normal in form, somewhat darker apically, a light yellow patch on the scape.

Thorax all black except for a trace of yellow on the pronotum and a broken band on the metanotum; enclosure ridged; mesosternal tubercles small but conspicuous; legs all black except clouded yellow patches on the fore- and midtibiae; wings subhyaline except the forewings are clouded along the anterior margins.

Abdomen black except for a narrow band on tergum 1, lateral narrow patches on terga 2 and 3, and a narrow line on terga 4, all of which are very light yellow; pygidium as illustrated (Figure 127c).

*Cerceris fortin* appears to be close to *C. mexicana* Saussure. The type of the latter species was not found by the writer in Europe.

MALE.—Unknown.

TYPES.—The type female, taken from Fortin de las Flores, Veracruz, Mexico, 9 September 1954 (F. X. Williams), is at the California Academy of Sciences. Paratype as follows: ♀, same locality, 14–21 September 1954 (FXW).

DISTRIBUTION.—Known only from the type-locality.

PREY RECORD.—None.

PLANT RECORD.—None.

### 34. *Cerceris huastecae* Saussure

FIGURE 39

*Cerceris huastecae* Saussure, 1867:102, pl. iv: fig. 60.—Schletterer 1887:494.—Cameron 1890:118.—Dalla Torre, C. G., 1897:463.

*Cerceris huastecae* [sic].—Ashmead, 1899:296.

The present author has been unable to recognize this species from the description. From Saussure's illustration of the female clypeal lamellae (pl. iv: fig. 60), it is close to *C. compacta* Cresson. No type of this species was found by the present author at Vienna or Geneva in 1959.

TYPE.—Unknown. The type-locality as given by Saussure is "Mexico, calida, Tampico."

DISTRIBUTION.—Known only from the type-locality and as recorded by Cameron: "Mexico, Chilpancingo in Guerrero 4600 feet (H. H. Smith), Tampico."

PREY RECORD.—None.

PLANT RECORD.—None.

### 35. *Cerceris hurdi*, new species

FIGURES 40a, b, 128a-d

FEMALE.—Length 12 mm. Black with yellow markings; punctation average; pubescence very short.

Head one-eighth wider than the thorax; black except large eye patches, the entire clypeus, patch between the antennal scrobes, basal part of mandibles and a small patch back of the eyes, all of which are yellow; clypeal process lunar shaped with a divided lamella; the attachment of the lamella is

marked by a distinct carina, which terminates laterally as a dark subdenticle-like point; clypeal margin with a prominent denticle at the medial end of each lateral lobe; mandibles with a sinuate carina medially with two minute elevations terminating as a low rounded denticle; antennae normal in form.

Thorax black except for two separated patches on the pronotum, the scutellum, and a patch on the tegulae, all of which are yellow; tegulae low and smooth; propodeum immaculate; enclosure distinctly ridged subparallel to the meson medially but approaching a 45° angle laterally; mesosternal tubercle absent; legs black to fuscous except for much of all tibiae, the tarsal segments and the third trochanter, all of which are yellow; wings subhyaline, becoming darker along the anterior border.

Abdomen black except for an elongate patch on tergum 1, and deeply emarginate bands on terga 2, 3, 4, and 5; venter immaculate on type (others show lateral patches); pygidium with sides converging apically, both ends rounded (Figure 128b).

MALE.—Length 11 mm. Black with yellow markings; punctation average; pubescence very short.

Head slightly wider than the thorax; black except the entire face below the antennal scrobes, small spots back of the eyes, basal half of the mandibles, and a small patch on the scape, all of which are yellow; medial extension on the clypeal border very narrow, subequal in width to the epistomal suture, with three dark acute denticles; hair lobes extending over three-fourths of the lateral clypeal lobe; mandibles unidentate; antennae normal in form.

Thorax black except for a broken band on the pronotum, a broad band on the scutellum, very rarely a trace of yellow on the metanotum, and a patch on the tegula, all of which are yellow; tegulae smooth; enclosure ridged and with a medial groove; mesopleural tubercle absent; legs black to distal end of all femora except the hind trochanter, which is yellow, and an evanescent trace of yellow on the midtrochanter; fore- and midtibiae and tarsi largely yellow except for a patch on the tibiae; hind tibiae and tarsi largely dark except the basal half of tibiae; wings subhyaline but forewing lightly clouded apically.

Abdomen black except for narrow yellow bands on the posterior borders of terga 2–6; venter black except for small lateral yellow patches on sterna 2–5; pygidium more oval than usual for males (Figure 128d).

A trace of yellow may rarely appear on the metanotum of either sex. The midtrochanter is sometimes yellow on males. A broad yellow patch appears on the genae of one female from eight miles south of Canutilla, Durango.

**TYPES.**—The female type, taken at Ahuacatlan, Nayarit, Mexico, 18–22 July 1951, on *Donnellsmithia hintonii* Mathias and Constance, by P. D. Hurd, and the allotype male, taken 8 miles south of Canutilla, Durango, Mexico, 9 August 1951, by P. D. Hurd, are deposited at the California Academy of Sciences. Paratypes are as follows:

**MEXICO:** CHIHUAHUA: ♀, Hidalgo del Parral, 13 August 1967 (RCG, Ko, KL). DURANGO: 7♀, 11♂, 8 mi S Canutillo, on *Guardiola tulocarpo*, 9 August 1951 (PDH); 2♀, 3♂, same locality and date (HEE); 2♀, Encino, 6200 ft, 27 July 1947 (WJG); 6♂, 65 mi S Hidalgo del Parral (Chihuahua), at *Asclepias* species, 20 June 1956 (HAS); ♀, San Juan del Rio, 9 August 1951 (HEE). GUERRERO: 2♂, Chipancingo, 24 July 1961 (R and KD); 3♂, Iguala, 21 July 1961 (R and KD). JALISCO: 2♀, Guadalajara, 26 August 1903, July 1904 (Mc); ♂, 9 mi S Guadalajara, 29 July 1965 (HEE); ♀, 20 mi N La Quemada, 27 July 1947 (WJC, MAC, GMB); 2♂, 3 mi SE Plande Barrancas, 8 July 1963 (FDP and LAS); ♀, 3♂, San Juan Lagos, on *Eysenhardtia polystachya* (Ortega). MICHOACÁN: 2♂, 11 mi E Apatzingan, 20 August 1954 (EGL, JWM, RFS). MORELOS: Alpuyecá, 5♀, 2♂, 27 June, 3 July 1951 (HEE); 2♀, 3♂, same locality and date (PDH); ♂, 5 mi E Cuernavaca, 16 July 1963 (FDP and LAS); ♂, Xochicalco, 4000 ft, 13 July 1961 (R and KD); ♀, 3♂, Tequesquitengo, 15 July 1961 (R and KD); 6♂, Yautepec, 13 July 1963 (FDP and LAS). NAYARIT: ♂, La Mesa de Nayar, 19 July 1955 (BM).

OAXACA: ♂, 100 mi S Acayucan (Veracruz) in Oaxaca, 600 ft, 18 August 1963 (S and B); ♀, 7 mi NE Juchitan, 18 July 1952 (EEG, CDMc). VERACRUZ: ♂, 22 mi SE Jalapa, 1100 ft, 29 June 1953 (UKE).

CENTRAL AMERICA: NICARAGUA: ♀, 8 mi S Condega, 2200 ft, 7 July 1963 (S and B).

UNITED STATES: ARIZONA: ♀, 5 mi W Patagonia, 25 August 1955 (GDB).

**DISTRIBUTION.**—Scattered records through Mexico with one record from the United States (Arizona) and one from Nicaragua.

**PREY RECORD.**—None.

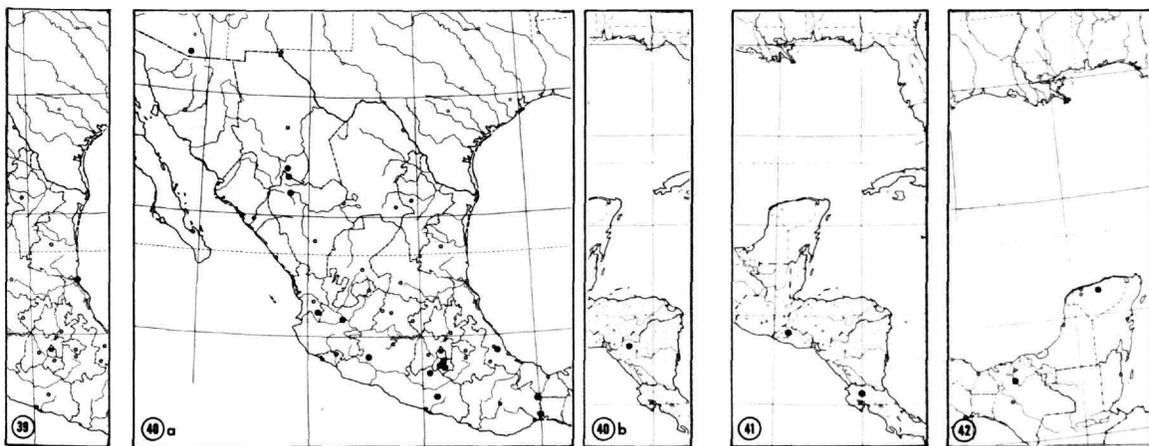
**PLANT RECORD.**—*Asclepias* species (Durango), *Donnellsmithia Hintonii* (Nayarit), *Eysenhardtia polystachya* (Jalisco), *Guardiola tulocarpa* (Durango).

### 36. *Cerceris irwini*, new species

FIGURES 41, 129a–d

**FEMALE.**—Length 12 mm. Black with yellow markings fused with fulvous borders; punctuation average to coarse; pubescence short.

Head slightly wider than the thorax; black except the entire face below the antennal scrobes to the clypeal margin and medial clypeal lobe below the process, and the dorsal two-thirds of the mandibles, which are yellow; clypeal border showing four low denticles, the medial pair more widely separated and with a low carina connecting them; the clypeal process lunar shaped with a semioval pair of lamella on the free margin completely separated; mandible



FIGURES 39–42.—39, *C. huastecae* Saussure; 40a, 40b, *C. hurdi*, new species; 41, *C. irwini*, new species; 42, *C. mexicana* Saussure.

tridentate, the distal one the largest and the medial one the smallest, all denticles acute; antennae normal in form, immaculate but more fuliginous below.

Thorax black except for a band on the pronotum, the scutellum, the metanotum, a divided patch on the enclosure, two large lateral patches on the propodeum, and a small area on the tegulae, all of which are yellow; tegulae normal in form, enclosure heavily ridged at a 45° angle and with a medial groove; mesosternal tubercle absent; legs black except the anterior half of the fore- and midtibiae and much of the fore- and midtarsi, all of which are yellow fused with fulvous; wings subhyaline with the anterior portion of the forewing clouded.

Abdomen black except most of tergum 1, tergum 2 with a narrow band, which is greatly expanded laterally, narrow bands on terga 3, 4, and 5, sternum 1, most of sternum 2, and small lateral spots on sterna 3 and 4, all of which are yellow; pygidium as illustrated (Figure 129*b*).

**MALE.**—Length 10 mm. Black with yellow markings that are fused with fulvous at the margins; punctuation somewhat coarse; pubescence short.

Head subequal in width to the thorax, black except the face from the antennal scrobes to the clypeal border on the lateral lobes and to the lower third of the medial lobe, which is yellow; medial clypeal lobe narrowly extended and with three low denticles; hair lobes covering about the lateral two-thirds of the lateral clypeal lobes; mandibles immaculate and unidentate; antennae normal in form, immaculate but lighter below.

Thorax black except band on the pronotum, the scutellum, the metanotum, much of the enclosure, two evanescent areas on each side of the propodeum, which become more or less fulvous or disappear, and a small area on the tegulae, all of which are yellow infused more or less with fulvous; tegulae normal in form; enclosure somewhat ridged at a 45° angle and with a medial groove; mesosternal tubercle absent; legs colored as in female; wings as in female.

Abdomen black except all of terga 1 and 2, sterna 1 and 2, narrow bands on terga 3, 4, 5, and 6, very small lateral spots on sterna 3, 4, 5, and 6, all of which are yellow more or less infused with fuscous; pygidium as illustrated (Figure 129*d*).

**VARIATIONS.**—The yellow markings, especially on the propodeum, are quite variable on both sexes of *C. irwini* Scullen. The more lateral patch of yellow on the propodeum may completely disappear or be

greatly reduced in size. Some male specimens are difficult or impossible to distinguish from the males of *C. cooperi*, new species, which are also common in Central America. The females of the above species are separated easily by the structure of the mandibles as well as the color pattern. *Cerceris irwini* is very close to *C. compacta* Cresson, and possibly it should be considered a subspecies of that species.

**TYPES.**—The type female and allotype male of *C. irwini*, taken 7 miles southeast of Liberia, Costa Rica, 400 feet elevation, 29 July 1963 (H. A. Scullen and Duis Bolinger), are at the National Museum of Natural History (USNM 71068). Paratypes are as follows:

**CENTRAL AMERICA: COSTA RICA:** 2♂, Liberia, 400 ft, 28 July 1963 (S and B); ♂, same locality, 8 August 1964 (R and GR); 2♀, 12♂, 7 mi S Liberia, 400 ft, 27, 29 July 1963 (S and B); ♀, ♂, 3 mi NW Liberia, 400 ft, 28 July 1963 (S and B); 2♂, 12 mi NW Liberia, 400 ft, 28 July 1963 (S and B). **EL SALVADOR:** 4♂, Quezaltepeque, 17, 22 June 1963 (C and I); ♂, 4 mi N Quezaltepeque, 18 July 1961 (HEI); ♂, 5 mi N Quezaltepeque, 23 August 1961 (HEI).

**DISTRIBUTION.**—Recorded only from Costa Rica and El Salvador, but there is no doubt it is in Honduras and Nicaragua also.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

### 37. *Cerceris mexicana* Saussure

FIGURE 42

*Cerceris mexicana* Saussure, 1867:101–102, pl. iv: fig. 59.—Schletterer 1887:497.—Cameron 1890:117, pl. vii: 19, 19*a-c*.—Dalla Torre, C. G., 1897:467.—Ashmead 1899:296.

The present author has been unable to recognize this species from the description. From the illustration of the female clypeal lamellae (Cameron 1867, pl. iv: fig. 59), it is close to *C. compacta* Cresson. No types were found by the author at Vienna or Geneva in 1959. It may be the same as *C. fortin*, new species, described in this publication (species number 33).

**TYPES.**—Unknown. The type-locality as given by Saussure is as follows: "In Agro Mexicano calido; ♀ in *Pueblo viejo* (Tampino) cepi et 2 ♂ prope Cuautlam in terras calidas provinciae urbis Mexico."

**DISTRIBUTION.**—Known only from the above records by Saussure and as recorded by Cameron: "Mexico, Tampico, Cuautla, Teapa in Tabasco

(H. H. Smith), Temax in North Yucatan (Gaumer)."

PREY RECORD.—None.

PLANT RECORD.—None.

### 38. *Cerceris montealban*, new species

FIGURES 43, 130a-d

FEMALE.—Length 16 mm. Black with very limited light markings; punctation average; pubescence short.

Head subequal in width to the thorax; black except for the frontal eye patches and a small patch on the medial clypeal lobe; clypeal border with three low denticles on the medial lobe and low broad elevations at the union of the medial and lateral lobes; an undivided lamella on the clypeal process; rows of prominent bristles are inserted close to the margin of the medial clypeal lobe and also bordering the clypeal process; mandibles with two denticles, the more distal one larger; antennae normal in form.

Thorax black except for two elongate patches of yellow on the scutellum; tegulae smooth; enclosure entirely ridged at an angle to the base; mesosternal tubercle small but acute; legs all black; wings dark.

Abdomen black except for a small narrow band on tergum 1 and a broken line on the distal margin of tergum 2, both of which are yellow; pygidium as illustrated (Figure 130b).

MALE.—Length 13 mm. Black with limited yellow markings; punctation coarse; pubescence average.

Head very slightly wider than the thorax; black except for large frontal eye patches, most of the medial lobe of the clypeus, evanescent patches on the lateral clypeal lobes, and small spot on the scape, all of which are yellow; clypeal margin with three low denticles on the medial lobe; hair lobes typical and covering the lateral lobes only; mandibles with one low denticle; antennae normal in form.

Thorax black except for a divided yellow band on the scutellum; enclosure lightly ridged at an angle to the base; tegulae smooth; mesosternal tubercle absent; legs black except for the fore- and midtibiae and tarsi, which show some yellow; wings clouded.

Abdomen all black except for a broad band on tergum 1, narrow bands on terga 2 and 3, and lateral patches on sterna 1, 2, and 3, all of which are yellow; pygidium as illustrated (Figure 130d).

This species somewhat resembles such large dark species as *C. imperialis* Saussure, *C. simplex simplex* F. Smith (South America), and *C. mexicana* Saussure, but clypeal structures will easily separate them.

TYPES.—The type female and allotype male, taken at Oaxaca, Oaxaca, Mexico, 8 July 1952 (E. E. Gilbert and C. D. MacNeil), are deposited at the California Academy of Sciences. Paratypes are as follows:

MEXICO: GUERRERO: ♀, Taxco, 9 July 1962 (DHJ). JALISCO: ♂, Guadalajara (C); ♂, 9 km N Mazamita, 31 July 1952 (FGW and FWW). MEXICO: ♀, Ixtapan de la Sol, 5500 ft, 9 August 1954 (JGC). MICHOACÁN: ♂, Morelia, 7 September 1938 (LJP). MORELOS: ♂, Cuernavaca, 9 July 1961 (R and KD); ♂, Tuxpan, 6000 ft, 6 July 1959 (HEE); 5♂, same locality, 11 July 1951 (HEE); 3♂, same locality and date (PDH); ♀, 4.3 mi W Yauatepec, 4000 ft, 17 August 1962 (O and M). NAYARIT: ♀, Tepic, 13 September 1957 (R and KD). OAXACA: 2♂, 13 mi SE Huajuapande Leon, 6000 ft, 4 July 1953, on *Salix* species (UKE); ♀, ♂, Monte Alban Ruins, 3 August 1964 (AVD); 2♂, Oaxaca, 8 July 1952 (EEG and CDMac); ♂, same locality, 1800 m, 13-14 July 1928 (GL); ♀, ♂, same locality, 24 July 1933 (ME); ♂, 12 mi SE Oaxaca, 5350 ft, 21 August 1963 (S and B). SINALOA: ♂, 1.7 mi W Potrerillos, 22 August 1964 (EIS); ♂, 6.5 mi E Potrerillos, 21 August 1964 (PAP).

DISTRIBUTION.—Southwestern Mexico from Sinaloa to Oaxaca.

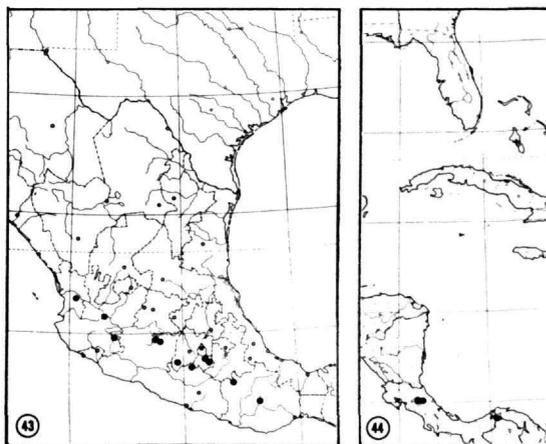
PREY RECORD.—None.

PLANT RECORD.—*Salix* species (Oaxaca).

### 39. *Cerceris rufonigra turrialba*, new subspecies

FIGURES 44, 131a-g

FEMALE.—Length 12 mm. Body slender; black with yellow markings covering close to 50 percent of the



FIGURES 43-44.—43, *C. montealban*, new species; 44, *C. rufonigra turrialba*, new subspecies.

body surface; punctation average to coarse; pubescence very short.

Head about one-third wider than the thorax; yellow markings cover much of the head, leaving the following areas black: an irregular area embodying the ocelli with extensions to the compound eyes and to the antennal scrobes, a black band extending from the posterior border of one eye to that of the other eye passing through the occiput, and an oval black patch on the genae surrounded by yellow; the clypeal border is amber, has three indistinct low denticles on the medial lobe, and a low carina near the junction of the medial and lateral lobes; the clypeal process border has two separated depressed lamella, dorsad of which there is a band of short bristles; mandibles very long with one large denticle near the apex, basad of which there are three low denticles; mandibles largely yellow with the apex and denticles fuscous; antennae normal in form, ferruginous with a yellow patch on the scape.

Thorax black except a divided band on the pronotum, two elongate stripes dorsally and two more lateral patches cephalad of the tegulae on the scutum, scutellum with two lateral patches, the metanotum, small patch on the tegulae, the propodeum exclusive of an elongate black area, most of the pleuron and ventral parts of the thorax, all of which are yellow; tegulae normal in form; enclosure heavily ridged; mesosternal tubercles appearing as two distinct denticles, one above and one below the epipleural suture with the corresponding sclerites considerably inflated; legs largely yellow except for dark stripes along the trochanters, femori, and tibiae; wings subhyaline.

Abdomen largely yellow with black bands on terga 1 and 2, black patches along the mesal anterior borders of terga 3, 4, and 5; venter yellow; pygidium as illustrated (Figure 131*d*), yellow but darker at the apex.

**MALE.**—Length 10 mm. Body slender; black with markings very similar to the female; punctation average; pubescence very short.

Head subequal in width to the thorax; yellow except for the following black areas: an irregular area embodying the ocelli with extensions to the compound eyes and antennal scrobes, a black band extending from the posterior border of one compound eye to that of the other eye and passing through the occiput, and a small black spot on the genae surrounded by yellow; clypeal border amber with three

very indistinct elevated carina on the medial lobe; hair lobes extending over the lateral two-thirds of the lateral clypeal lobes; mandibles without denticles, largely yellow but with the apex and margins darker; antennae normal in form, ferruginous to fuscous with a yellow patch on the scape.

Thorax with a color pattern like that of the female; enclosure ridged as in the female; mesopleural tubercles absent but the mesopleural sclerites inflated as in the female; legs and wings as on the female.

Abdomen with yellow markings as on the female, that on tergum 6 being similar to the color pattern on terga 3, 4, and 5; pygidium as illustrated (Figure 131*g*), yellow except for darker apex.

**TYPES.**—The type female, taken from Turrialba, Costa Rica, 2080 feet elevation, 24 July 1963, and the allotype male, taken from 6 miles west of Turrialba, Costa Rica, 3800 feet elevation, 17 July 1963 (both by H. A. Scullen and Duis Bolinger), are at the National Museum of Natural History (USNM 71073). Paratypes are as follows:

**CENTRAL AMERICA: COSTA RICA:** ♂, Heredia, Puerto Viejo, 100 m, 1 August 1964 (MGN); ♀, Turrialba, 2080 ft, 22 July 1963 (S and B); ♂, same locality, 31 July 1963 (C and I); 4♀, 75♂, 6 mi W Turrialba, 13–17, 21, 23 July 1963 (S and B). **PANAMA:** ♀, Potrerillos, 3 May 1935 (GEB); ♀, Barro Colorado Island, 4 March 1937 (SWF); 2♀, ♂, same locality, 27 April, 7 June 1952, 12 February 1955 (CWR); ♀, Chiva Chiva Trail, 18 November 1923; ♀, Mount Hope, 8 July 1924 (NB).

**SOUTH AMERICA: COLOMBIA:** ♀, near Medellin, 5700 ft (NW); ♀, ♂, Restrepo, Meta, 500 m, 1936 (JB); ♂, Santo Domingo, 8 September 1930 (RB).

**DISTRIBUTION.**—Costa Rica south to Colombia, South America.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

#### 40. *Cerceris semipetiolata* Saussure

*Cerceris semipetiolata* Saussure, 1867:88.—Schletterer 1887: 502.—Cameron 1890:118, pl. vii: figs. 14, 14*a*, *b*, *c*.—Dalla Torre, C. G., 1897:476.—Ashmead 1899:296.

**TYPES.**—No type or other named material was found by the writer at Vienna or Geneva in 1959. It was described from a male “0.008–0.007” in length from “Mexico, Orizaba.”

Cameron described what he considered the female and the male. His description of the female as well as his illustrations would place it in Group III. The

size of the male as given by Saussure is small for that group.

*Cerceris semipetiolata* Saussure is therefore retained as a valid species, but so far it is unrecognized until some type or named specimens can be located.

DISTRIBUTION.—Known only from the type-locality.

#### 41a. *Cerceris veracruz veracruz*, new subspecies

FIGURES 45, 132a-d

FEMALE.—Length 12 mm. Black with creamy-white markings; punctation average; pubescence very short.

Head slightly wider than the thorax; black except for large lateral eye patches, the dorsal surface of the clypeal process, the frons, and the basal two-thirds of the dorsal surface of the mandibles, all of which are creamy white; clypeal border with four low denticles, the two mesal ones widely separated and connected by a low carina; clypeal process lunar in shape with two semioval lamella attached to the free margin (similar to those of *C. compacta* Cresson); clypeus largely black except for the upper surface of the process; mandibles with three denticles, the apical one somewhat the largest unless it is badly worn; antennae immaculate, normal in form, dark above and lighter below.

Thorax black except for a divided band on the pronotum, two evanescent spots on the scutellum, the metanotum, and spots on the tegulae, all of which are creamy white; tegulae normal in form; enclosure heavily ridged, mesosternal tubercles small; legs black except the anterior surfaces of the fore- and midtibiae, and the fore- and midtarsi, all of which are creamy white; wings subhyaline with the anterior portion of the forewings clouded.

Abdomen black except for narrow bands on terga 1 and 2, a broken or interrupted line on tergum 3, narrow lines on terga 4 and 5, and small lateral spots on sterna 2 and 3, all of which are creamy white; pygidium as illustrated (Figure 132b).

MALE.—Length 10 mm. Black with creamy-white markings; punctation and pubescence average.

Head subequal in width to the thorax; black except for large frontal eye patches, a small patch on the medial clypeal lobe adjoining the epistomal suture, and a patch on the frons, all of which are creamy white; medial extension on the clypeal border narrow with three indistinct denticles; hair lobes narrow; mandibles unidentate; antennae immaculate, normal in form, dark above and lighter below.

Thorax black except for a divided band on the pronotum, the metanotum, and small spots on the tegulae, all of which are creamy white; tegulae normal in form; enclosure ridged; legs black except for the anterior surfaces of the fore- and midtibiae, and the fore- and midtarsi, all of which are creamy white; wings are subhyaline with the anterior part of the forewings clouded.

Abdomen black except for bands on terga 1 and 2, lateral patches on tergum 3, narrow lines on terga 4, 5, and 6, and small lateral spots on sterna 3, 4, and 5, all of which are creamy white; bristles on sterna 5 and 6 closely matted to form a triangular mass; pygidium as illustrated (Figures 132d).

TYPES.—The type female, taken 1 mile east of Cordoba, Veracruz, Mexico, 27 July 1962, by D. H. Janzen, and the allotype male, taken at Fortin de las Flores, Veracruz, Mexico, 17 September 1954 by F. X. Williams, are at the California Academy of Sciences. Paratypes are as follows:

MEXICO: CAMPECHE: ♂, 39 mi E Campeche, 10 ft, 16 August 1963 (S and B). CHIHUAHUA: 5♂, 5 mi W Parrita, Santa Clara Canyon, 6 July 1954 (EIS); 4♂, same locality and date (JWM); ♂, same locality, 21 June 1956 (JWM and DDL). DURANGO: 3♂, 10 mi W Durango, 6600 ft, 16 June 1964 (DB). SAN LUIS POTOSÍ: 2♀, ♂, El Salto, 1600 ft, 20 July, 3 September 1962, 24 August 1954 (UKE); ♀, Tamazunchale, 11 June 1951 (HEE); ♀, Xilitla, 23 July 1954 (UKE); ♂, 10 mi E Xilitla, 25 July 1954 (UKE). VERACRUZ: ♀, Acayucan, 23 October 1957 (R and KD); ♀, Cotaxtla Experiment Station, Cotaxtla, 26 June 1962 (DHJ); 2♂, Minatitlan, 4 August to 1 September 1961 (R and KD); ♂, Puente Nation, 9 August 1961 (R and KD); ♀, 5♂, Veracruz, 28 July to 11 August 1956, 1-6 August 1961 (R and KD). STATE UNKNOWN: ♀, "L.300-316, R 180" [sic], Tabasco, 1 September 1961 (R and KD); ♀, 4♂, "Mexico" (CFB).

DISTRIBUTION.—East-central Mexico and Yucatan area.

PREY RECORD.—None.

PLANT RECORD.—None.

#### 41b. *Cerceris veracruz josei*, new subspecies

FIGURE 46

FEMALE.—Length 11 mm. Black with creamy-white markings; punctation average; pubescence very short.

Head slightly wider than the thorax; black except for large lateral eye patches, the dorsal surface of the clypeal process, a patch on the lateral lobes of

the clypeus, the frons, and the basal two-thirds of the dorsal surface of the mandibles, all of which are creamy white; clypeal border with four low denticles, the two mesal ones widely separated and connected by a low carina; clypeal process lunar in shape with two semioval lamella attached to the free margin; clypeus largely black except for a patch on the lateral lobes and the upper surface of the process; mandibles tridentate, the apical denticle distinctly the largest, the mesal one the smallest; antennae immaculate but darker above and lighter below, normal in form.

Thorax black except for a divided band on the pronotum, two evanescent spots on the scutellum, the metanotum, a spot on each side of the propodeum adjacent to the enclosure, a minute evanescent spot on the tegulae, all of which are creamy white; tegulae normal; enclosure heavily ridged; mesosternal tubercle small and variable; legs black except the anterior surfaces of the fore- and midtibiae and the fore- and midtarsi, all of which are creamy white; wings average.

Abdomen black except for narrow bands on terga 1 and 2, the latter being greatly expanded laterally, a broken line on tergum 3, narrow lines on terga 4 and 5, most of sternum 1, and evanescent lateral spots on sterna 2 and 3, all of which are creamy white; pygidium as illustrated for the nominate subspecies (Figure 132*b*).

**MALE.**—Length 9 mm. Black with creamy-white markings; punctuation and pubescence average.

Head subequal in width to the thorax; black except for large frontal eye patches, the frons below the antennal scrobes, and the dorsal part of the medial clypeal lobe, all of which are creamy white; medial extension of the clypeal border narrow with three denticles; antennae immaculate.

Thorax black except for an evanescent broken line on the pronotum, a variable amount of white on the scutellum, the metanotum, two patches on the propodeum adjacent to the enclosure, and a small spot on the tegulae, all of which are creamy white; tegulae normal; enclosure ridged; mesosternal tubercle absent; legs black except for narrow stripes on the fore- and midtibiae and portions of the fore- and midtarsi, all of which are more or less creamy white; wings normal.

Abdomen black except for all of tergum 1, a band of tergum 2, which is greatly expanded laterally, a narrow line on terga 4, 5, and 6, most of sterna 3, 4, and 5, all of which are creamy white; pygidium as

illustrated for the nominate subspecies (Figure 132*d*).

The subspecies *C. veracruz josei*, which so far is recorded only from El Salvador, differs from the nominate subspecies of Mexico only in minor color differences, especially the twin patches on the propodeum of the former.

**TYPES.**—The type female, taken from Quezaltepeque, El Salvador, Central America, 6 August 1963 (D. Cavagnaro and M. E. Irwin), and the allotype male, taken at the same locality, 18 June 1963, by the same collectors, are at the University of California at Davis, Calif. Paratypes are as follows:

**CENTRAL AMERICA: EL SALVADOR:** ♀, Quezaltepeque, 17 June 1963 (C and I); 2♂, same locality, 3 July 1963 (S and B); ♀, 2.5 mi W Quezaltepeque, 2 July 1961 (HEI); ♀, 3 mi W Quezaltepeque, 4 August 1961 (HEI); ♂, 25 mi N San Salvador, 4 July 1963 (S and B).

**DISTRIBUTION.**—Known only from El Salvador, Central America.

**PREY RECORD.**—None.

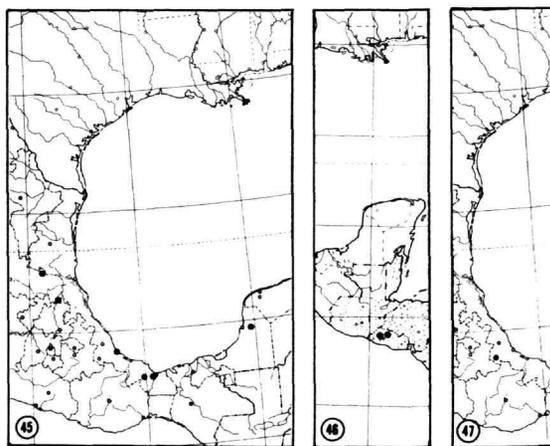
**PLANT RECORD.**—None.

#### 42. *Cerceris williamsi*, new species

FIGURES 47, 133*a, b*

**FEMALE.**—Length 11 mm. Black with very limited white markings; punctuation average; pubescence very short.

Head subequal in width to the thorax; black except for very narrow frontal eye patches, a very small spot back of the eye, an irregular area on the basal



FIGURES 45-47.—45, *C. veracruz veracruz*, new subspecies; 46, *C. v. josei*, new subspecies; 47, *C. williamsi*, new species.

half of the mandible, and a small patch on the scape, all of which are white to gray; clypeal border with five very distinct denticles on the medial lobe; clypeal process small, subequal to one-third the distance between the eyes, with two semioval lamellae attached to the free margin (in form like those of *C. compacta* Cresson, but smaller); mandibles tridentate, the basal one very low and rounded, the two distal ones subequal and prominent; antennae normal in form.

Thorax black except for a very indistinct broken line on the pronotum and two very indistinct elongate patches on the metanotum, all of which are white infuscated; tegulae smooth; enclosure distinctly ridged; mesosternal tubercles very prominent; legs black; wings somewhat darker than average with the anterior area of the forewings still darker.

Abdomen black except a band on tergum 1, a narrow line on tergum 2, the entire first sternum, a lateral patch on sternum 2, all of which are white to light gray; pygidium as illustrated (Figure 133b).

MALE.—Unknown.

TYPES.—The type female, taken from Fortin de las Flores, Veracruz Llave, Mexico, 17 September 1954 (F. X. Williams), is at the California Academy of Sciences. One paratype as follows: Fortin de las Flores, Veracruz Llave, Mexico, 17 September 1954 (FXW).

DISTRIBUTION.—Known only from the type-locality.

PREY RECORD.—None.

PLANT RECORD.—None.

## GROUP IV

### 43a. *Cerceris femurrubra femurrubra* Viereck and Cockerell

FIGURES 48, 49, 134a-f

*Cerceris femurrubrum* Viereck and Cockerell, 1904:135.—Viereck 1906:234.—Mickel 1917b:451.—Banks 1947:15.—Scullen 1951:1007; 1960:78; 1965a:348, 354, 435-437, figs. 51, 53, 140a, b, c, d, e, f.

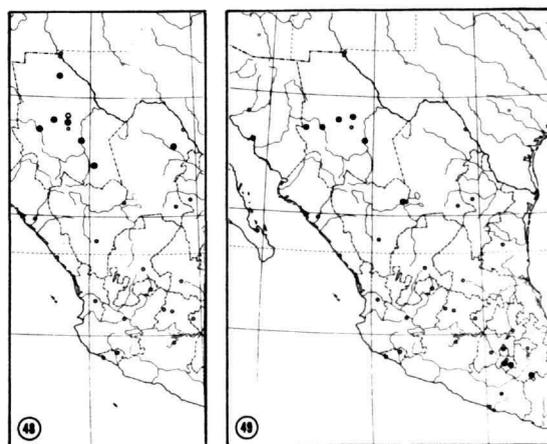
TYPES.—The type male of *C. femurrubra* Viereck and Cockerell, from Albuquerque, N. Mex., 30 June (Cockerell), is at the Academy of Natural Sciences of Philadelphia (10040). The type male of *C. thione* Banks, from Colton, Calif. (Plate), is at the Museum of Comparative Zoology (23593).

DISTRIBUTION.—Females of the nominate subspecies *C. femurrubra femurrubra* Viereck and Cockerell are recorded in limited numbers from the

state of Chihuahua and with one record each from the states of Coahuila and Sonora. One female placed in the subspecies *C.f. thione* Banks is recorded from near Chihuahua. Males that are indistinguishable in each of the above subspecies are recorded from wide areas of northern Mexico and as far south as the states of Puebla and Guerrero. The subspecies *C.f. thione* Banks should be taken in northwestern Sonora and northern Baja California, as it is common in the arid parts of southern California and Arizona. Distribution records for Mexico are as follows:

MEXICO (females): CHIHUAHUA: ♀, 10 mi N Chihuahua, 17 August 1965 (HEE); ♀, 33 mi SE Chihuahua, 4100 ft, 12 September 1963 (S and B); 3 ♀, 45 mi NW Chihuahua, 4800 ft, 27 July 1953 (UKE); ♀, San Buenaventura, 5100 ft, 13 September 1963 (S and B); 2 ♀, 18 mi W Jimenez, 10 August 1951, at Baccharis (HEE); 3 ♀, Villa Ahumada, 3700 ft, 28 July 1953 (UKE). COAHUILA: 2 ♀, 23 mi N Sabinas, 10 August 1959 (ASM, LAS). SONORA: ♀, 2 mi N El Dorador, 6 June 1968 (JMD).

MEXICO (males): BAJA CALIFORNIA SUR: ♂, Paredones, 2 July 1953 (Sn). CHIHUAHUA: 2 ♂, San Buenaventura, 5100 ft, and ♂, 9 mi NW of same locality, 5000 ft, 13 September 1963 (S and B); ♂, 33 mi SE Chihuahua, 4100 ft, 12 September 1963 (S and B); 6 ♂, 35 mi N Chihuahua, 5400 ft, 14 September 1963 (S and B); 3 ♂, 45 mi NW Chihuahua, 27 July 1953 (UKE); 5 ♂, 15 mi S Chihuahua and 7 ♂, 10 mi N Chihuahua, 16-17 August 1965 (HEE); ♂, Gallego, 6 August 1954 (MAC and party); 5 ♂, Villa Ahumada, 3700 ft, 28 July 1953 (UKE); 5 ♂, 13 mi N and 12 mi S of Ahumada, 3700 ft, and 3800 ft, respectively, 28 July 1953 (UKE); ♂, Ahumada, 4 July 1954 (JWM). DURANGO: ♂, 7 mi El Ceballos, 3900 ft, 9 September 1963 (S and B); 5 ♂, 45 mi NW Gomez Palacio, 3800 ft,



FIGURES 48-49.—48, *C. femurrubra femurrubra* Viereck and Cockerell, *C. f. athene* Banks (♀ only); 49, *C. femurrubra* Viereck and Cockerell (♂ only).

10 September 1963 (S and B). GUERRERO: ♂, 18 mi N Chipancingo, 3100 ft, 7 August 1962 (UKE); ♂, 16 mi N same locality and date (NM). MORELOS: 2♂, 5 km N Alpuyecá, 3400 ft, 10 August 1962 (HEE); ♂, Tequesquitengo, 15 July 1961 (R and KD). PUEBLA: ♂, 8 mi SE Tehuitzingo, 4100 ft, 29 July 1961 (UKE). SONORA: 2♂, 32 mi SE Guaymas, 125 ft, 23 September 1963 (S and B).

PREY RECORD.—None.

PLANT RECORDS.—*Baccharis* species (San Buenaventura, Chihuahua).

#### 43b. *Cerceris femurrubra athene* Banks

##### FIGURE 48

*Cerceris thione* Banks, 1947:18–19.—Scullen 1951:1007.  
*Cerceris athene* Banks, 1947:20.—Scullen 1951:1005.—Wasbauer 1957:131.  
*Cerceris femurrubrum* Viereck and Cockerell, 1904:135.—Scullen 1960:78.  
*Cerceris femurrubrum athene*.—Scullen 1965a:348, 437–438, fig. 52.  
*Cerceris femurrubrum femurrubrum*.—Scullen 1965a:435.

TYPE.—The type female of *C. athene* Banks, taken from Claremont, Calif. (C. F. Baker), is at the Museum of Comparative Zoology (23537). (The female is used here as the type since males are not distinct.)

DISTRIBUTION.—Southern California and southern Arizona with the following record from Mexico: ♂, 10 mi N Chihuahua, 17 August 1965 (H. E. Evans).

PREY RECORD.—*Eurymetopon rufipes* Escholtz (Tenebrionidae) in California but no record from Mexico.

PLANT RECORD.—None from Mexico.

#### 43c. *Cerceris femurrubra rossi*, new subspecies

##### FIGURE 50

FEMALE.—13 mm. Black with creamy-white to light yellow markings; punctation small and normally spaced; pubescence short.

Head subequal in width to the thorax, black except for medium large and irregular lateral eye patches, round spots back of the eyes and two wedge-shaped spots on the vertex, all of which are creamy white to light yellow; clypeal margin with a broad extension on the medial lobe flanked by prominent acute denticles; in other structural details like the nominate subspecies.

Thorax black except for a divided band on the

pronotum, a broad patch on the scutellum and a small patch on the pleuron below the wing, all of which are creamy white to light yellow; legs black; otherwise structurally like the nominate subspecies.

Abdomen black except for a broad and slightly emarginate band on tergum 1 and emarginate bands on terga 2, 3, and 4, all of which are creamy white, otherwise structurally like the nominate subspecies.

MALE.—Length 10 mm. Black with creamy-white markings to light yellow; punctation small and normally spaced; pubescence somewhat longer than normal.

Head subequal in width to the thorax; black except the face, base of mandibles, scape, and a small spot back of the eye, all of which are creamy white; clypeal margin with a broad emarginate medial denticle flanked by single lateral acute denticles; hair lobes extending from the eyes to the lateral clypeal denticles; mandibles with one medial acute denticle; antennae with the apical segment slightly curved and with a blunt end.

Thorax black except for an emarginate band on the pronotum, a divided band on the scutellum, a broken small line on the metanotum, a small spot on the pleuron below the wing, and the tegulae, all of which are creamy white; tegulae low and smooth; enclosure pitted laterally, smooth medially with a light medial groove; mesosternal tubercle absent; legs black except for the hind coxae, hind trochanters, small spot near the apical ends of the fore- and midfemora, most of all tibiae and much of the fore- and midtarsal segments; wings subhyaline but lightly clouded in the anterior part.

Abdomen black except for narrow bands on terga 1, 2, 3, and 4 and a broken line on tergum 5; venter immaculate; pygidium three-fourths as wide as it is long.

The black background color with the limited creamy markings easily separate this subspecies from *C.f. femurrubra* Viereck and Cockerell and *C.f. athene* Banks found in the southwestern states.

TYPES.—The type female and allotype male were both taken at Las Animas, Sierra Laguna (Sierra de la Victoria), Lower California (Baja California Sur), Mexico, 12 October 1941, by Ross and Bohart. The above types are deposited at the California Academy of Sciences. Paratypes are as follows:

MEXICO: BAJA CALIFORNIA (north): ♂, 2 mi N El Doctoro, 6 June 1968 (JMD and party). BAJA CALIFORNIA SUR: 2♂, La Paz, 12 October 1954 (FXW); ♂, 2 mi S

La Paz, 31 July 1966 (EG and JML); 2♀, 7♂, same locality, 1, 4, 6, 7 August 1966, at *Wislizenia refracta* var. *mamillata* (PDH); 2♂, same locality and date (EGL); 2♂, same locality and date (JAC); ♂, 25 mi W La Paz, 4 September 1959 (KWR and FGW); 4♀, ♂, Las Animas, Sierra Laguna (Sierra de la Victoria), 12 October 1941 (R and B); ♀, Las Parras (near Loreto), October 1923 (WMM); ♀, 8♂, San Jose Viejo, 16–17 July 1968 (JMD and party); 5♂, San Lucas, 21 July 1968 (same collectors). DURANGO: ♀, 7 mi SE Ceballos, 3900 ft, 9 September 1963 (S and B). GUERRERO: 10♂, 18 mi S Iguala, 18, 22 July 1963 (FDP and LAS); ♂, Mexcala, 29 June 1951 (PDH); 3♂, Zumpango, 22 July 1963 (FDP and LAS). MORELOS: ♀, 15♂, Cuernavaca, 9, 12–19, 29 July 1961 (R and KD); 4♂, 6 mi S Temixco, 16 July 1963 (P and S); 3♂, Tequesquitengo, 15 July 1961 (R and KD); ♂, Xochicalco Pyramid, 16 July 1963 (P and S). NAYARIT: ♂, Chapaderos, 3 July 1963 (P and S); 4♂, 8 mi S Elota, 2 July 1963 (same collectors); ♂, Malpica, 29 June 1961 (RAS). SONORA: 4♀, 8♂, 32 mi SE Guaymas, 125 ft, 23 September 1963 (S and B). OAXACA: 3♂, 5 mi NW Cuicatlan, 22 July 1966 (JSB, MRG, and RCG).

**DISTRIBUTION.**—Baja California and Sonora south and east to Oaxaca. Especially common in southern Baja California.

**PREY RECORD.**—None.

**PLANT RECORD.**—*Wislizenia refracta* var. *mamillata* (Baja California Sur).

#### 44. *Cerceris hebes* Cameron

*Cerceris hebes* Cameron, 1890:124–5, pl. VIII: figs, 4, 4a, b, c, d.—Scullen 1942:187; 1965b:273.

**TYPE.**—The type male, taken from Chilpancingo

in Guerrero, Mexico, 4600 feet elevation (H. H. Smith), should be in the British Museum, but it was not found there by the author in 1959.

From Cameron's illustrations and the type-locality, *C. hebes* Cameron doubtless will prove to be a synonym of *C. simplex graphica* F. Smith.

**DISTRIBUTION.**—Known only from the type-locality.

**PREY RECORD.**—It will probably be found to use Tenebrionidae as food for its young as do other members of this subdivision of *Cerceris*.

**PLANT RECORD.**—None.

#### 45a. *Cerceris simplex graphica* F. Smith

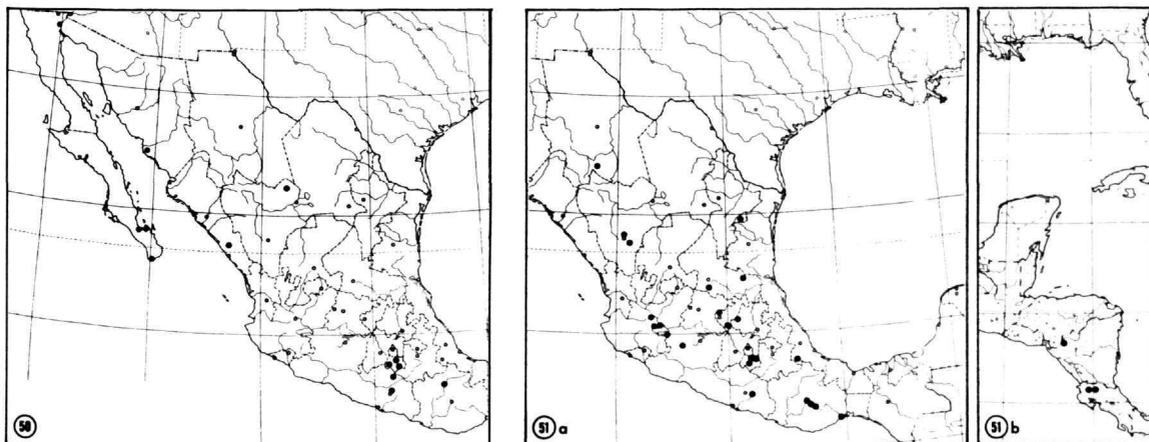
FIGURES 51a, b

*Cerceris graphica* F. Smith, 1873:410 [Mexico].—Schletterer 1887:493.—Cameron 1890:129.—Fox 1895:266.—Dalla Torre, C. G., 1897:462.—Ashmead 1899:296.

*Cerceris simplex graphica*.—Scullen, 1965b:273. [New combination.]

**FEMALE.**—Length 18 mm. Black and ferruginous with yellow markings; punctation deep and crowded, especially on the abdomen; pubescence average.

Head subequal in width to the thorax; black except for narrow frontal eye patches, basal half of mandibles and triangular spot back of the eyes, all of which are yellow bordered and infused with ferruginous; clypeal margin considerably extended from the medial lobe with clusters of bristles above the lateral angles; single prominent broad denticles appear on the borders of



FIGURES 50–51b.—50, *C. femurrubra rossi*, new subspecies; 51a, 51b, *C. simplex graphica* F. Smith.

the lateral clypeal lobes near their junction with the medial lobe; the clypeal surface process in the form of a flattened, cone-shaped extension rounded apically; mandibles with a single prominent denticle, apical of which there is a deep notch; antennae normal in form, ferruginous becoming darker beyond the center.

Thorax black except for a widely divided band on the pronotum, two large spots on the scutellum, the metanotum, large areas on the sides of the propodeum, two large spots on the enclosure and a spot on the pleuron, all of which are yellow; tegulae low, smooth, and ferruginous in color; enclosure deeply pitted laterally but smooth medially with a slight medial groove; mesosternal tubercles absent; legs black to dark fuscous basally to near the center of the femora, beyond which they are ferruginous, becoming more or less yellow on the tarsal segments; wings fusco-ferruginous.

Abdomen ferruginous except tergum 1 darker with a broad yellow band constricted medially, narrow lines of yellow on terga 3 and 4, and the venter, which is black to dark fuscous with traces of ferruginous laterally; venter becomes heavily covered with bristle-like setae apically; pygidium with sides slightly convex and the apical end semitruncate with the lateral corners rounded.

**MALE.**—Length 16 mm. Black and ferruginous with yellow markings; punctuation coarse and deep; pubescence normal.

Head slightly wider than the thorax; black except for large lateral eye patches, the entire clypeus, basal two-thirds of the mandibles, small patch on the scape, and a broad line along the lateral margins of the eyes and extending from the eyes across the genae; the clypeal margin with a broad, medial, bicuspidate denticle flanked by single small denticles; closely waxed hair lobes extending from the eyes to the lateral clypeal denticles; surface of the medial clypeal lobe slightly concave; mandibles with a prominent single denticle; antennae ferruginous basally with a yellow patch on the scape becoming darker apically, terminal segment slightly curved with a blunt end and the two apical segments longer than the others.

Thorax black except for a divided band on the pronotum, two large spots on the scutellum, the metanotum, single patches laterally on the propodeum, a pair of small spots on the enclosure, a small patch on the pleuron below the wing and a spot on the tegulae, all of which are yellow; tegulae low and smooth; en-

closure deeply pitted laterally, smooth medially with a slight medial groove; mesosternal tubercles absent; legs black to fuscous basally with the trochanters largely yellow, a yellow patch on the hind coxae, elongate yellow patches on the fore- and midfemora, a ferruginous area on the hind femora, all femora ferruginous at the apical ends, tibiae fuscous to yellow and the tarsal segments more or less yellow; wings fusco-ferruginous.

Abdomen black and dark ferruginous with yellow markings; tergum 1 black with a wide divided band of yellow; tergum 2 ferruginous with a broad yellow band deeply emarginate; terga 3 and 4 ferruginous infused with black medially and with a band of yellow not emarginate; tergum 5 black medially, ferruginous laterally and with a yellow band not emarginate; tergum 6 black with a yellow band not emarginate; venter black with a small patch on sternum 1, bands on sternum 2, 3, and 4, sternum 5 and 6 with patches laterally, all of which are yellow; pygidium width subequal to the length, yellow.

**TYPES.**—The type female of *C. graphica* F. Smith from Mexico is at the British Museum of Natural History (21.1,427). The type male of *C. hebes* Cameron from Mexico, Chilpancingo in Guerrero, 4600 feet (H. H. Smith), should be in the British Museum, but it was not found by the author in 1959.

**DISTRIBUTION.**—The mountains of Central Mexico, south through Central America to northwestern South America. Specimens are as follows:

**CENTRAL AMERICA: COSTA RICA:** ♀, 2 ♂, Liberia, 400 ft, 28–29 July 1963 (S and B); 3 ♀, 85 ♂, 3, 5, and 8 mi NW of Liberia, 7 and 16 mi SE Liberia, all 400 ft, 26–29 July, 1963 (S and B). **NICARAGUA:** ♀, San Marcos (B).

**MEXICO: CHIHUAHUA:** ♂, Hidalgo del Parral, 15 August 1965 (HEE); ♂, 15 mi S Villa Matameos, 26 July 1967, (RCG, CRK). **DURANGO:** ♀, 20 mi N Durango, 6300 ft, 17 September 1963 (S and B); 2 ♀, 6 ♂, Nombre de Dios, 1 August 1951 (HEE); 2 ♂, same locality, 13 July 1954 (EIS). **HIDALGO:** 3 ♂, Zimapan, 8 July 1968 (MW, JS1). **GUERRERO:** ♀, 2 ♂, Chilapa, 4600 ft, 29 July 1962 (HEE). **JALISCO:** ♂, Ajijic, 9 July 1966 (RWi); ♂, same locality, 28 September 1963 (AMi); 3 ♀, 11 ♂, Ajijic area, 5200–5400 ft, 20, 30 June, 21, 31 July 1964 (WLN and sons); ♂, Chapala, 19 June 1963 (S and B); 14 ♂, Guadalajara, (C); 2 ♂, same locality, 1 September 1914 (Mc); 6 ♂, same locality, 17 September 1957 (R and KD); ♀, 2 ♂, same locality, 17, 20, 23, 28 July 1965 (HEE); ♂, 5 mi S Guadalajara, 29 July 1965 (HEE); ♀, 3 mi SE Plan de Barrancas, 8 July 1963 (P and S). **MICHOACÁN:** ♀, 11 mi E Apatzingan, 20 August 1954 (L, S, and M); 4 ♀, 5 ♂, 32 mi W Jiquilpan, 5200 ft, 25 September 1957

(HAS); ♂, 2 mi S Tzitzio, 29 July 1962 (UKE). MORELOS: 2♂, 5 km N Alpuyecá, 3400 ft, 10 August 1962 (HEE); 4♂, Canyon de Lobos, Yautepec, 4000 ft, 25 May 1959 (HEE); 4♂, Cuernavaca, 9 July 1961 (R and KD); ♂, Xochicalco Pyramid, 19 July 1963 (P and S). NUEVO LEÓN: 5♂, 13 mi W Linares, 4600 ft, 7 September 1963 (S and B). OAXACA: 2♂, Mitla, 5700 ft, 2 September 1957, (HAS); ♀, 11♂, same locality, 5600 ft, 27–28 June, 20–22 August 1963 (S and B); 2♂, Oaxaca, 5068 and 5400 ft, 24 August and 1 September 1967, respectively, (HAS); 9♂, 5, 12, and 16 mi SE Oaxaca, 6150, 5350, 5600 ft, respectively, 27 June, 21 August 1963 (S and B); 4♂, 22 mi SE Oaxaca, 5700 ft, 2 September 1957 (HAS); ♂, 10 mi SE Tepanatepec, 8 August 1963 (S and B). QUERÉTARO: ♂, 41 mi N Querétaro, 6500 ft, 19 September 1963 (S and B); ♂, San Juan del Reo, 6350 ft, 2 September 1963 (S and B). SAN LUIS POTOSÍ: ♀, 5 mi E Ciudad del Maíz, 4700 ft, 22–23 August 1954 (UKE); ♀, 40 mi S San Luis Potosí, 5700 ft, 5 September 1963 (S and B). VERACRUZ: 4♀, 2♂, Orizaba, 1862 (LB).

SOUTH AMERICA: EQUADOR: ♀, Guayaquil (Buchwald); 2♂, 22 mi N Sanka Elena, Guayas, 30 January 1955 (ER and EIS). PERU: ♂, Chancay River Valley, 15 March 1951 (M and R); ♀, 3♂, 10 km S Chiclayo, 19 March 1951 (M and R); ♀, 2♂, Lima, January 1922 (P. Herbst); 11♀, 31♂, same locality, February, 7 May 1939, 27 April 1951, 17 February 1953 (Weyrauch).

PREY RECORD.—None.

PLANT RECORD.—None.

#### 45b. *Cerceris simplex macrosticta* Viereck and Cockerell

FIGURES 52, 135a–f

*Cerceris macrosticta* Viereck and Cockerell, 1904:133.—

Viereck 1906:234.—Scullen 1942:187.—Banks 1947:9.

—Scullen 1951:1009; 1965a:348, 354, 438–440, figs. 54,

141a, b, c, d, e, f.—Gibson and Carrillo 1959:211.

*Cerceris simplex macrosticta*.—Scullen 1965b:274.

*Cerceris ampla* Banks, 1912:10.

TYPES.—The type male of *C. macrosticta* Viereck and Cockerell, taken in New Mexico, is at the Academy of Natural Sciences of Philadelphia (10381). The type male and allotype female of *C. ampla* Banks, taken at Fedor, Lee Co., Tex. (Birkmann), are at the Museum of Comparative Zoology (13769).

DISTRIBUTION.—The nominate subspecies is the usual form taken in the southwestern states north of the border, and the subspecies *C. simplex graphica* F. Smith is the usual form taken south of the border; however, the lighter form, *C. s. macrosticta* Viereck and Cockerell is recorded through the central plateau area of Mexico as far south as the state of Morelos,

with four records from Baja California. Specimens are as follows:

MEXICO: BAJA CALIFORNIA (north): ♂, Santo Domingo, 19 July 1938 (M and R). BAJA CALIFORNIA SUR: 3♂, San Lucas, 21 July 1968 (JMD and party). CHIHUAHUA: ♂, 9 mi NW Buenaventura, 5000 ft, 13 September 1963 (S and B); ♂, 20 mi SW Camargo, 13 July 1947, at *Cevallia sinuata* (CDM); ♂, Chihuahua, 12 August 1951, at *Baccharis glutinosa* (PDH); 2♀, ♂, 25 mi S Chihuahua, 11 August 1951 (HEE); 2♀, 4♂, same locality and date, at *Baccharis glutinosa* (PDH); ♂, 7 mi SE Galeana, 4850 ft, 13 September 1963 (S and B); ♂, 18 mi W Jimenez, 10 August 1951 (HEE); ♂, same locality and date at *Baccharis glutinosa* (PDH); ♀, 2 mi S Matachic, 21 August 1950 (RFS). COAHUILA: 7♀, ♂, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B). DURANGO: ♀, 8 mi S Canutillo, 9 August 1951 (HEE); ♀, 6 mi S Surango, 23 August 1953 (C and PV); 4♂, 20 mi N Durango, 6300 ft, 17 September 1963 (S and B); 3♂, 58 mi N Durango, 16 September 1963 (S and B); ♀, 34 mi NW La Zarca, 25 July 1953 (UKE); 7♂, Nombre de Dios, 1, 5–6 August 1951 (HEE); 5♂, 7♂, same locality and dates, at *Asclepias* species (PDH); 2♀, 2♂, San Juan del Reo, 7 August 1951 (HEE); ♂, same locality and date (PDH). HIDALGO: ♂, Zimapan, 11–14 June 1951 (HEE). JALISCO: ♂, Lagos de Moreno, 12 August 1955 (RRD). MICHOACÁN: ♂, 10 mi N Morelia, 5900 ft, 28 July 1962 (UKE). MORELOS: ♀, Alpuyecá, 8 July 1951 (PDH). NAYARIT: ♀, ♂, Ahuacatlan, 18–22 July 1951, on *Donnellsmithia Hintonii* (PDH).

PREY RECORD.—None from Mexico.

PLANT RECORD.—*Asclepias* species (Durango), *Baccharis glutinosa* (Chihuahua), *Cevallia sinuata* (Chihuahua), *Donnellsmithia Hintonii* (Nayarit).

## GROUP V

### 46a. *Cerceris compar compar* Cresson

FIGURES 136a–c

*Cerceris compar* Cresson, 1865:126.—Packard 1866:63.—

Patton 1880:404.—Cresson 1887:282.—Schletterer 1887:

488.—Robertson 1889:303; 1891:577; 1896:156.—

Ashmead 1899:295.—Bridwell 1898:209.—Smith, H. S.,

1908:368.—Banks 1912:25.—Viereck 1916:695.—Mickel

1917b:452.—Britton 1920:341.—Hendrickson 1930:160.

—Scullen 1951:1006; 1960:77–78.

*Cerceris jucunda* Cresson, 1872:231; 1887:282.—Schletterer

1887:495.—Ashmead 1899:295.—Banks 1912:26.

*Cerceris jucunda* [sic].—Hendrickson 1930:160.

*Cerceris jucunda carolina* Banks, 1912:26.

*Cerceris catawba* Banks, 1912:25.—Mickel 1917b:452.

*Cerceris compar compar*.—Scullen 1965a:348, 354, 440–

442, figs. 55, 142a, b, c.

TYPES.—The type male of *C. compar* Cresson,

from Illinois, is at the Academy of Natural Sciences of Philadelphia (1949). The type male of *C. jucunda* Cresson, from Texas, is at the Academy of Natural Sciences of Philadelphia (1716). The type male of *C. jucunda carolina* Banks, from Southern Pines, N.C., is at the Museum of Comparative Zoology (13787).

**DISTRIBUTION.**—*Cerceris compar compar* Cresson, which is widely recorded from Texas (Scullen 1965: fig. 55), should be found in northeastern Mexico; however, only the two following records are known: ♀, Silao, Guanajuato, 16 August 1953 (DR); ♂, Zimmermann (state unknown).

**PREY RECORD.**—None from Mexico.

**PLANT RECORD.**—None.

#### 46b. *Cerceris compar albinota*, new subspecies

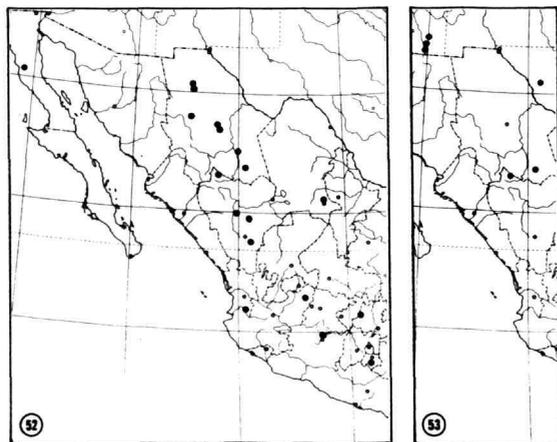
FIGURES 53, 137a-e

**FEMALE.**—Length 9 mm. Black with creamy-white markings, otherwise similar to the nominate subspecies *C. compar compar* Cresson, on which the markings are yellow.

Head similar in size and detail to that of *C. compar compar* Cresson.

Thorax like that of the nominate subspecies in form and color pattern except the light markings are creamy white in *C. compar albinota*. The light markings on the femori of *C. compar albinota* are more extensive than on the nominate subspecies.

Bands on the abdomen of *C. compar albinota* are



FIGURES 52-53.—52, *C. simplex macrosticta* Viereck and Cockerell; 53, *C. compar albinota*, new subspecies.

somewhat wider than on the nominate subspecies.

**MALE.**—Length 9 mm. Black with creamy-white markings; structurally like the nominate subspecies, *C. compar compar* Cresson.

Head similar in detail except for the difference in color of the markings.

Thorax differs from the nominate subspecies only in the shade of light markings.

Abdominal bands of *C. compar albinota* are somewhat wider than those on the nominate subspecies.

*Cerceris compar albinota* may be distinguished from *C. compar orestes* Banks by the complete band on tergum 2. On the latter subspecies it is represented by two lateral spots.

**TYPES.**—The type female, taken from 2 miles northeast of Portal, elevation 4700 feet, 1 August 1959, on *Baccharis glutinosa* (Maggie Stratham), is at the American Museum of Natural History.

The allotype male, taken 29 miles east of Hidalgo de Parral, Chihuahua, Mexico, 5000 feet elevation, 21 June 1956 (H. A. Scullen), is at the National Museum of Natural History. Paratypes are as follows:

**UNITED STATES: ARIZONA:** Cochise Co.: ♂, 7 mi S Cochise, 24 August 1959 (HEE); ♂, Hereford (WMM); ♂, 5 mi S Tombstone, 26 August 1959 (HEE). **TEXAS:** Jeff Davis Co.: ♂, 10 mi W Valentine, 23 July 1955 (CAK).

**MEXICO: CHIHUAHUA:** ♂, 18 mi W Jimenez, on *Baccharis*, 10 August 1951 (PDH). **DURANGO:** 2♂, 8 mi S Canutillo, 9 August 1951 (HEE).

**DISTRIBUTION.**—Southern Arizona and western Texas in the United States and south into northern Chihuahua and Durango, Mexico.

**PREY RECORD.**—None.

**PLANT RECORD.**—*Baccharis glutinosa* (Arizona, United States; Chihuahua, Mexico).

#### 46c. *Cerceris compar geniculata* Cameron

FIGURE 54

*Cerceris geniculata* Cameron, 1890:113, pl. vii: figs. 7, 7a, b.—Dalla Torre, C. G., 1897:462.—Ashmead 1899:296.

*Cerceris feralis* Cameron, 1890:113-114.—Dalla Torre, C. G., 1897:459.—Ashmead 1899:296.

*Cerceris compar geniculata*.—Scullen 1962:57; 1965a:348, 354, 442-443, fig. 56.

*Cerceris compar geniculata* Cameron and *C. compar orestes* Banks are very close; both are taken over about the same area. The absence of a mesosternal

tubercle on the males of *C. compar orestes* is the most evident difference. Some females are more difficult to separate.

TYPE.—The type female of *C. geniculata* Cameron, from Cuautla, Mexico (Saussure), and the type male of *C. feralis* Cameron, from Mexico (Saussure), are at the British Museum (21.1,366 and 21.1,372, respectively).

DISTRIBUTION.—From southern Arizona through western and central Mexico to northern Guatemala. Specimens are as follows:

MEXICO: CHIHUAHUA: ♂, Matachic, 8 July 1947 (MAC); 2♂, 2 mi W Matachic, 6400 ft, 7 July 1947 (CDM); ♂, Suchiapa, 18 July 1957 (PDH). DISTRITO FEDERAL: ♀, Tlapam, 21 July 1947 (HOW). DURANGO: 2♂, Canutillo, 9 August 1951 (PDH); ♂, Encino, 6200 ft, 27 July 1947 (WJG); ♀, same locality and date (DR). GUANAJUATO: ♀, Guanajuato, (ED); 2♀, Silao, 16 August 1953 (C and PV). GUERRERO: 2♀, ♂, Chilpancingo, 30 June 1951 (HEE); ♀, same locality and date (PDH). JALISCO: 3♂, mountains N Ajijic, 5300–5400 ft, 12, 21, 23 July 1964 (WLN); ♀, ♂, Chapala, 19 June 1963 (S and B); 3♀, 3♂, Guadalajara (C); 6♀, 18♂, same locality, 17, 23 July 1951, 13–14 July 1959, 5000 ft, 17–20, 23–28 July, 4 August 1965 (HEE); ♀, 3♂, same locality, 23–24 July 1951, at *Baccharis glutinosa* (PDH); 5♀, 4♂, same locality, 6 August, 6 July, 18 September, 27 August, 1903, 11 June 1928, 1 June 1917 (Mc); ♂, 9 mi S Guadalajara, 24 July 1965 (HEE); ♂, Jacona, 4 July 1949 (FO); ♀, 3 mi SE Plan de Barrancas, 8 July 1963 (P and S). MEXICO: 2♂, Chapingo, 28 July, August 1924; 13♂, Tepexpan, 26 July 1963 (FDP and LAS); ♀, Villa de Bravo, 7 October 1962 (FMP). MICHOACÁN: ♀, ♂, 3 mi E Carapan, 10 July 1963 (P and S); ♂, Morelia, 13 August 1963 (FMP); ♂, 10 mi N Morelia, 5900 ft, 28 July 1962 (UKE); ♂, Quiroga 6300 ft, 17 July 1953 (UKE); ♂, Quiroga, 12 August 1962 (FMP); 2♂, Tuxpan, 6000 ft, 7 July 1959 (HEE); ♂, Tzintzuntzan, 7000 ft, 6 August 1962 (HEE); ♂, 2 mi S Tzitzio, 4450 ft, 29 July 1962 (UKE); ♂, Zamora, 5200 ft, 20 June 1963 (S and B); ♂, Zitzcuaro, 11 July 1951 (HEE); 2♂, same locality and date (PDH); ♀, 10 mi W Zitacuaro, same date (PDH). MORELOS: ♂, Canyon de Lobos, 4000 ft, 25 May 1959 (HEE); ♀, Cuernavaca (C); ♂, same locality, June 1959 (NLK); ♀, same locality, 5500 ft, 26 June 1959 (HEE); ♀, 8♂, 3 mi N Cuernavaca, 6500 ft, 17, 24, 26 June 1959 (HEE). NAYARIT: ♀, 2♂, Ahuacatlan, 18–22 July 1951 (HEE); ♂, same locality and date (PDH); ♂, Chapaila, 19 July 1951 (PDH); ♀, 15 km N Chapaila, same date (HEE); ♂, San Blas, 27 August 1959 (ASM and LAS); 3♂, Tepic, 2–7 August 1947 (BM); ♂, same locality, 7 July 1963 (P and S); ♀, 2♂, 18 mi and 24 mi S Tepic, 7 July 1963 (P and S). OAXACA: ♀, 100 mi S Acayucan, 18 August 1963 (S and B); ♂, Oaxaca (C); 3♀, 5 mi SE Oaxaca, 6150 ft, 21 August 1963 (S and B). PUEBLA: ♀, 7 mi N Matamoros, Izucar Pueblo, 4450 ft, 19 August 1962 (UKE). SINALOA:

♀, Mazatlan, 15–20 July 1965 (HEE); 2♀, Villa Union, 17 August 1962 (HEE). TABASCO: ♂, Frontero (collector unknown). VERACRUZ: 3♂, Cordoba (C); ♂, Cordoba, 20 July 1963 (JSB, MRG, RCG); ♂, same locality, 25 July 1963 (same collectors); 5♀, 22♂, Minatitlan, 1 September 1961 (R and KD); ♂, Veracruz, 28 July–11 August 1956 (R and KD).

CENTRAL AMERICA: GUATEMALA: ♂, Antigua Guatemala, 16 May 1923 (EGS).

PREY RECORD.—None.

PLANT RECORD.—*Baccharis glutinosa* (Jalisco, Mexico).

#### 46d. *Cerceris compar orestes* Banks<sup>2</sup>

FIGURE 55

*Cerceris orestes* Banks, 1947:13–14.

*Cerceris compar orestes*.—Scullen, 1962:57; 1965a:348, 354, 444–445, fig. 57.

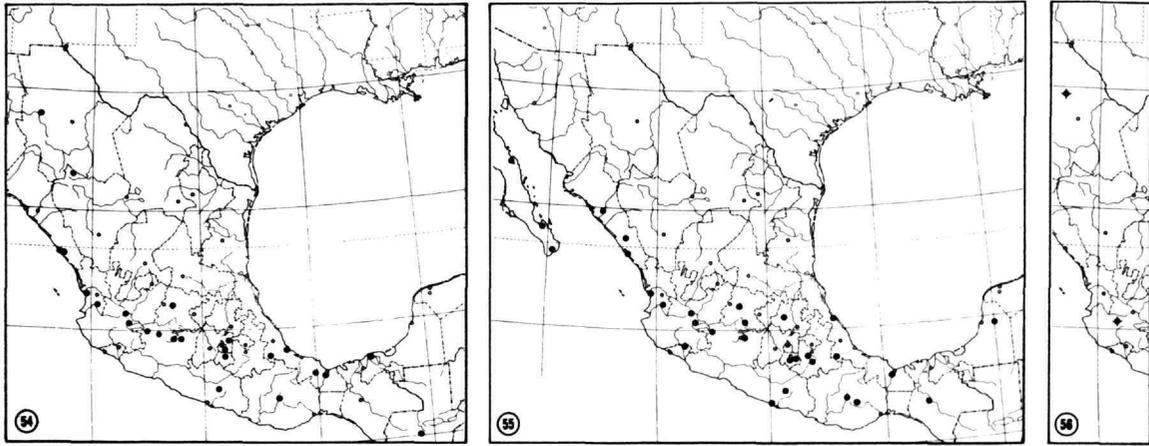
FEMALE.—Some females taken in Mexico do not have the “large hook-shaped patch on the propodeum,” or it may be reduced in size.

MALE.—The males do not, as a rule, have the hook-shaped patch on the propodeum, and marks on the propodeum may be much reduced or, in rare cases, may disappear; the face may be white to light yellow.

DISTRIBUTION.—Widely distributed over north and central Mexico, rare in the far south. Specimens are as follows:

MEXICO: BAJA CALIFORNIA SUR: ♂, Coyote Cove, Concepcion Bay, 1 October 1941 (R and B); ♂, La Paz, 29 June 1919 (GFF); 6♂, San Jose Viejo, 16, 17 July 1968 (JMD and party). CAMPECHE: ♂, 31 mi E Campeche, 10 ft, 16 August 1963 (S and B). CHIAPAS: ♀, Suchiapa, 18 July 1957 (PDH); ♂, Tuxtla Gutierrez, 14 July 1956 (DDL). COLIMA: ♂, Colima, September 1965 (NLK). GUANAJUATO: ♂, Salvatierra, 5600 ft, 7 August 1962 (HEE). GUERRERO: ♂, Acapulco, July 1959 (NLK); ♂, Chilpancingo, 24 July 1961 (R and KD); ♂, 1.5 mi W Mochitlan, 6 August 1962 (UKE). HIDALGO: ♂, Ixmiquilpan, 5200 ft, 29 July 1954 (UKE). JALISCO: ♂, Ajijic, 5300 ft, 23 July 1964 (WLN); ♀, 6♂, Guadalajara, 19 June, 21 July, 10 August 1903 (Mc); ♂, same locality, 24 July 1951 (PDH); ♂, same locality, 6 July 1956 (R and KD); ♀, ♂, same locality, 500 ft, 14 July 1959 (HEE); 13♂, 17–20, 23–28 July, 4 August 1965 (HEE); 3♂, same locality (C); ♀, 2♂, La Primavera, 8 July 1956 (R and KD); 2♂, 3 mi SE Plan de Barrancas, 8 July 1963 (P and S); 4♂, 15 mi N Rio Santiago, 22 July 1965

<sup>2</sup>See note under *Cerceris compar geniculata* Cameron.



FIGURES 54-56.—54, *C. compar geniculata* Cameron; 55, *C. compar orestes* Banks; 56, *C. insolita insolita* Cresson.

(HEE); 11♂, San Blas, 17 June 1963 (S and B). MICHOACÁN: ♂, Jacona, 10 June 1950 (DSE); ♂, 13 mi E Morelia, 6800 ft, 21 June 1963 (S and B); ♂, Zamora, 28 August 1954 (EGL, JWM); 2♂, same locality, 5200 ft, 20 June 1963 (S and B). MORELOS: ♂, Cuautla, 6 July 1961 (FMP); ♂, Cuernavaca, 4500 ft, 11 May 1959 (HEE); 5♂, 20 and 26 mi S Cuernavaca, 3150 ft, 28 August 1963 (S and B); ♂, 3 mi NW Cuernavaca, 6500 ft, 17 June 1959 (HEE); ♂, 6 mi S Temixco, 5 May 1962 (LAS); ♂, Tetecala, 10 August 1962 (HEE). NYARIT: 3♂, Ahuacatlan, 18-22 July 1951 (HEE); 4♂, same locality and date (PDH); ♂, 20 mi SE Ixtlan del Reo, 22 July 1963 (RLW); ♂, Jesus Maria, 27 July 1955 (BM); ♂, Tepic, 13 September 1957 (R and KD). OAXACA: 2♂, Mitla, 28 June 1963 (S and B); ♂, Oaxaca, 8 July 1952 (EEG, CDMc); ♂, 5 mi E Oaxaca, 13 July 1952 (same collectors); 12♂, 5 and 25 mi SE Oaxaca, 6150 and 5600 ft, respectively, 21 August and 27 June 1963 (S and B). PUEBLA: 2♂, Atlixco, 31 May 1963 (FMP); ♂, 46 mi S Puebla, 4200 ft, 8 June 1956 (HAS). SINALOA: 2♂, 8 mi S Elota, 2 July 1963 (FDP and LAS); 13♂, Villa Union, 17 August 1962 (HEE); ♂, Culican, 21 July 1959 (HEE). VERACRUZ: ♂, Cordoba, 20 July 1966 (JSB, RCG, SG); 2♂, Minatitlan, 26 August-1, 21 September 1961 (R and KD); ♂, Tecolutla, 12 June 1961 (M and D). ZACATECAS: ♂, km 55, Route 45, 3 July 1961 (R and KD).

PREY RECORD.—None.

PLANT RECORD.—None.

#### 47a. *Cerceris insolita insolita* Cresson

FIGURE 56

*Cerceris insolita* Cresson, 1865:129.—Packard 1866:63.—Cresson 1887:282.—Schletterer 1887:494.—Ashmead

1899:295.—Smith, H. S., 1908:270.—Banks 1912:23.—Mickel 1917b:451.—Banks 1947:15.—Scullen 1951:1008; 1962:57.

*Cerceris intractibilis* Mickel, 1916:411; 1917b:451.—Scullen 1951:1008.

TYPES.—The type male of *C. insolita* Cresson, from Illinois, is at the Academy of Natural Sciences of Philadelphia (1954). The type female of *C. intractibilis* Mickel, from Child's Point, Nebr., 14 July 1915 (E. M. Partridge), is at the University of Nebraska.

DISTRIBUTION.—Single specimens of the more distinct females are recorded from Garcia, Chihuahua, and Villa Guadalupe, Jalisco, in Mexico. The less distinctive male has been recorded from scattering locations in the northern states of Mexico.

#### 47b. *Cerceris insolita albida* Scullen

FIGURE 57

*Cerceris insolita albida* Scullen, 1965a:349, 354, 447-448, fig. 59.

TYPES.—The type female and allotype male, from Las Cruces, N. Mex., 3880 feet elevation, 18 June 1942 (H. A. Scullen), are at the National Museum of Natural History (USNM 66168).

DISTRIBUTION.—Only one male recorded from Mexico: ♂, 25 mi W Acayucan, Veracruz, 18 August 1959 (Manke and Stange).

PREY RECORD.—None.

PLANT RECORD.—None.

#### 47c. *Cerceris insolita atrafemori* Scullen

FIGURES 58, 138a-c

*Cerceris insolita atrafemori* Scullen, 1965a:349, 354, 448-449, figs. 60, 143a, b, c.

TYPES.—The type female, taken from Phoenix, Ariz., 1100 feet elevation, 10 August 1946 (H. A. Scullen), is at the National Museum of Natural History (USNM 66169).

The males of the subspecies *C. i. atrafemori* Scullen are difficult to distinguish from closely related forms.

DISTRIBUTION.—Known south of the border from the following two females and one male taken in western Mexico:

MEXICO: NAYARIT: ♀, 39 mi SE Tepic, 2750 ft, 18 June 1963 (S and B); SINALOA: ♀, ♂, Villa Union, 17 August 1962 (HEE).

PREY RECORD.—None.

PLANT RECORD.—None.

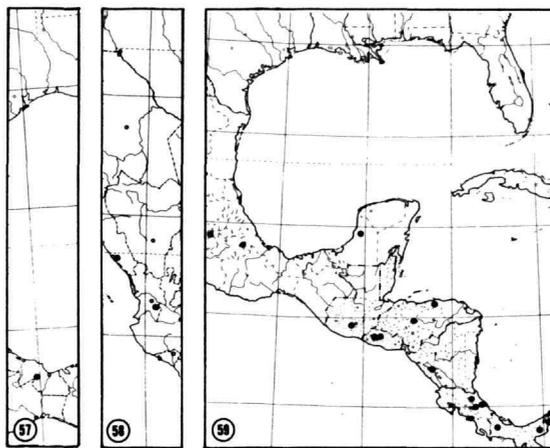
#### 47d. *Cerceris insolita chiriquirensis* Cameron

FIGURES 59, 139a-e

*Cerceris chiriquirensis* Cameron, 1890:114, pl. vii: fig. 8 [Panama].—Ashmead 1899:296.—Cheesman 1929:151.

FEMALE.—Length 12 mm. Black with yellow markings; punctuation average; pubescence short to average.

Head subequal in width to the thorax; black except large frontal eye patches, central part of the medial clypeal lobe, lateral clypeal lobes, small medial frontal patch, basal part of the mandibles, spot back of the eye, and a patch on the scape, all of which are yellow; black of the vertex extends through the antennal scrobes and continues as a wide line between the clypeal lobes; clypeal border with a blunt medial denticle flanked on each side by a bicuspidate broad denticle, dark fuliginous; medial clypeal lobe with a low, cone-shaped elevation with a truncate apex; mandibles with three denticles, the most apical one much the largest apicad of which there is a deep incision, the most basal denticle little more than a low, rounded carina; antennae normal in form, dark above and lighter below.



FIGURES 57-59.—57, *C. insolita albida* Scullen; 58, *C. i. atrafemori* Scullen; 59, *C. i. chiriquirensis* Cameron.

Thorax black except a broken band on the pronotum, the scutellum, the metanotum, two separated elongate patches on the propodeum, a large patch on the enclosure that may be divided along the meson, a patch on the pleuron and a spot on the tegulae, all of which are yellow; tegulae low and smooth; enclosure smooth medially but deeply punctate laterally; mesosternal tubercles absent; legs black to dark fuscous except elongate patches on the first and second femora and all tibiae, small patches on the third trochanter and femora, and most of the tarsal segments, all of which are yellow; wings subhyaline but clouded in the anterior area.

Abdomen black except most of the first abdominal segment, lateral border of tergum 2, band on tergum 3, narrow lines on terga 4 and 5, most of sternum 2 and narrow lines on sterna 3, 4, and 5, all of which are yellow; pygidium with sides convex, ends subequal in width and the apical end broadly rounded.

MALE.—Length 10 mm. Black with yellow markings; punctuation average; pubescence average.

Head black except for most of the face, a small spot back of the eye and a patch on the scape, all of which are yellow; clypeal border with a small medial denticle and a low indistinct lateral denticle on the medial clypeal lobe; mandibles with a single denticle; antennae normal in form, dark above, lighter below.

Thorax black except for a solid band on the pronotum, the scutellum, the metanotum, two separated

elongate patches on the pronotum, the enclosure, and a spot on the tegulae, all of which are yellow; tegulae low and smooth; enclosure smooth except for scattered lateral punctation; mesosternal tubercle absent; legs as on the female except the hind femora may have a patch of fulvous replacing the yellow; wings as on female.

Abdomen black except the entire first segment, lateral spots on tergum 2, bands on tergum 3, narrow lines on terga 4, 5, and 6, bands on sterna 2 and 3, and broken lines on sterna 4, 5 and 6, all of which are yellow; pygidium with sides slightly convex, both ends broad, the apical end broadly truncate, surface with a very few deep pits.

Some females taken in the area of Turrialba, Costa Rica, are darker than the typical form. In these the abdomen is black except for much of the first abdominal segment and an evanescent line on the apical border of tergum 3.

The male is described herein for the first time.

In some male specimens one or both yellow patches on the propodeum may be much reduced in size or even disappear completely. The amount of black on the face of the male is quite variable.

In some specimens it is difficult to separate the subspecies *C. insolita chiriquensis* Cameron from the subspecies *C. i. otomia* Saussure, which has creamy-white markings.

**TYPE.**—The type female of *Cerceris chiriquensis* Cameron, taken from Panama, Volcan de Chiriqui, 2500 to 4000 feet elevation (Champion), is at the British Museum (21.1.370), where it was examined by the author in 1959.

**DISTRIBUTION.**—Southern Mexico, Central America south through Ecuador; several records from Trinidad:

**COSTA RICA:** ♂, "Costa Rica," 1920 (PS); ♂, La Cata, 1920 (PS); 5♂, La Lola, near Matina, 130 ft, 19 July 1963 (S and B); ♀, La Trinite, Monte Tucucme, 1000 ft, 1914 (PS); ♀, Navarro Farm, March 1924 (HA); 6♂, Pacvare, 1949 (KWC); ♀, Palmar, (BOA); ♀, Sarapique, La Virgen, 1920 (PS); 5♂, Turrialba, 1949 (KWC); 13♀, 76♂, same location, 2080 ft, 11–24 July 1963 (S and B); 18♀, 157♂, 6 mi E Turrialba, 3800 ft, 13–23 July 1963 (S and B). **EL SALVADOR:** 2♂, Quezaltepeque, 3 July 1963 (S and B); ♀, 2♂, 23 mi N San Salvador, 2100 ft, 4 July 1963 (S and B); ♂, 25 mi N San Salvador, 2100 ft, 4 July 1963 (S and B). **GUATAMALA:** ♂, Amatitlan, 4000 ft, 4 August 1963 (S and B). **HONDURAS:** ♂, Corocito, 3 April 1924; ♂, Minas de Ore Comay, 4000 ft, (JE); 4♂, Prieta, 5, 6 April 1924. **MEXICO:** ♂, 31 mi E Cam-

peche, Campeche, 10 ft, 16 August 1963 (S and B); ♀, Escuintla, Chiapas (C); ♂, Kochimilo, 31 August 1947 (HEM); ♀, 16 mi S Mexico, D.F., 7400 ft, 3 August 1954; ♂, Orizaba, 1862 (LB). **NICARAGUA:** ♂, San Marcos (B). **PANAMA:** ♀, Ancon, Canal Zone, 6 August 1924 (NB); 3♀, Barro Colorado Island, 26 September 1928 (PR); ♂, Buena Ventura, 10 March 1911 (ABu); ♂, Changuinola District, Boc Toro, 21 April 1924 (JBr); ♀, Corozal, Canal Zone, 19 January 1929 (CHC); ♂, El Valle, January 1947 (NLK); ♂, Empire, Canal Zone, 22 August; ♂, on barge from Limon to Juan Mina, Canal Zone, 31 August 1918 (HFD); ♂, Porto Bello, 4 March 1911 (ABu); ♀, Potrecillos, February 1935. **TRINIDAD:** ♀, "Trinidad," 27 October 1902 (HCh); ♀, "Trinidad," X-33 [sic] (Fitz Gerald); 2♀, ♂, Caroni River, 12 October 1918 (HMo); ♀, Caura Valley, 17 March 1935 (NW); ♀, Montserrat, June 1929 (ABu); ♀, Rio Pan, 23 March 1915 (ABu). **ECUADOR:** ♂, San Domingo de las Colorados, 9 August 1930 (RB).

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

#### 47c. *Cerceris insolita cortezi*, new subspecies

FIGURE 60

**FEMALE.**—Length 12 mm. Black with yellow markings; pubescence and punctuation average.

Head subequal in width to the thorax; black except for large frontal eye patches, a small patch on the clypeal process, and an area on the basal half of the mandibles, all of which are yellow; clypeal border with five subequal denticles, the medial three somewhat fused at the base; clypeal elevation like that of the nominate subspecies; mandibles with three denticles, the most apical one large, the most basal one the smallest; antennae normal in form, dark fuscous, except the more medial segments are lighter below.

Thorax black except for a divided band on the pronotum, a band on the scutellum, and a small patch on the tegulae, all of which are yellow; tegulae smooth and low; enclosure deeply pitted except the base and with the usual medial groove; mesosternal tubercle absent; legs black except for an evanescent spot on the hind coxae, prominent yellow stripes on the fore- and midtibiae, and much of the fore- and midtarsi, all of which are yellow; wings subhyaline but clouded along the anterior borders.

Abdomen black except for a band on tergum 1 and narrower bands on terga 3, 4, and 5.

**MALE.**—Length 11 mm. Color, punctuation, and pubescence like the female except the entire face

below the antennal scrobes is yellow; hair lobes slightly separated medially; mandibles unidentate; mesosternal tubercle prominent, acute, and pointing caudad; hind coxae and mid- and hind trochanter light yellow.

**TYPES.**—The type female and allotype male, taken from Cuernavaca, Morelos, Mexico, 12–19 July 1961 (R. and K. Dreisbach) are at the National Museum of Natural History (USNM 71364). Paratypes are as follows:

**MEXICO:** JALISCO: ♀, Ajijio, 5200 ft, 31 July 1964 (WLN and sons). MICHOACÁN: ♂, 13 mi E Moralia, 6800 ft, 21 June 1963 (S and B); 4♂, 5 mi E Tuxpan, 6500 ft, 22 June 1963 (S and B). MORELOS: ♂, Cuernavaca, June 1945 (NLK); 4♀, 3♂, same locality, 12–19 July 1961 (R and KD); ♀, 4 mi E Cuernavaca, 6000 ft, 20 June 1959 (HEE); ♀, 18 mi S Cuernavaca, 8 July 1962 (DHJ); 2♀, 7.5 mi SSW Yautepec, 3500 ft, 2 July 1961 (UKE); ♂, Xochicalco, 4000 ft, 13 July 1961 (R and KD). NAYARIT: ♀, Ahuacatlan, 18–22 July 1951 (PDH).

**DISTRIBUTION.**—South-central Mexico.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

#### 47f. *Cerceris insolita otomia* Saussure, new status

FIGURES 61a, b, 140a–e

*Cerceris otomia* Saussure, 1867:99.—Schletterer 1887:498.—Cameron 1890:116, pl. VII: fig. 10.—Ashmead 1899:296.

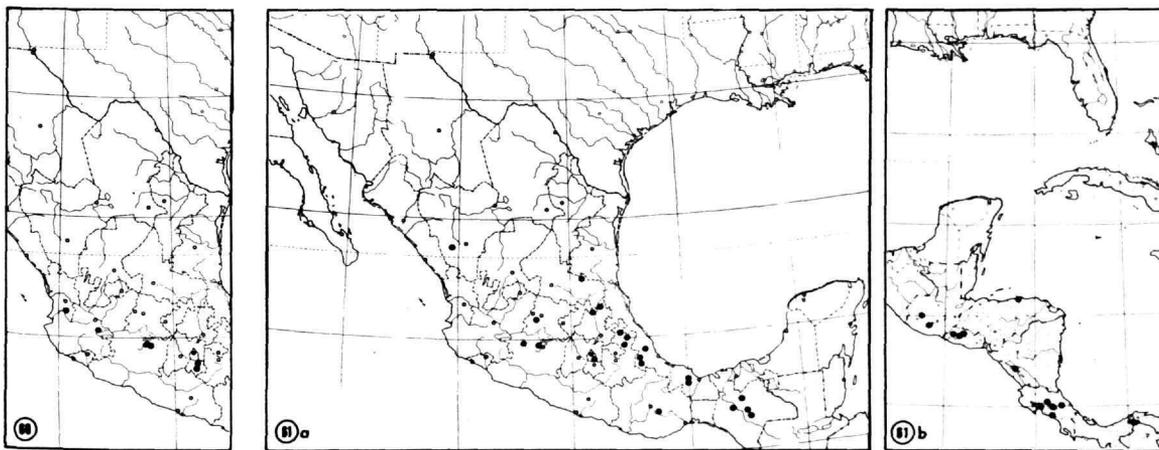
*Cerceris otomita* [sic].—Dalla Torre, C. G., 1897:469 [error in spelling].

*Cerceris otomaria* [sic].—Rau 1933:183 [error in spelling].

**FEMALE.**—Length 10 mm. Jet black with creamy-white markings; punctuation coarse; pubescence average.

Head slightly narrower than the thorax; black except for large frontal eye patches, lateral clypeal lobes, center and process of the medial clypeal lobe, basal part of the mandibles and a patch on the scape, all of which are creamy white; a conspicuous black border surrounds the medial clypeal lobe, clypeal border with five denticles, the two lateral and one medial denticles slightly smaller than the other two; clypeal process more acute than on other subspecies of *C. insolita* and with a pronounced smooth, concave area below; mandibles with three denticles, the apical one the largest; between it and the tip of the mandible there is a prominent rounded carina; antennae normal in form, dark above, lighter below.

Thorax black except for a narrow divided line on the pronotum, two spots on the scutellum, the metanotum, an elongate patch laterally, and two small spots bordering the enclosure on the propodeum, and small spots on the tegulae, all of which are creamy white; tegulae smooth and not elevated; enclosure smooth medially with a slight medial depression but deeply pitted laterally; mesosternal tubercles absent; legs largely black but with elongate creamy-white patches on the under surfaces of all tarsi and the first two pairs of femora; hind femora black except for a brownish area apically showing a trace of yellow; wings subhyaline over the posterior area, clouded in the anterior area.



FIGURES 60–61b.—60, *C. insolita cortezi*, new subspecies; 61a, 61b, *C. i. otomia* Saussure.

Abdomen black above except for strong, narrow bands on terga 1 and 3, and evanescent narrow lines on the posterior margins of terga 4 and 5; venter black to dark fuscous except the posterior part of sternum 1 and minute lateral spots on sternum 3, all of which are creamy white; pygidium elongate with sides slightly convex, the apical end rounded.

**MALE.**—Length 8 to 9 mm. Jet black with creamy-white markings; punctuation coarse; pubescence average.

Head subequal in width to the thorax; black except the face, which is largely creamy white with a pronounced black border extending from the antennal scrobes along the lateral margins of the frons and more or less completely surrounding the medial lobe of the clypeus; extension of the medial lobe of the clypeus with an acute, small medial denticle flanked by low lateral elevations; hair lobes extending from the eyes to the lateral elevations of the medial clypeal border; mandibles black with one small denticle; antennae normal in form, dark above, lighter below with a creamy-white spot on the scape.

Thorax black except for a narrow divided band on the pronotum, two spots on the scutellum, the metanotum, one or two pairs of spots on the propodeum and small spots on the tegulae, all of which are creamy white; tegulae low and smooth; enclosure smooth except for a few deep pits laterally and a slight medial depression; mesosternal tubercles absent; legs black, with more or less elongate areas of creamy white on all long leg segments except the hind femora, which have a lighter area on the ventral surface near the apical end.

Abdomen black above except for medium-wide bands on terga 1 and 3 and evanescent hair lines on the posterior margins of terga 4, 5, and 6; venter dark fuscous to black with a broad area on sternite 1, a band on sternite 3, and evanescent lateral spots on other sternites, all being creamy white; pygidium somewhat elongate, the sides slightly convex, the apical border almost straight with rounded lateral corners, the surface with a few deep pits.

**TYPE.**—The female holotype of *C. otomia* Sausure, from "Mexico," is at the Naturhistorisches Museum, Vienna.

**DISTRIBUTION.**—Southern Mexico through Central America and recorded from Ecuador and Argentina. Specimens are as follows:

**MEXICO:** CHIAPAS: ♂, Ixtapa, 12 April 1962 (FDP);

♀, ♂, San Cristobal las Casas, 12 April 1962 (FDP); ♂, 5 mi SE same locality, 5 July 1956 (DDL); ♀, 20 mi W same locality, 6000 ft, 3 May 1959 (HEE); ♀, Santo Domingo, 15 mi SE Simojovel, 8–15 July 1958 (RFS); ♀, Suchiapa, 15 July 1957 (JAC, BJR); ♂, same locality, 18 July 1957 (PDH); ♂, Teopisca, 12 April 1962 (LAS). CHIQUAHUA: ♀, Arroyo Masteno, Sierra del Nido, 7600 ft, 15 July 1959 (WCR). DISTRITO FEDERAL: ♀, Xochimilco, 31 August 1947 (HEM). DURANGO: ♀, 40 mi W Durango, 8100 ft, 15 June 1964 (DB). HIDALGO: ♂, 32 mi NE Jacala, 3950 ft, 10 July 1961 (UKE). JALISCO: ♀, 3 mi SE Plan de Barrancas, 8 July 1963 (P and S). MICHOACÁN: ♀, 3 mi E Carapan, 10 July 1963 (P and S); ♀, Hidalgo, 12 July 1963 (P and S); 2♀, 6 mi NW Quiroga, 11 July 1963 (P and S); ♀, Tancitaro, 6600 ft, 3 August 1962 (HEE); ♀, same locality and elevation, 12 August 1940 (K and H); ♀, 10 mi W Zitacuaro, 11 July 1951 (PDH). MEXICO: ♂, Villa de Bravo, 6500 ft, 3 August 1962 (HEE). OAXACA: ♂, 25 mi SE Oaxaca, 5600 ft, 27 June 1963 (S and B); ♀, ♂, Palomares, 5–21 September 1961 (R and KD); 2♂, Tamascal, 16 July 1966 (JEB, MRG, RCG); ♂, Textepec, October 1953 (MF); 4♂, 44 mi N junction of Highways 190 and 185, 350 ft, 11 August 1963 (S and B). PUEBLA: ♂, Apulco, N Zaca-poaxtla, 4700 ft, 20 June 1961 (UKE); ♀, 2♂, 3 mi SW Cuetzalan, 4100 ft, 19 June 1961 (UKE); ♀, 4.3 mi W Huauchinango, 5650 ft, 21 August 1962 (UKE). SAN LUIS POTOSÍ: ♂, 5 mi E Ciudad del Maiz, 4700 ft, 22 August 1955 (UKE); 2♀, El Salto, 1800 ft, 8 June 1961, 21 July 1962 (UKE); 2♀, Tamazunchale, 11 June 1951; ♀, same locality and date (PDH); 3♂, Zilitla, 23 July 1954 (UKE); ♀, 5 mi W Zilitla, 2400 ft, 22 July 1954 (UKE). SINALOA: ♀, 6 mi NE Potrerillos, 2 July 1963 (P and S). VERACRUZ: ♂, Acayucan, 23 October 1957 (R and KD); ♂, 35 mi N Acayucan, 18 August 1959 (R and KD); ♀, ♂, 3 mi SW Acayucan, 4600 ft, and 10 mi SW Acayucan, 5300 ft, respectively, 25 August 1963 (S and B); ♀, 3♂, Cordoba, 1 January 1941 (GEB); 3♀, 15♂, same locality, 6, 13, 20, 24–25, 29 July 1966 (JSB, MRG, RCG); ♂, Coscomatepec, 27 April 1962 (FDP); 2♀, 7♂, Fortin de las Flores, 17 September 1954 (FXW); ♂, same locality, 3000 ft, 10 June 1959 (HEE); ♀, 1 mi S Huatusco, 17 July 1966 (JSB, MRG, RCG); 5♀, 3♂, Jalapa (C); ♂, same locality, 1–6 August 1961 (R and KD); ♂, 2 mi NW Jalapa, 17 August 1959 (LAS and ASM); 9♂, Orizaba, 1862 (LB); 2♀, 6♂, same locality, 25 July 1956, 12–22 August 1961 (R and KD); ♂, Presidio, 15 July 1966 (JSB, MRG, RCG); ♂, Rio Blanco, 13 November 1957 (R and KD).

**CENTRAL AMERICA:** COSTA RICA: ♂, Buenos Aires, San José Province, 21 July 1964; ♀, 9 mi NW Esparta, 22 July 1965 (PJS); ♀, 8 mi N Parrita (PI), San José Province, 30 m, 13–19 August 1962 (CDM, AW); ♂, Pucuaré (KWC); ♀, San Carlos (Bo); ♂, San José, March 1932 (SS); ♀, ♂, same locality, 10 August 1962, 15 June 1963 (CDM, DMM); ♂, Turrialba (KWC); 21♂, same locality, 31 July 1963 (DCC, MEI). GUATEMALA: ♂, Coban, 4000 ft, 8 July 1947 (C and PV; FJ); ♂, Escuintla, 1959 (NLK); 4♀, 2♂, Moca Guatalon, March–April 1931

(JB); ♀, 6 ♂, 13 and 16 mi S Panajachel, Lake Atitlan, 6300 ft, 7 August 1963 (S and B); ♀, Quiriqua (JB); ♀, Yepocapa, May 1948 (HTD). EL SALVADOR: ♂, Cerro Verde National Park, 19 June 1963 (C and I); 3 ♀, ♂, same locality, 6450 and 6800 ft, 5 July, 2 August 1963 (S and BO); 2 ♀, ♂, Monte Cristo, 7-9 May 1958 (OLC); 2 ♀, ♂, Mount San Salvador, 8 July 1963 (C and I); 7 ♀, 38 ♂, Quezaltepeque, 2 mi E and 2½ mi W same locality, 26 June, 6, 20, 24 July, 2 August 1961, 18, 22 June, 1, 3, 5, 16, 19 July, 6, 12 August 1963 (MEI); ♂, San Salvador, 23 August 1958 (OLC); 12 ♂, 23 mi N San Salvador, 2100 ft, 4 July 1963 (S and B). NICARAGUA: ♂, Granada (B). HONDURAS: ♂, Corocito, 3 April 1924; 2 ♂, Prieta, 5 March 1924; ♂, Puerto Castilla, 9 April 1926 (RHP). PANAMA: ♂, Buerro Colorado Island, Canal Zone, 23 July 1963 (C and I).

SOUTH AMERICA: ECUADOR (RB). ARGENTINA: Weyueb Cordoba.

PREY RECORD.—*Nodonota* species (Chrysomelidae) (Rau 1933:183).

PLANT RECORD.—None.

#### 47g. *Cerceris insolita panama*, new subspecies

FIGURES 62, 141a-e

FEMALE.—Length 10 mm. Black with yellow and creamy-white markings; punctation average; pubescence average.

Head subequal in width to the thorax; black except the entire face below antennal scrobes, basal half of the mandibles and patch on the scape, all of which are creamy white and a spot back of the eye, which is yellow; clypeal border with six subequal denticles, fuscous; clypeal surface conical with the tip bent dorsad; mandibles with three denticles closely appressed at the base, the most apical one much the largest, apicad of which a deep incision and below this a low, rounded carina; antennae normal in form, dark above, lighter below.

Thorax black except for a band on the pronotum, the scutellum, the metanotum, all but the margins of the propodeum, an evanescent patch on the enclosure and a spot on the tegula, all of which are yellow; tegulae low and smooth; enclosure with a light medial groove, deeply pitted laterally; mesosternal tubercles absent; legs black except for small patches near the apex of the femora, a broad stripe on each tibia and most of the tarsi of the first and second pair of legs, all of which are yellow; wings subhyaline with the anterior area darker.

Abdomen black except tergum 1, which is almost entirely yellow, small lateral spots on tergum 2, a

band on tergum 3, narrow lines on terga 4 and 5, sternum 1, and a small patch on sternum 2, all of which are yellow; venter otherwise immaculate; pygidium with sides convex, narrowing basad and rounded apically.

MALE.—Length 9.5 mm. Black with yellow markings; punctation average; pubescence average.

Head subequal in width to the thorax; black except the entire face below the antennal scrobes, a patch on the mandible, a small spot back of the eye and most of the scape, all of which are yellow; clypeal border with one distinct medial denticle and two indistinct lateral denticles; hair lobes extend from the lateral denticles to the compound eyes; mandibles with one small denticle; antennae normal in form, dark above, lighter below.

Thorax black except for a semidivided band on the pronotum, the scutellum, the metanotum, all but the margins of the propodeum, and evanescent patch on the enclosures and a patch on the tegula, all of which are yellow; tegulae low and smooth; mesosternal tubercles absent; legs black except for small irregular patches on the basal segments of the second and third pair of legs, large patches on the first and second femora, large patches on all tibiae and most of the tarsal segments of the first two pair of legs, all of which are yellow; a large patch of fuliginous on the third femur; wings average.

Abdomen black except for most of the first segment, small lateral spots and an evanescent small patch dorsally on tergum 2, a wide band on tergum 3, narrow lines on terga 4, 5, and 6, band on sternum 3 and small lateral patches on sternum 2, 4, 5, and 6, all of which are yellow; pygidium narrowing slightly at each end, the apex broad and nearly flat, surface deeply pitted.

TYPES.—The type female and the allotype male, taken 7 miles southeast of Liberia, Costa Rica, 400 feet elevation, the former 29 July 1963 and the latter 27 July 1963 (H. A. Scullen and Duis Bolinger), are at the National Museum of Natural History (USNM 71067). Paratypes as follows:

CENTRAL AMERICA: COSTA RICA: GUANACASTE PROVINCE: ♀, 9 mi NW Esparta, 22 July 1965 (PJS); 4 ♂, Liberia, 400 ft, 29 July 1963 (S and B); 5 ♂, Liberia, 6 August 1964 (MGN); 13 ♂, 16 mi SE Liberia, 300 ft, 26-27 July 1963 (S and B); 83 ♂, 7 mi SE Liberia, 400 ft, 27, 29 July 1963 (S and B); 5 ♂, 3 mi NW Liberia, 400 ft, 28 July 1963 (S and B); 2 ♂, 12 mi NW Liberia, 400 ft, 28 July 1963 (S and B); ♀, Playas del Coco, 15 August

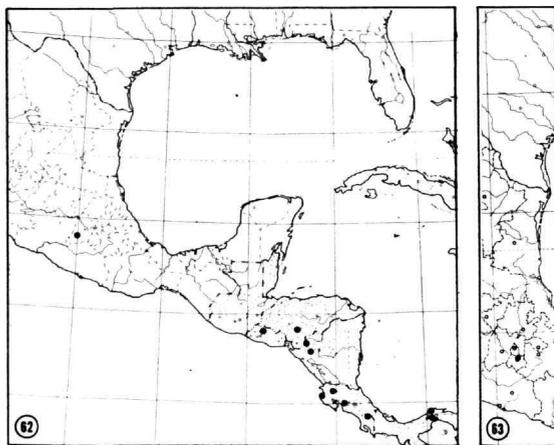
1964 (MGN); 3♂, same locality, 5 August 1964 (R and GR); PUNTARENAS PROVINCE: ♂, Buenos Aires, 21 July 1964 (CDM and CGE); ♂, Macacona, 8 mi N Esparta, 31 July 1962 (AW, CDM). EL SALVADOR: ♀, Quezaltepeque, 17 July 1963 (C and I). HONDURAS: ♀, Tegucigalpa, 10 August 1918 (FJD). NICARAGUA: ♂, 4 mi S Esteli, 2700 ft, 30 July 1963 (S and B); ♂, 28 mi S Somoto, 2000 ft, 31 July 1963 (S and B). PANAMA: ♂, Bella Vista, 2 August 1924 (NB); CANAL ZONE: ♀, Ancon, 6 August 1924 (NB); 3♂, Balboa, 27 May, 19 June, 11 October 1914 (THH); ♂, Balbao Prado, 2 July 1918 (HDi); ♂, Barro Colorado Island, 24 March 1933 (HFS); ♂, same location, 13 November 1933; 3♀, Cristobal, 17 June, 10 August 1924 (NB); 3♂, Frijoles, 9 November 1930 (HFS); ♀, Gamboa, 17 July 1918 (HDi, Z); ♀, Red Tank, 1 July 1924 (NB).

MEXICO: ♂, Tejupilco, Temascaltepec, July 1932 (HEH).

**DISTRIBUTION.**—Panama north to Nicaragua with one questionable record from Mexico.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.



FIGURES 62-63.—62, *C. insolita panama*, new subspecies; 63, *C. acolhua* Saussure.

## UNGROUPED SPECIES

### 48. *Cerceris acolhua* Saussure

FIGURE 63

*Cerceris acolhua* Saussure, 1867:90-91.—Schletterer 1887:485.—Cameron 1890:124, pl. VIII: figs. 2, 2a, b, c, d.—Dalla Torre, C. G., 1897:449.—Ashmead 1899:296.

The type male of this species was examined by the writer at Vienna in 1959. Much of the abdomen of

the type was lost by that time. It is known only from this type specimen, which is a male. From the remaining parts it appears to be about the size of *C. frontata* Say. The face is quite distinct from that species. Length 15 mm.

The entire face is yellow. The upper surface of the clypeus is elevated, forming a low, lunar-shaped ridge resembling the clypeal elevation on the female of *C. bicornuta* Guerin, but not so elevated. It is only slightly puffed out. The three clypeal border denticles are low and flattened. Hair lobes are narrow. The terminal antennal segments are hooked as in *C. bicornuta*.

The thorax has two large patches on the pronotum and the scutellum is yellow; fore- and midlegs are black to near the distal ends of the femori; hind legs are yellow to near center of femori; tibiae and tarsi are largely yellow.

The abdomen has tergum 1 with two yellow patches and an emarginate band on tergum 3. The remainder of the abdomen is lost.

This species, as indicated by the male type, is near *C. bicornuta* Guerin, but the surface of the face is not the same and basal tarsal segment is not S-shaped as it is on *C. bicornuta* Guerin male (Scullen 1965a: fig. 153d). It is also near the males of *C. frontata* Say and *C. mimica* Cresson, but the face is not like that of either. No other specimens have been seen that conform to this type specimen.

**TYPE.**—The holotype male of *C. acolhua* Saussure from Chapultepec, Mexico, taken in June, is at the Naturhistorisches Museum, Vienna.

**DISTRIBUTION.**—Known only from type-locality.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

### 49. *Cerceris atacomulca*, new species

FIGURES 64, 142a-f

**FEMALE.**—Length 10 mm. Black with white markings on the body but clouded white to yellow on legs; punctuation average on head and thorax but more sparse on the abdomen; pubescence normal except on the propodeum, where it is long, and on the abdomen, where it is very short in general.

Head about one-fifth wider than the thorax; black except the frontal eye patch, which is very large, the entire clypeus exclusive of the borders and the ventral surface of the clypeal process, and a patch

on the base of the mandibles, all of which are white, and the ventral surface of the flagellum of the antennae, which is ferruginous; finely and closely punctate; clypeal margin with two bicuspidate denticles opposite the junction of the lateral and medial lobes of the clypeus, the medial cuspid of the denticles being much the larger of the two; a row of six or more enlarged bristles between the two denticles; a cone-shaped process on the medial lobe of clypeus, which is black below and white above; mandibles with one large denticle; antennae normal in form.

Thorax black except two elongate patches on the prothorax, the metanotum, and the tegulae, all of which are white; enclosure minutely rugose and pitted with a deep medial groove; propodeum coarsely pitted; a small but acute mesosternal tubercles; fore- and midlegs black to near the distal ends of the femori, which are light yellow; fore- and midtarsi light yellow with elongate dark patches; hind trochanters creamy white; hind femori dark except the distal tip with a variable amount of brown; hind tibiae light basically but dark distally; fore- and midtarsi light infused with brown; hind tarsi largely dark; wings subhyaline with the anterior area and distal end slightly clouded; stigma light amber.

Abdomen black except for a divided band on tergum 1; narrow and slightly emarginate bands on terga 2, 3, 4, and 5, and large lateral patches on sterna 3 and 4, all of which are white; bristles more prominent on sterna 4 and 5; pygidium as illustrated (Figure 142c).

MALE.—Length 8 mm. Black with creamy-white markings; punctation average on the head and thorax but more sparse on the abdomen; pubescence somewhat longer than average on the head and thorax but short on the abdomen.

Head subequal in width to the thorax; black except the entire face below the antennal scrobes and a small spot on the base of the mandibles; extension of the medial clypeal lobe subequal in width to twice the length of the epistomal suture, black in color, and terminating in three low denticles; mandibles without denticles; hair lobes extending the full width of the lateral clypeal lobes; antennae normal in form.

Thorax black except for a widely divided band on the pronotum, the metanotum, and the tegulae, all of which are creamy white; tegulae low and smooth; enclosure with the usual medial groove and

pitted along the lateral margins; mesosternal tubercles absent; legs and wings as on the female.

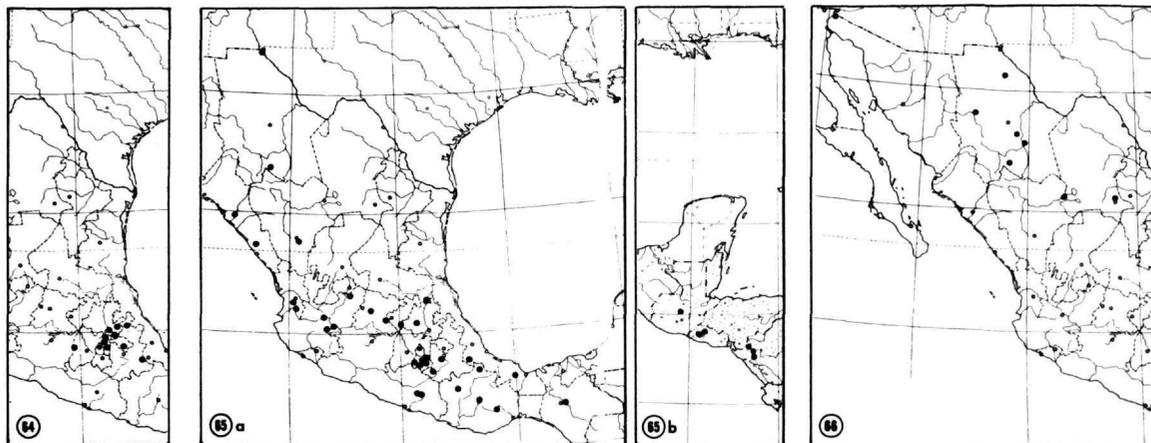
Abdomen black except for two small lateral patches on tergum 1, narrow bands on the posterior margins of terga 2, 3, 4, 5, and 6, all of which are slightly emarginate and creamy white in color; the band on tergum 5 often more deeply emarginate than on other terga, or in rare cases divided mesally; venter with two large lateral light patches on sterna 3 and 4; pygidium as illustrated (Figure 142f).

The males of *C. atacomulca* are very close to the males of *C. gandarai* Rohwer in structure and color. They may be distinguished by the following characters:

	<i>C. atacomulca</i>	<i>C. gandarai</i>
width of medial clypeal extension	twice the length of the epistomal suture	subequal the length of the epistomal suture
distal margin of above extension	3 low denticles	2 low lateral denticles
light markings of face	creamy white	light yellow
distal end of hind femori	trace of brown	brown covers near 3/16 of femur
band on tergum 5	may be very thin or broken	subequal to bands on other terga

TYPES.—The type female and the allotype male, taken from Atacomulca, Mexico, 8550 feet elevation, 30 August 1963 (H. A. Scullen and Duis Bolinger), are deposited at the National Museum of Natural History (USNM 71056). Paratypes are as follows:

MEXICO: HIDALGO: ♂, Epazoyucan, 8100 ft, 17 June 1961 (UKE); ♂, Pachuca, 7300 ft, 28 July 1954 (UKE); ♀, 5♂, 14 mi SW Pachuca, 7500 ft, 9 July 1961 (UKE); ♂, 11 mi SE Pachuca, 8100 ft, 15 June 1961 (UKE); ♂, 6 km W Tepeapulco, 4 July 1948 (WHL); 17♂, 3 mi N Tepeapulco, 17 June 1961 (UKE); 3♂, 3.5 mi NE Tizayuca, 7700 ft, 28 August 1962 (UKE); 2♂, 13.5 mi NE Tizayuca, 7700 ft, (UKE); ♂, Tulancingo, 6750 ft, 14 June 1961 (UKE); 2♀, 7 mi S Tulancingo, 7500 ft, 26 August 1962 (MN and RR); ♀, 4 mi E Tulancingo, 7100 ft, 24 August 1962 (O and R); 3♀, 2♂, 6 mi E Tulancingo, 6900 ft, 24 August 1962 (O and R). MEXICO: ♀, ♂, Atacomulco, 8800 ft, 18 August 1954 (UKE); ♀, same locality and date (JCG); 7♂, same locality, 8550 ft, 30 August 1963 (S and B); ♀, 8 mi N Atacomulco, 8550 ft, 30 August 1963 (S and B); ♀, Chapingo, 1950 (FMP); ♀, Texcoco, 12 August 1954 (UKE); ♂, Tepexpan, 6500 ft, 12 August 1954 (UKE); 2♂, Zoquiapan, 19 July 1953. PUEBLA: ♀, 8 mi W Huauchinango, 6450 ft, 23 August 1962 (UKE); 2♀, 10.2 mi W Pueblo-Veracruz boundary, Highway 150, 5 July 1962 (DHJ). TLAXCALA: 3♀, 7800 ft, 20 August 1962 (UKE).



FIGURES 64–66.—64, *C. atacomulca*, new species; 65a, 65b, *C. azteca* Saussure; 66, *C. bicornuta bicornuta* Guerin.

**DISTRIBUTION.**—South-central Mexico. Largely in the mountains northeast of Mexico City.

**PREY RECORD.**—None.

**PLANT RECORD.**—*Asclepias* species (Hidalgo), Blue *Ipomoea* (Hidalgo).

### 50. *Cerceris azteca* Saussure

FIGURES 65a, b, 143a–d

*Cerceris azteca* Saussure, 1867:97.—Schletterer 1887:486.—Cameron 1890:125, figs. 5, 5a, b, c.—Dalla Torre, C. G., 1897:453.—Ashmead 1899:296.—Scullen 1961:45; 1965a:345, 349, 459–461, figs. 69, 151a, b, c, d.  
*Cerceris seminigra* Banks, 1947:33–34.—Scullen 1951:1010.

**TYPES.**—The type female of *Cerceris azteca* Saussure is at the Naturhistorisches Museum, Vienna, with the following label: “In Agro Mexicano frequens. In partes calidas provinciae urbis Mexico prope Yautepec at Cuautla 8 ♀ in Julio cepi, et in Orizaba 2 ♀ in Martio.” The type male of *Cerceris seminigra* Banks, taken from Patagonia, Ariz., 20 August (Bequaert), is at the Museum of Comparative Zoology (27621).

**DISTRIBUTION.**—Through western and southern Mexico, and Central America. Limited records from southern Arizona, New Mexico, and Texas. Specimens from south of the United States-Mexican border are as follows:

MEXICO: CAMPECHE: ♀, Ciudad del Carmen, 5 August 1964 (PJS). CHIAPAS: 2♂, Ixtapa, 11 April 1962 (FDP); ♂, 9 mi S Ixtapa, 1 April 1953 (RCB and EIS); ♂, 7 mi SE Soyalo, 27 March 1953 (RCB and EIS). CHIHUAHUA: ♂, Colonia Juarez (DEB); 2♂, 9 mi S Hidalgo del Parral, 22, 26 July 1967 (SG, Ko, KL). DURANGO: ♀, 2♂, Nombre de Dios, 5 August 1951 (HEE); 2♀, same locality, 1 and 6 August 1951 (PDHjr). GUANAJUATO: 12♀, 4♂, Guanajuato (E. Ouges); 3♂, 5 mi N Salamanca, 6000 ft, 19 August 1954 (RRD); 3♀, 2♂, Silao, 16 August 1953 (CPV). GUERRERO: 3♂, Chilapa, 4600 ft, 29 July 1962 (HEE); ♀, 5 km S Chilapa, 29 July 1962 (FMP); 2♂, Chilpancingo, 6 July 1963 (FMP); ♂, same locality, 15 July 1965 (AO); ♂, 5 mi S, 25 mi E Chilpancingo, 3800 ft, 5 August 1962 (UKE). HIDALGO: 2♀, ♂, 12 mi W Del Parral, 6200 ft, 14 July 1964 (JAC, JPo); ♂, Irmiguilpan, 5200 ft, 29 July 1964 (UKE); ♂, 5 mi S Ixmiquilpan, 9 July 1968 (MAW, JSL). JALISCO: 4♀, Ajijic, 5200 ft, 31 July 1964 (WLN and sons); ♀, same locality, 18 July 1966 (RWi); 2♂, Catalitlan, 10 July 1956 (R and KD); 2♀, Chapala, 5000 ft, 22 May 1956 (HAS); 2♀, 5♂, Guadalajara (C); 2♂, same locality, 11 August, 18 September 1903 (Mc); 3♀, same locality, 24 July 1951 (PDH); 10♀, 20♂, same locality, on *Baccharis*, 5000 ft, 13–14, 17, 23 July 1951, 17–20, 23–28 July 1965 (HEE); 5♀, 4♂, same locality, 17 September 1957 (R and KD); ♂, 9 mi S Guadalajara, 24 July 1965 (HEE); ♂, Encarnacion de Diaz, 28 July 1951 (PDH); ♀, Lagos de Moreno, 6300 ft, 12 August 1954 (R and KD); ♂, Lake Chapala, 7 July 1953 (C and PV); 4♀, 7♂, La Primavera, 8 July 1956 (R and KD). MORELOS: 8♂, 51 km N Alpuyecá, 3400 ft, 10 August 1962 (HEE); ♂, Cuautla, 5 July 1961 (JVá); ♀, Cuernavaca, 4500 ft, 22 May 1951 (HEE); 6♀, same locality, 9, 12 July 1961 (R and KD); ♂, 3 mi N Cuernavaca, 6500 ft, 20 May 1959 (HEE); ♂, 13 mi S Cuernavaca, 8 July 1962 (DHJ); ♀, 19♂, 14 mi

S Cuernavaca, 3600 ft, 28 August 1963 (S and B); ♂, 35 mi S Cuernavaca, 2600 ft, 4 July 1954 (CDM); ♂, Huajintlan, 27 September 1951 (R and KD); ♀, 3 ♂, 6 mi S Temixcom, 5 May 1962, 16 June 1963 (P and S); ♀, Tepoztlan, 26 September 1951 (R and KD); ♂, same locality, 13 July 1956 (CBe); ♂, Tetecala, 2800 ft, 10 August 1962 (HEE); 7 ♀, Xochicalco, 13 July 1961 (R and KD); ♂, Yauatepec, Canyon de Lobos, 4000 ft, 7 March 1959 (HEE); ♂, 2 mi SE Yauatepec, 3800 March 1959 (HEE); ♂, 2 mi SE Yauatepec 3800 ft, 2 July 1961 (CDM); 2 ♀, 2 mi SW Yauatepec, 4000 ft, 2 July 1961 (CDM); ♀, 7 mi NE Yauatepec, 3800 ft, 18 August 1962 (UKE); 5 ♀, 37 ♂, 7.3 mi S Yauatepec, 3000 ft, 15-17 August 1962 (NM, EO, MN, RR). NAYARIT: ♀, Ahuacatlan, 18 July 1951 (HEE); 2 ♀, 7 ♂, same locality, 18, 22 July 1951, on *Donnellsmithia Hintonii*, (PDH); ♂, same locality, 6 July 1956 (R and KD); ♀, Arrogo Refelion, near Compostela, 8 August 1965 (HEE); ♂, 15 km N Chapalilla, 19 July 1951 (PDHjr); 2 ♂, same locality and date (HEE); 4 ♂, Pichon, 12 July 1956 (R and KD); ♂, Tepic, 12 July 1956 (R and KD). OAXACA: ♂, El Camaron, 29 September 1963 (JV a); 2 ♂, Mitla, 5600 ft, 28 June 1963 (S and B); ♂, Oaxaca, 5068 ft, 24 August 1957 (HAS); 8 ♂, 5 mi SE Oaxaca, 6150 ft, 21 August 1963 (S and B); ♂, 24 mi SE Oaxaca, 22 August 1963 (S and B); ♂, Palomares, 5-21 September 1961 (R and KD); ♂, 2 mi NW Tamazulapan, 6000 ft, 28 June 1961 (UKE); ♀, Temascal, 16 July 1966 (JSB, MG and RG); 3 ♂, 11 mi N junction 190 and 185, 100 ft, 11 August 1963 (S and B). PUEBLA: ♀, Atlixco, 23 July 1956 (R and KD); ♀, 7 mi N Matamoros, 450 ft, 13 August 1962 (UKE); ♂, 13 mi S Puebla, 6900 ft, 25 June 1963 (S and B). QUERÉTARO: ♂, 5 mi W San Juan del Rio, 6500 ft, 2 September 1963 (S and B). SAN LUIS POTOSÍ: ♀, 2 ♂, Tamazunchale, 11 June 1951 (PDHjr). SINALOA: ♀, 2 ♂, Chupaderos, 600 ft, 21 August 1962 (HEE); ♀, same locality, 3 July 1963 (P and S); ♂, 13 mi N Culican, 17 March 1962 (FDP); ♂, 11 mi N Culican, 20 May 1962 (LAS); ♂, 8 mi S Elota, 2 July 1963 (P and S). VERACRUZ: 6 ♀, 30 mi S Acayucan, 22 April 1962 (FDP); 6 ♀, ♂, Orizaba, 1862 (LB).

CENTRAL AMERICA: EL SALVADOR: ♀, ♂, Quezaltepeque, 21 June, 30 July 1961 (MEI); ♀, 3 ♂, same locality, 3 July 1963 (S and B); 16 ♀, 24 ♂, same locality, 1500 ft, 18-19, 21-22 June, 1, 3, 16 July 1963 (C and I); ♂, 25 mi N San Salvador, 2100 ft, 4 July 1963 (S and B). GUATEMALA: ♀, Salama, 3000 ft, 30 July 1947 (C and PV, FJ). HONDURAS: ♀, Carocito, 3 April 1924; ♂, Contarranas, Rio Choluteca, 2200 ft, 19-20 July 1930 (PAHE); ♂, Preta, 5 April 1824. NICARAGUA: 2 ♂, 8 mi S Condega, 2200 ft, ♂, 20 mi S. Condega, 3000 ft, and ♀, 33 mi S Condega, 3100 ft, all 7 July 1963 (S and B); 2 ♀, 58 ♂, 28 mi S Somoto, 2000 ft, 31 July 1963 (S and B).

PREY RECORD.—None.

PLANT RECORD.—*Baccharis* (Jalisco), *Donnellsmithia Hintonii* (Nayarit).

### 51a. *Cerceris bicornuta bicornuta* Guérin

FIGURES 66, 144a-e

*Cerceris bicornuta* Guérin, 1845:443.—Smith, F., 1856:466.—Cresson 1865:117.—Packard 1866:61.—Saussure 1867:100-101, pl. 4: fig. 58.—Cresson 1872:227; 1875:717.—Robertson 1887:202-216, 246.—Cresson 1887:282.—Schletterer 1887:486.—Cameron 1890:127.—Robertson 1891:570.—Dalla Torre, C. G., 1897:453.—Bridwell 1898:209.—Smith, J. B., 1900:519.—Vioreck 1903:120.—Vioreck and Cockerell 1904:130.—Smith, J. B., 1910:678.—Banks 1912:16.—Mickel 1917b:446.—Bequaert 1928:62.—Rau 1928:337-341, pl. 24.—Cartright 1929:35.—Scullen 1942:188.—Guiglia 1948:179.—Scullen 1951:1005; 1965a:345, 349, 462-465, figs. 71, 153a, b, c, d, e.—Gibson and Carrillo 1959:211.

*Cerceris dufourii* Guérin, 1844:443.—Smith, F., 1856:466.—Cresson 1865:131.—Packard 1866:64.—Cresson 1875:717; 1887:282.—Schletterer 1887:490.—Dalla Torre, C. G., 1897:457.—Ashmead 1899:295.—Smith, J. B., 1900:519; 1910:678.—Scullen 1942:188.—Guiglia 1948:179.

*Cerceris venator* Cresson, 1865:116.—Packard 1866:61.—Cresson 1872:228; 1875:717; 1887:282.—Ashmead 1899:295.—Dalla Torre, C. G., 1897:480.—Bridwell 1898:209.—Smith, J. B., 1900:519.—Cockerell 1901:42.—Vioreck and Cockerell 1904:130.—Vioreck 1906:223.—Smith, H. S., 1908:364.—Smith, J. B., 1910:678.—Mickel 1917b:447.—Hendrickson 1930:160.

*Cerceris curvicornis* Cameron, 1890:124.—Ashmead 1899:296.

*Cerceris bicornis* [sic].—Ashmead, 1899:295.

*Cerceris serripes* Bequaert,<sup>3</sup> 1928:62.—Scullen 1942:188.—Strandtmann 1945:311.

*Cerceris bicornuta bicornuta*.—Krombein, 1952:336; 1953:118-119, 123, 124, 125, 134; 1954:235; 1958a:197; 1958b:101.—Scullen 1961:45; 1965a:345, 349, 462-465, figs. 71, 153a, b, c, d, e.

TYPES.—The type female of *C. bicornuta* Guérin and the type male of *C. dufourii* Guérin, both from New Orleans, La., are at the Museo Civico di Storia Naturale, Genoa. The type male of *C. venator* Cresson, from Illinois, is at the Academy of Natural Sciences of Philadelphia (1937). The type male of *C. curvicornis* Cameron, from Presidio de Mazatlan, Mexico (Forrer), is at the British Museum of Natural History (21.1,430).

DISTRIBUTION.—In Mexico largely in the state of Chihuahua with one record each from Durango and Sonora. Specimens are as follows:

MEXICO: CHIHUAHUA: ♂, 7 mi SE Ceballos, 3900 ft, 9 September 1963 (S and B); ♂, Ciudad Camargo, Rio

<sup>3</sup>For a discussion of the misidentification of this species, see Scullen (1965a:503-505).

Conchos, 17 August 1952 (JDL); 2♂, Delicias, 13 July 1947 (CDM); 3♀, 5♂, 29 mi E Hidalgo del Parral, 5000 ft, 21 June 1956 (HAS); ♀, 18 mi W Jimenez, 10 August 1951 (HEE); 4♂, same locality and date (PDHjr); ♂, Matachic, 7 July 1947 (CDM); 2♂, 3 mi NW Meoqui, 13 July 1964 (JPo); ♂, Villa Ahumada, 14 August 1951 (HEE). COAHUILA: 2♀, 6♂, 15 mi N Saltillo, 4550 ft, 10 October 1957, 9 September 1963 (S and B); 4♂, Torreon, 3800 ft, 18 October 1957 (HAS). DURANGO: ♂, Los Angeles, 1 July 1961 (R and KD). SONORA: ♂, San Luis, 22 June 1953 (RRSn).

PREY RECORD (in Mexico).—None.

PLANT RECORDS (in Mexico).—None.

### 51b. *Cerceris bicornuta fidelis* Viereck and Cockerell

FIGURE 67

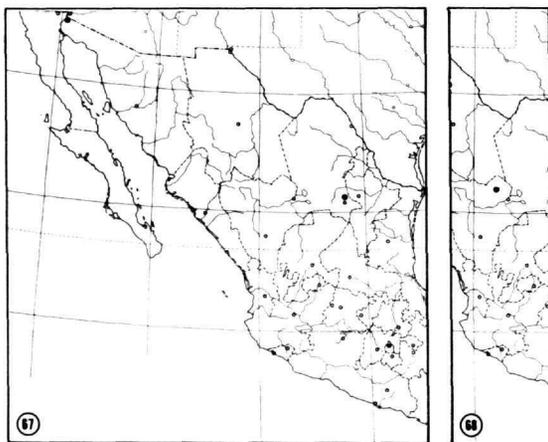
*Cerceris fidelis* Viereck and Cockerell, 1904:132.—Banks 1947:15.

*Cerceris bicornuta fidelis*.—Scullen 1951:1005.—Krombein 1960a:75–76.—Scullen 1965a:345, 349, 465–466, fig. 72.

TYPE.—The type female of *C. fidelis* Viereck and Cockerell, from Santa Fe, N. Mex. (Cockerell), is at the Academy of Natural Sciences of Philadelphia (10378.)

DISTRIBUTION.—Limited records from Mexico are as follows:

MEXICO: BAJA CALIFORNIA SUR: 5♂, San José, 16, 21–22 July 1968 (JD and MAC). COAHUILA: 3♀, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B). SONORA: 2♂, San Luis, 22 June 1953 (RRSn, OHJ).



FIGURES 67–68.—67, *C. bicornuta fidelis* Viereck and Cockerell; 68, *C. bolingeri*, new species.

PREY RECORDS (from Mexico).—None.

PLANT RECORDS (from Mexico).—None.

### 52. *Cerceris boharti* Scullen

FIGURES 145a–c

*Cerceris boharti* Scullen, 1965a:345, 466–467, figs. 73, 154a, b, c.

TYPE.—The type female of *C. boharti* Scullen, taken from Mount Lemmon Lodge, Santa Catalina Mountains, Ariz., 15 August 1954 (R. M. Bohart), is at the University of California at Davis.

DISTRIBUTION (in Mexico).—♀, Meadow Valley (state?). “Meadow Valley” has not been located on a map.

PREY RECORD (in Mexico).—None.

PLANT RECORD (in Mexico).—None.

### 53. *Cerceris bolingeri*, new species

FIGURES 68, 146a, b

FEMALE.—Length 14 mm. Black and ferruginous with very limited yellow markings; punctation small and somewhat sparse on the abdomen; pubescence average.

Head subequal in width to the thorax; largely ferruginous with a large black area on the vertex that embodies the ocelli and extends on each side through the antennal scrobes to the epistomal suture (a small black spot may appear on the medial lobe of the clypeus below the process); large frontal eye patches, a small area on the lateral wings of the clypeus, and a small area on the carina between the antennal scrobes, all of which are yellow; a broad extension appears on the free margin of the medial clypeal lobe, which is flanked on each side by two low denticles; clypeal process a truncate flat cone with the terminal margin deeply emarginate (very similar to that of *C. mimica* Cresson); mandibles unidentate, the low, broad denticle with a suggestion of being bicuspidate; antennae normal in form, ferruginous basally and darker distally.

Thorax black with an emarginate yellow band on the pronotum impregnated with ferruginous, much of the posterior lobe of the pronotum, most of the scutellum, the metanotum, much of the propodeum, a patch on the pleuron below the wing, and the tegulae, all of which are ferruginous; tegulae normal; en-

closure smooth and shiny, medial groove indistinct; mesosternal tubercle large and acute; legs ferruginous; wings dark.

Abdomen with terga 1 and 2 yellow impregnated with ferruginous, terga 3, 4, and 5 ferruginous emarginate with fuscous, venter largely ferruginous with lateral yellow patches on sterna 3 and 5; pygidium as illustrated (Figure 146*b*.)

MALE.—Unknown.

*Cerceris bolingeri* in many ways resembles *C. mica* Cresson, but it differs from that species in being smaller, having the enclosure entirely smooth, having a different form to the pygidium, and other details.

TYPES.—The type female, taken from 40 miles northwest of Gomez Palacio, Durango, Mexico, 3700 feet elevation, 10 September 1963 (H. A. Scullen and Duis Bolinger), is at the National Museum of Natural History (USNM 71057). Paratype as follows: Herford, Ariz., 17 September 1935 (FHP).

DISTRIBUTION.—Known only from Durango, Mexico, and southern Arizona.

PREY RECORD.—None.

PLANT RECORD.—None.

#### 54. *Cerceris bothriophora* Schletterer

*Cerceris bothriophora* Schletterer, 1887:456, 457.—Cameron 1890:127.—Dalla Torre, C. G., 1897:454.—Ashmead 1899:296.

TYPES.—No type of *C. bothriophora* Schletterer was found at the Naturhistorisches Museum, Vienna, by the present author in 1959; however, a single female labeled “bothriophora det Schletterer” was found; it was also labeled “Wthm.” and “Newhaven.” This female was designated a neotype by the present author. It is described below. Two males were also found apparently labeled by Schletterer as *C. bothriophora*. From the very wide hair lobes and other characters, these males did not appear to be males of the above female.

FEMALE (neotype).—Length 12 mm. Black with yellow markings; punctuation and pubescence average.

Head black except for large frontal eye patches and a patch on the clypeal process, both of which are yellow; clypeal border with two prominent denticles, each below a point on the process; mandibles with a single large denticle that fits in mesad of a denticle on the clypeal border; antennae normal in form.

Thorax all black except a divided band on the

pronotum and the metanotum, which are yellow; scutellum black; enclosure heavily ridged; legs black to distal ends of femora, beyond which they are amber; stigma of wings medium.

Abdomen all black except for two large lateral patches on tergum 1; tergum 2 with a deeply emarginate band similar to the corresponding band on *C. clypeata prominens* Banks (Scullen 1965:344, 475); terga 3, 4, and 5 with bands wide laterally but narrow or broken medially; tergum 6 black; pygidium narrowing distally; venter immaculate.

In general appearance, size, and coloration this female is close to *C. clypeata* Dahlbom, but the form of the clypeal process is quite different. No females have been studied that come close to the above neotype.

MALE.—Unknown.

DISTRIBUTION.—Schletterer gives the type-locality of *C. bothriophora* as “Mexico.” The locations as recorded on the above neotype (“Wthm.” and “Newhaven”) have no geographical significance to the present author.

PREY RECORD.—None.

PLANT RECORD.—None.

#### 55. *Cerceris bradleyi*, new species

FIGURES 69, 147*a-c*

FEMALE.—Length 19 mm. Black with yellow and ferruginous markings; punctuation small and compact; pubescence very short.

Head slightly wider than the thorax, yellow except for a black area, including the antennal scrobes and ocellar area, in the center of which a yellow patch extending between the antennae from the medial ocellus to the epistomal suture; a ferruginous area covering the vertex and sides of the head and embodying large yellow patches back of the compound eyes and two small indistinct yellow patches on the vertex; free margin of the clypeus with a broad mesal extension, the distal border of which slightly emarginate, and laterad of this extension a smaller extension on each side that is smooth and rounded; clypeal process lunar in form similar to that of *C. bicornuta* Guérin but much larger, the terminal ends of which dark fuscous; clusters of bristles appearing below these terminal ends of the clypeal process; mandibles with one large denticle near the basal end and a smaller denticle near the center of the

mandible; basal half of the mandible yellow, the distal half and denticles dark fuscous; antennae normal in form, ferruginous basally, darker distally.

Thorax black except for a broad band on the pronotum that is slightly emarginate mesally, the scutellum, the metanotum, large patches on the propodeum, and most of the tegulae, all of which are yellow; tegulae normal in form; enclosure with the usual medial groove, deeply pitted laterally, otherwise minutely rugose; propodeum deeply pitted and with an area of long bristles dorsolaterally; mesosternal tubercle absent; legs largely yellow to ferruginous but dark fuscous to black over most of the coxae and patches on all femora and the hind tibiae; wings subhyaline but more clouded apically.

Abdomen with a broad but divided yellow band on tergum 1, broad but deeply emarginate yellow bands on terga 2, 3, 4, and 5, emarginations black on terga 2 and 3, partly ferruginous on tergum 4, all ferruginous on tergum 5, tergum 6 largely ferruginous; pygidium as illustrated (Figure 147c), ferruginous basally becoming dark fuscous distally; basal sterna largely black, ferruginous bands appearing on sterna 2 and 3, sterna 4, 5, and 6 largely ferruginous;

MALE.—Unknown.

*Cerceris bradleyi* is very close to *C. bicornuta* Guérin, but it is distinguished from that species by the dentation of the mandibles and the color pattern of the abdomen.

TYPE.—The holotype female, taken from La Calera (?), Nicaragua, 18 May 1955 (E. N. Maiz, P. Estrada), is in the National Museum of Natural History (USNM 71058). Paratype as follows: ♀, Alpuyecá, Morelos, Mexico, 3 July 1951 (PDH).

DISTRIBUTION.—Known only from the type-locality and the state of Morelos, Mexico, where the one paratype was taken. The spelling of the locality ("La Colera") is indistinct on the label. No such locality has been found by the author on maps of Nicaragua.

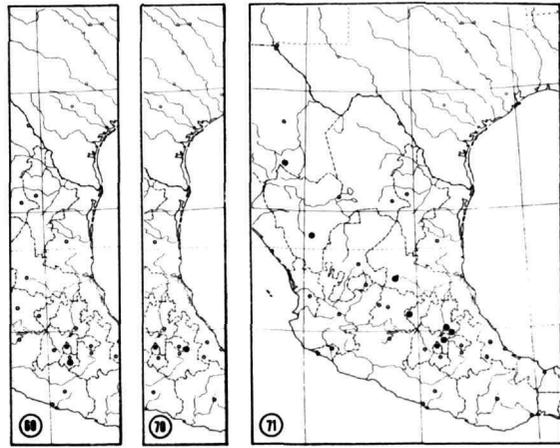
PREY RECORD.—None.

PLANT RECORD.—None.

### 56. *Cerceris cacaloapana*, new species

FIGURES 70, 148a-d

FEMALE.—Length 14 mm. Black with limited, very light yellow markings; punctation deep and closely



FIGURES 69-71.—69, *C. bradleyi*, new species; 70, *C. cacaloapana*, new species; 71, *C. calochorti hidalgo*, new subspecies.

crowded on the head and thorax, less so on the abdomen; pubescence somewhat shorter than average.

Head subequal in width to the thorax; black except for large emarginate frontal eye patches, much of the lateral clypeal lobes, a small spot back of the compound eyes, a small patch on the mandibles, and the scape of the antennae, all of which are very light yellow to cream colored; clypeal border with five small but distinct denticles, the lateral ones somewhat the largest; clypeal process scoop shaped with a deep incision mesad; mandibles unidentate; antennae normal in form, scape largely yellow, remaining segments black except for the two distal segments, which are largely amber.

Abdomen tergum 1 with a narrow band of light yellow along the distal border extending cephalad along the lateral border, tergum 2 with a divided lateral patch only, tergum 3 with a broad band slightly emarginate, terga 4 and 5 with narrow light bands, sternum 1 largely light, sternum 2 with a narrow line, sternum 3 with a broad band deeply emarginate, sterna 4 and 5 with small lateral patches; pygidium as illustrated (Figure 148d).

Thorax black except for a divided band on the pronotum, the metanotum, a small spot on the pleuron, a spot on the tegulae, and a patch on the propodeum, all of which are very light yellow; tegulae normal; enclosure rugose; mesosternal tubercle small but distinct; legs black except for a patch on

the hind coxae, stripes on all tibiae and indefinite areas on all tarsi, all of which are very light yellow; wings subhyaline (right wing lost), lightly clouded along the anterior area.

MALE.—Unknown.

TYPE.—The holotype female, taken from Cacaloapan, Puebla, Mexico, 20 August 1963 (F. D. Parker, L. A. Stange), is at the University of California at Davis.

DISTRIBUTION.—Known only from the type-locality. The exact location of Cacaloapan in Puebla is 17 miles northwest of Tehuacan, Puebla.

PREY RECORD.—None.

PLANT RECORD.—None.

### 57. *Cerceris calachorti hidalgo*, new subspecies

FIGURES 71, 149a-e

FEMALE.—Length 11 mm. Black with creamy-white markings; legs largely amber with white patches on the fore- and midfemora and all legs fuscous to black basally; punctation and pubescence average.

Head black except for large frontal eye patches, dorsal surface of the clypeal process, a triangular area on the frons, the lateral lobes of the clypeus, angular patches back of the eyes, and a patch on the basal third of the mandibles, all of which are creamy white; clypeal border similar to that of the nominate subspecies; clypeal process with pronounced acute denticles on the lateral angles of the free border, which are black; mandibles bidentate.

Thorax black except for a divided band on the pronotum, the metanotum, large patches on the propodeum, and the tegulae, all of which are creamy white; enclosure deeply rugose; mesosternal tubercle absent; legs largely ferruginous except the coxae, trochanters, and basal part of all femora black to dark fuscous, and large oval patches of white on the fore- and midfemora; wings average.

Abdomen black except lateral patches on tergum 1, broad deeply emarginate bands on terga 2, 3, 4, and 5; venter immaculate; pygidium as illustrated (Figure 149c).

MALE.—Structure and coloration as on the nominate subspecies. One specimen from 19 miles east of Hidalgo de Parral has a light scutellum. All others seem to have this part black.

The subspecies *C. calachorti hidalgo* as recognized

herein differs from the nominate subspecies largely in the form of the clypeal process, which has prominent acute extensions on the lateral angles of the free border (one from Veracruz more like nominate subspecies) and the more amber color of the legs. The clypeal process on the nominate subspecies varies somewhat in size and form but lacks the lateral processes. One specimen of *C. calachorti hidalgo* has been recognized from north of the Mexican border near Arivaca, Pima Co., Ariz. The legs of this specimen are unusually dark.

TYPES.—The type female and allotype male, taken from 14 miles northeast of Durango, Mexico, 6200 feet elevation, 17 June 1956 (H. A. Scullen) are deposited at the National Museum of Natural History (USNM 71059). Paratypes are as follows:

MEXICO: CHIHUAHUA: ♂, Catarinas, 5800 ft, 26 July 1947 (MAC); ♀, 6♂, 29 mi E Hidalgo de Parral, 5000 ft, 21 June 1956 (HAS); ♂, Madera, 7200 ft, 6 July 1947 (WJG); ♂, Santa Clara, 6500 ft, Namiquipa District, 3 July 1947 (Spi). DURANGO: 2♂, 4 mi W Durango, 6300 ft, 19 September 1963 (S and B); ♀, 14 mi NW Durango, 6200 ft, 17 June 1956 (HAS). HIDALGO: ♀, Pachuca, 7300 ft, 28 July 1954 (UKE); 2♀, ♂, 3 mi N Tepeapulco, on *Asclepias* species 17 June 1961 (UKE). MEXICO: 2♂, Teotihuacan, 6 July 1951 (PDH); ♂, same locality, 10 July 1951 (HEE); ♀, same locality, 21 July 1956 (R and KD); ♂, Tepexpan, 6900 ft, 12 August 1954 (JGC). QUERÉTARO: ♂, 41 mi N Querétaro, 6500 ft, 19 September 1963 (S and B). SAN LUIS POTOSÍ: ♂, 19 mi SW San Luis Potosí, 7200 ft, 4 September 1962 (S and B). VERACRUZ: ♀, 5 mi E Acultzingo, 5000 ft, 9 June 1959 (HEE).

DISTRIBUTION.—From Arizona south through central Mexico to the state of Mexico at higher elevations.

PREY RECORD.—None.

PLANT RECORD.—None.

### 58. *Cerceris cavagnaroi*, new species

FIGURES 72, 150a, b.

FEMALE.—Length 9 mm. Black with creamy-white markings; punctation large and crowded; pubescence short.

Head subequal to the thorax in width; black except for large frontal eye patches, a broken patch on the clypeal process, a small area on the mandibles, and a small patch on the scape, all of which are creamy white; a clypeal margin with two pairs of low denticles, each pair near the border between the

lateral and medial lobes of the clypeus, the pairs joined medially by a low depressed carina; the clypeal process in the form of a depressed truncate cone, the terminal end being slightly emarginate; mandibles unidentate; antennae normal in form, fuliginous, light below and darker above.

Thorax with single subdenticle-like extensions dorsolaterally on the pronotum; entire thorax black except two lateral elongate patches on the pronotum, two small lateral patches on the scutellum, the entire metanotum, large patches on the propodeum, and spots on the tegulae, all of which are creamy white; tegulae low and smooth; enclosure heavily ridged subparallel to its base; propodeum deeply and closely pitted; mesosternal tubercle absent; legs almost entirely black except for limited areas on the tibiae and much of the tarsi, all of which are clouded white; wings (right forewing lost) subhyaline, slightly clouded along the anterior margin, stigma light.

Abdomen black except for a medium width band on terga 1 and 3, hair lines on terga 4 and 5, all bands on 3, 4, and 5 much broader laterally; all markings creamy white; venter immaculate, pygidium relatively large, punctate (Figure 150*b*).

MALE.—Unknown.

TYPE.—The holotype female of *C. cavagnaroi*, taken from Quezaltepeque, El Salvador, 18 June 1963 (David Q. Cavagnaro and Mickel E. Irwin), is at the University of California at Davis, Calif.

DISTRIBUTION.—Known only from the type-locality.

PREY RECORD.—None.

PLANT RECORD.—None.

### 59. *Cerceris clypeata tepaneca* Saussure

FIGURE 73

*Cerceris tepaneca* Saussure, 1867:90.—Schletterer 1887:504.—Cameron 1890:125.—Dalla Torre, C. G., 1897:478.—Ashmead 1899:296.—Scullen 1965a:343, 350, 509–511, figs. 96, 176*a*, *b*, *c*.

*Cerceris sextoides* Scullen, 1961:48.

*Cerceris clypeata tepaneca*.—Scullen 1969:283–284.

FEMALE.—Length 12 to 13 mm. Black with yellow markings infringed with amber; punctation and pubescence as in the nominate subspecies, *C. clypeata clypeata* Dahlbom. Color markings of the abdomen more emarginate on tergum 2 but broader on terga 3, 4, and 5 with tergum 6 largely yellow but variable.

Head similar in form and coloration to the nominate subspecies, except for some amber appearing on the border of the yellow of the clypeal process and the spots back of the compound eyes; dentation of the mandibles like those of the nominate subspecies.

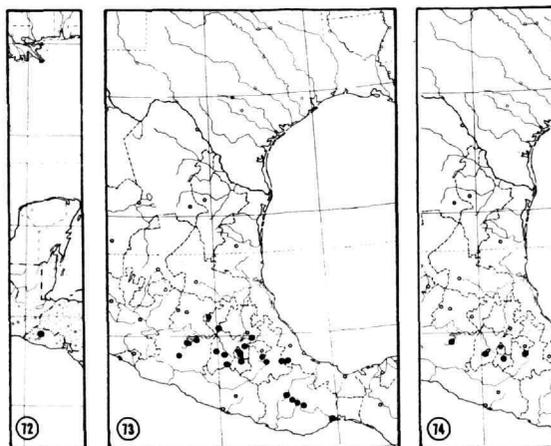
Thorax black except for large separated patches of yellow infringed with amber on the pronotum, evanescent patches of amber on the scutellum, complete yellow metanotum, and amber tegulae; enclosure heavily ridged as on the nominate subspecies; legs largely amber except the coxae, which are black; wings subhyaline but clouded with amber.

Abdomen black except for an amber band on tergum 1, a broad band of yellow bordered with amber emarginate on tergum 2, broad but more deeply emarginate yellow bands bordered with amber on terga 3 and 4, tergum 5 almost completely yellow, and tergum 6 showing clouded patches of yellow laterad of the pygidium; venter largely amber with evanescent small yellow lateral patches on sterna 2, 3, 4, and 5.

MALE.—Length 10 mm. Black with yellow markings; punctation and pubescence similar to that of the nominate subspecies; color markings of the abdominal terga 3, 4, 5, and 6 distinctly wider than those of the nominate subspecies.

Head similar in form and coloration to that of the nominate subspecies.

Thorax black with two widely separated patches



FIGURES 72–74.—72, *C. cavagnaroi*, new species; 73, *C. clypeata tepaneca* Saussure; 74, *C. dreisbachi*, new species.

on the pronotum, the metanotum, and most of the tegulae, all of which are yellow; enclosure heavily ridged with the ridges spreading distally; propodeum deeply pitted; legs black except for a patch on the hind coxae, oval patches on the fore- and midfemora, and the basal two-thirds of the hind femora, most of the tibiae and the tarsi, all of which are yellow.

Abdomen black except for a broad band on tergum 2 (smaller than that on the nominate subspecies), medium bands on terga 3, 4, and 5 (wider than those on the nominate subspecies), and distal two-thirds of tergum 6, a medial patch on the pygidium, and lateral patches, variable in size, on sterna 2 to 6, all of which are yellow; pygidium as illustrated (Scullen 1965a: fig. 176c).

For a time the writer considered *C. sextoides* Banks to be a synonym of *C. tepaneca* Saussure (Scullen 1961:48; 1965:509-511); however, on a restudy of the lectotype of *C. tepaneca* Saussure in 1969, it was then considered to be a subspecies of *C. clypeata* Dahlbom (Scullen 1969:283-284).

**TYPES.**—A male specimen of Saussure's original type series of *C. tepaneca* at the Naturhistorisches Museum, Vienna, described from Orizaba, Mexico, has been designated a lectotype by the present writer. The female is described herein for the first time from a specimen taken by F. D. Parker and L. A. Stange at Hidalgo, Michoacán, Mexico, 12 July 1963, associated with five males and three other females.

No type of *C. thermophila* Schletterer was found at Vienna or Geneva by the writer in 1959. One female specimen so named by Schletterer at the Naturhistorisches Museum, Zoologische Abteilung, Vienna, was found and designated a lectotype by the writer in 1959. It carries the locality label: "Bilimek Mexico 1871."

**DISTRIBUTION.**—South-central Mexico. Specimens are as follows:

MEXICO: DISTRITO FEDERAL: 2♂, Coapa, 14 June, July 1922 (EGS); ♂, Xochimilco, 22 July 1947 (HOW). HIDALGO: ♂, 3 mi N Tepeapulco, 17 June 1961 (UKE); 4♂, 3.5 mi NE Tizayuca, 28 August 1962 (UKE). MEXICO: ♂, Chapingo, 26 July 1961 (FMP); ♂, 33 mi N Taxco, 29 August 1963 (S and B); ♂, 29 mi S Toluca, 6850 ft, same date and collectors; ♂, Santa Elena, Toluca, 17 June 1961 (FMP); ♂, 7 km E Villa Victoria, 14 July 1965 (HEE). MICHOACÁN: 4♀, 5♂, Hidalgo, 12 July 1963 (FDP, LAS); ♀, 6 mi NW Quiroga, 11 July 1963 (P and S); ♂, Uruapan, 22 July 1900 (COD); ♂, 10 mi W Zitacuaro, 11 July 1951 (PDH). VERACRUZ: 4♀, Orizaba, 1862 (LB). STATE UNKNOWN:

♀, "Mexico," Bilimek, 1871. MORELOS: ♂, Cuernavaca, 14 July 1965 (HEE); 2♂, Tepoztlan, 10 August 1956 (R and KD). OAXACA: ♂, 9 mi NW Nochixtlan, 6850 ft, 23 August 1963 (S and B); ♂, Oaxaca, 5400 ft, 1 September 1957 (HAS); 2♂, same locality, 5068 ft, 24 August 1963 (S and B); ♂, 18 mi NW Oaxaca, 5800 ft, 26 June 1963 (S and B); ♂, 25 mi SE Oaxaca, 5600 ft, 27 June 1963 (S and B); ♀, 10 mi SE Tapanatepec, 8 August 1963 (P and S); ♂, Tehuantepec; ♂, 1 mi SE Tijopan, 22 August 1959 (LAS, ASM). PUEBLA: ♂, Nuevo Chiapas, 20 March 1953 (RCB, EIS); 2♂, Puebla, 3 July 1952 (EEG, CDMc); ♂, 35 mi SE Puebla, 6600 ft, 24 August 1963 (S and B); ♂, 10.2 mi W Puebla-Veracruz boundary, highway 150, 5 July 1962 (DHJ). QUERÉTARO: 3♂, 41 mi N Querétaro, 6500 ft, 19 September 1963 (S and B); ♂, 5 mi W San Juan del Rio, 6300 ft, 2 September 1963 (S and B). VERACRUZ: ♂, Atoyac and Orizaba (HHS, reported by Cameron 1890:125); ♂, Coscomatepec, 27 August 1962 (FDP). 2♂, Orizaba, 12-22 August 1961 (R and KD); 2♂, same locality, 1962 (LB).

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

## 60. *Cerceris dreisbachi*, new species

FIGURES 74, 151a-d

**FEMALE.**—Length 8 mm. Black with light yellow markings; punctation somewhat coarse; pubescence short in general but long on sides of propodeum.

Head subequal in width to the thorax; black except for very large frontal eye patches, an evanescent small spot on the clypeal process, and a small spot on the mandibles near the base, all of which are light yellow; clypeal margin with five distinct denticles equally spaced; clypeal process small, truncate with the terminal margin slightly concave; mandibles bidentate, the more distal denticle the larger; antennae normal in form, darker basally and dorsally.

Thorax black except for divided band on the pronotum, lateral small patches on the scutellum, the metanotum, angular patches on the propodeum, and small spots on the tegulae, all of which are light yellow; tegulae low and smooth; enclosure rugose and punctate with the usual medial groove; mesosternal tubercle small; legs black except for yellow stripes along the fore- and midtarsi, and a tendency to be fuscous on the tarsal segments; wings subhyaline but clouded along the anterior margins.

Abdomen black except for most of tergum 1, narrow distal lines on terga 2, 3, 4, and 5, a broad emarginate band on sternum 2, and evanescent lateral

patches on sternum 3; pygidium as illustrated (Figure 151*b*).

**MALE.**—Length 7.5 mm. Black with light yellow markings; punctuation somewhat coarse; pubescence somewhat longer than average on parts of the thorax.

Head subequal in width to the thorax; face yellow below the antennal scrobes except for extensions of the dark area on the frons along its lateral borders to the epistomal suture and the free border of the clypeus, all of which are black; extension of the medial clypeal lobe with very slight evidence of dentation; mandibles without denticles; hair lobes average; antennae normal in form, dark above and lighter below.

Thorax black except for a divided band on the pronotum, the metanotum, and a spot on the tegulae, all of which are light yellow; tegulae normal in form; enclosure lightly punctate and with a medial groove; mesosternal tubercles absent; legs black except for the hind trochanter, stripes on the tibiae and the tarsi, all of which are light yellow with infringing darker borders.

Abdomen black except for a broad band on tergum 1, narrow distal lines on terga 2, 3, 4, 5, and 6, a band on sternum 3, and lateral spots on sternum 4, all of which are light yellow, pygidium as illustrated (Figure 151*d*).

**TYPES.**—The type female and allotype male of *Cerceris dreisbachi*, taken from Cuernavaca, Morelos, Mexico, 9 July 1961 (R. and K. Dreisbach), are at the National Museum of Natural History (USNM 71363). Paratypes are as follows:

**MEXICO: GUERRERO:** ♂, Almolongo [=Amula], 6000 ft, 29 July 1962 (HEE). **MEXICO:** 2♂, Valle de Brave, 6500 ft, 3 August (HEE). **MICHOACÁN:** 2♂, Morelia, 22 September 1957 (R and KD); ♂, 15 mi E Morelia, 15 July 1956 (R and KD); 13♂, 16 and 18 mi E Morelia, 7000 ft, 21 June 1963 (S and B); ♂, 3 km E Zarumbeno, 7000 ft, 5 August 1962 (HEE). **MORELOS:** ♂, 11♂, Cuernavaca, 7000 ft, 9, 29 July 1961 (R and KD); ♂, same locality, June 1959 (NLK); ♀, 4 mi NW Cuernavaca, 7500 ft, 26 June 1955 (HEE); ♂, 4 mi E Cuernavaca, 6000 ft, 16 June 1959 (HEE); ♂, 12 mi E Cuernavaca, 12 August 1954 (RRD); 2♂, Tepotzlan, 26 September 1957 (R and KD). **PUEBLA:** 34♂, 13 mi S Puebla, 6900 ft, 25 June 1963 (S and B).

**DISTRIBUTION.**—South-central Mexico.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

## 61. *Cerceris durango*, new species

FIGURES 75, 152*a-d*

**FEMALE.**—Length 11–13 mm. Black with light creamy-yellow markings; punctuation average; pubescence very short.

Head subequal in width to thorax; black except most of the medial clypeal lobe, two large frontal eye patches, patches on the lateral clypeal lobes, small patch on the frons, small patch back of the eye, and basal half of the mandible, all of which are creamy yellow; clypeal free border with two broad but short wedge-shaped lamellae joining at the meson and a low broad denticle at the junction of the medial and lateral lobes; medial clypeal lobe only slightly convex; lower portion of the clypeus densely covered with short silvery setae; 15 to 20 long bristles inserted below the margin of the medial clypeal lobe; mandibles with two subequal denticles; antennae normal in form, fuscous above and fuliginous below.

Thorax black except for a divided band on the pronotum, two patches on the scutellum, and patches on the tegulae, all of which are creamy yellow; tegulae smooth; enclosure ridged laterally, partly covered with minute pits, medially grooved; propodeum coarsely and deeply pitted; mesosternal tubercle present; legs black except the hind trochanter, an elongate area on all tibiae and most of the tarsal segments, all of which are yellow.

Abdomen black except narrow bands along distal margins of terga 1 to 5, that on tergum 2 somewhat wider than the others and becoming broad laterally, all of which are creamy yellow; venter black except for lateral yellow patches on sterna 3 and 4; pygidium as illustrated (Figure 152*b*).

**MALE.**—Length 12 mm. Black with creamy-yellow markings; punctuation average; pubescence short.

Head subequal in width to the thorax; black except for two large frontal eye patches, the entire clypeus exclusive of the free margin, the frons, and the basal half of the mandibles, all of which are creamy yellow; clypeal margin with three small acute denticles on the medial lobe; hair lobes extending over about one-half of the lateral clypeal lobes; mandibles with two low rounded elevations; antennae normal in form, immaculate but lighter below.

Thorax black except for a widely divided band on the pronotum, a broken band on the scutellum, and a spot on each tegula, all of which are creamy yellow;

tegulae normal in form; enclosure very lightly ridged laterally and with a medial groove; mesosternal tubercles absent; legs black except for elgonate areas on the fore- and midtibiae, a small patch on the hind tibiae, the hind trochanter, and the fore- and mid-tarsi, all of which are very light yellow; wings subhyaline except for the usual darkened area along the anterior border of the forewings.

Abdomen black except for medium wide bands on terga 1, 2, and 6, narrow bands on terga 3, 4, and 5, and lateral patches on sterna 2, 3, and 4, all of which are creamy yellow; pygidium as illustrated (Figure 152*d*).

Markings on specimens from further south and southeast becoming more yellow, possibly should be recognized as a separate form.

**TYPES.**—The type female and the allotype male of *C. durango*, taken from 15 miles north of Durango, Durango, Mexico, 6550 feet elevation, 17 September 1963 (H. A. Scullen and Duis Bolinger) are at the National Museum of Natural History (USNM 71065). Paratypes are as follows:

**MEXICO: CHIHUAHUA:** ♂, Catariras, 5800 ft, 26 July 1947 (MAC); **DURANGO:** 3♀, 4♂, 15 mi N Durango, 6550 ft, 17 September 1963 (S and B); ♀, 33 mi SE Guadalajara (Jalisco), 5300 ft, 30 September 1957 (HAS); ♀, El Tascate, 6400 ft, 28 July 1947 (CDM); ♂, Encino, 6200 ft, 27 July 1947 (MAS). **GUERRERO:** 2♂, Chilapa, 29 July 1962 (HEE). **HIDALGO:** 2♂, 11 mi W junction Highways 45 and 85, 6500 ft, 2 September 1963 (S and B).

**JALISCO:** ♀, 20 mi S Guadalajara, 5000 ft, 19 July 1963 (S and B); ♀, ♂, 21 mi SE Guadalajara, 27 September 1957 (HAS); ♀, 2♂, 33 mi SE Guadalajara, 5300 ft, 30 September 1957 (HAS); ♀, 8 mi SW San Juan de los Lagos, 4 August 1954 (JWM); ♀, Lagos de Moreno, 6400 ft, 21 August 1954 (CDM); 2♀, Villa Guadalupe, 26 July 1951 (HEE); 4♂, same locality and date (PDH).

**MEXICO:** 2♂, 33 mi N Taxco, 5700 ft, 29 August 1963 (S and B). **MICHOACÁN:** ♀, Morelia, 15 July 1956 (R and KD); ♀, same locality, 21 September 1964 (AMi); ♂, 4 mi E Morelia, 9 July 1959 (HEE); 2♂, 10 km E Morelia, 5 August 1962 (HEE), ♂, 22 mi E Sahuayo, 5600 ft, 20 June 1963 (S and B). **MORELOS:** ♀, Alpuyeca, 3 July 1951 (HEE); ♀, Cuernavaca, 20 October 1957 (CDM); ♂, same locality 4–5000 ft, 11 September 1957 (HAS); 8♀, 20♂, Yautepec, 13, 31 July 1963 (FDP, LAS); ♂, same locality, 31 July 1963 (EJM); ♀, 8.7 mi NE Yautepec, 4400 ft, 15 August 1962 (O and R). **NAYARIT:** ♀, San Blas, 2 July 1956 (R and KD); ♀, 17 mi E San Blas, 27 August 1959 (ASM, LAS). **OAXACA:** 2♀, Mitla, 5600 ft, 27 June, 20 August 1963 (S and B). **PUEBLA:** ♂, 3 mi N Petalcingo, 21 August 1963 (FDP, LAS). **SAN LUIS POTOSI:**

♀, El Salto Falls, 1700 ft, 25 August 1954 (CDM).

**DISTRIBUTION.**—Central Mexico from the state of Durango to Oaxaca.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

## 62. *Cerceris erythropoda* Cameron

*Cerceris erythropoda* Cameron, 1890:126–127, pl. 8: figs. 7, 7a–c.—Dalla Torre, C. G., 1897:459.—Ashmead 1899: 296.

This species was described and illustrated by Cameron from a female taken at Cordova, Mexico (Saussure). No female type was found by the present writer at the British Museum in 1959. A male apparently named by Cameron was found there at that time and is described herein (British Museum, 21.1,400).

**MALE.**—Length 13 mm. Head largely black; face ferruginous except for the clypeal free margin; dark spots appearing at the region of the tentorial pits; medial lobe of the clypeus showing the usual three denticles, the medial denticle being somewhat smaller than the lateral denticles; the three basal segments and the basal half of the fourth segment of the antennae are ferruginous; a large ferruginous area back of the compound eyes and another on the vertex back of the ocelli.

Thorax with dorsal parts largely ferruginous except the enclosure, which is black; enclosure finely and uniformly pitted; legs amber; small mesosternal tubercle.

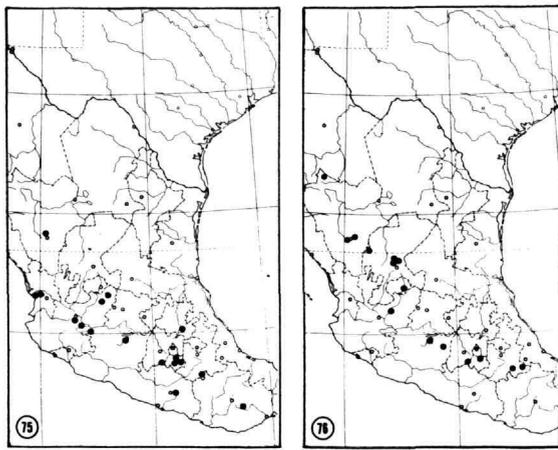
Abdomen with tergum 1 all amber; tergum 2 one-third amber, tergum 3 with a distal amber band, tergum 4 with lateral elongate patches of amber, tergum 5 with lateral distal amber spots, terga 6 and 7 black; venter black except sternite 1 and one-third of sternite 3, which are amber.

The above male is very similar in size and structure to the male of *C. sextoides* Banks. No specimens have been recognized by the present writer as belonging to this species. Cameron's illustration of the female clypeal process would place it near *C. clypeata* Dahlburg.

**DISTRIBUTION.**—Known only from the type-locality: "Cordova, Mexico" (probably refers to Cordoba, Veracruz).

**PREY RECORD.**—None.

**PLANT RECORD.**—None.



FIGURES 75-76.—75, *C. durango*, new species; 76, *C. evansi*, new species.

### 63. *Cerceris evansi*, new species

FIGURES 76, 153a-d

**FEMALE.**—Length 10 mm. Black with light yellow markings; punctuation average; pubescence very short.

Head subequal in width to the thorax; black except for greatly enlarged frontal eye patches, the yellow of which extends onto the lateral lobes of the clypeus, and a round spot back of each eye; clypeal free border with a broad medial extension, laterad of which there is a single low denticle; clypeal process reduced to two depressed rounded processes; mandibles with one small denticle and a yellow area near the base; antennae normal in form without yellow markings.

Thorax black except for a divided band on the pronotum, a band on the scutellum, a spot on the tegulae, two patches on each side of the propodeum, one of which borders the enclosure, and a small spot on the pleuron below the wing, all of which are light yellow; enclosure with a very slight medial groove, lightly rugose in the lateral angles, and lightly pitted over the remaining surface; mesopleural tubercle small but distinct; legs largely fuscous to the distal ends of the femora exclusive of the hind trochanters, which are somewhat lighter, tibiae and tarsi with a variable amount of yellow; wings subhyaline but slightly darker along the anterior margins.

Abdomen black with subequal light yellow bands becoming wider laterally on all terga; venter with

variable lateral yellow patches on sterna 2, 3, 4, and 5; pygidium as illustrated (Figure 153b).

**MALE.**—Length 8 mm. Black with yellow markings; punctuation average; pubescence short.

Head slightly wider than the thorax; black except the entire face below the antennal scrobes and above the free margin of the clypeus; minute evanescent yellow spots appearing back of the eyes; the medial clypeal extension terminating in three distinct denticles; mandibles with a single low inconspicuous denticle, with considerable yellow over the basal half; hair lobes extending over the lateral half of the lateral clypeal lobes.

Thorax black except for two elongate patches on the pronotum, small patches on the tegulae, and (rarely) small patches on the scutellum, all of which are light yellow; tegulae normal in form; enclosure without the usual medial groove or it is very slight, smooth except for a few deep pits in the lateral angles and scattered minute punctuation; mesopleural tubercles absent; legs black except for the hind trochanter, limited areas on the tibiae, and most of the tarsi, all of which are light yellow; wings subhyaline but clouded along the anterior borders.

Abdomen black except for subequal narrow bands on all terga 1-6; venter with lateral small yellow patches on sterna 2-5; pygidium as illustrated (Figure 153d).

The females of *C. evansi* are easily distinguished by their facial characters, but the males are very similar to those of *C. atacomulcoae*, new species, *C. dreisbachi*, new species, and *C. gandari* Rohwer, and possibly other small species. It is hoped the key will make it possible to separate the above males.

**TYPES.**—The type female and the allotype male of *Cerceris evansi* Scullen, taken from 3 miles northwest of Cuernavaca, Morelos, Mexico, 6500 feet elevation, 17 June 1959 (H. E. Evans), are at the National Museum of Natural History (USNM 71362). Paratypes are as follows:

MEXICO: AGUASCALIENTES: 2 ♀, Aguascalientes, 28 July 1951 (HEE). DURANGO: ♂, 8 mi S Canutillo, 9 August 1951 (UKE); ♀, 10 mi W Durango, 12 July 1954 (JWM); ♂, same locality, 6600 ft, 16 June 1964 (DB); ♂, 14 mi NE Durango, 6200 ft, 17 June 1956 (HAS). JALISCO: 5 ♀, El Tigra, 18 July 1954 (EIS); ♀, 3 mi SE Plan de Barrancas, 8 July 1963 (P and S); 2 ♀, ♂, Tepatitlan, 8 July 1956 (R and KD); 2 ♂, Villa Guadalupe, 26 July 1951 (HEE). MEXICO: 3 ♂, 33 mi N Texco (Guerrero), 5700 ft, 29 August 1963 (S and B). MICH-

ACÁN: ♂, 4 mi E Morelia, 6500 ft, 9 July 1959 (HEE); ♀, 10 km W Zitacuaro, 11 July 1951 (PDH). MORELOS: 2♀, Cuernavaca (C); 7♀, same locality, 9 July 1961 (R and KD); 19♀, 21♂, 3 mi NW Cuernavaca, 6500 ft, 20 May–30 June 1959 (HEE). PUEBLA: ♂, 55 mi SE Puebla, 6600 ft, 7 June 1956 (HAS); ♀, Tehuacan (CAP). ZACATECAS: ♀, Fresnillo, 7000 ft, 15 August 1947 (CDM); ♀, 17 mi N Fresnillo, 18 July, 1954 (JWM); ♀, 15 mi E Sombretete, 28–31 July 1951 (HEE); 6♀, same locality and date (PDH); ♀, 20 mi N Zacatecas, 7300 ft, 18 August 1957 (HAS).

DISTRIBUTION.—Central Mexican highlands from Durango southeast to Puebla.

PREY RECORD.—None.

PLANT RECORD.—None.

#### 64. *Cerceris flavotrochanterica* Rohwer

FIGURES 77, 154a, b

*Cerceris flavotrochanterica* Rohwer, 1912:471.

MALE.—Length 12 mm. Black with light yellow markings; punctation and pubescence average.

Head subequal in width to the thorax, black except the entire face below the antennal scrobes, a minute evanescent spot back of the eye (lacking on many specimens), and a patch on the basal half of mandibles, all of which are light yellow; clypeal border with three distinct denticles; hair lobes extending over approximately two-thirds of the lateral clypeal lobe; mandibles without denticles but showing two slight elevations on the upper carina; antennae normal in form.

Thorax black except for a divided band on the pronotum, two lateral patches on the scutellum, and most of the tegulae, all of which are light yellow; tegulae normal; enclosure heavily ridged subparallel to the medial groove, which is prominent; mesosternal tubercle absent; fore- and midlegs black to dark fuscous to distal ends of femori, hind trochanters light yellow, hind femori black basally, becoming amber distally (amber area variable in extent), fore- and midtibiae largely yellow, hind tibiae largely dark distally, fore- and midtarsi largely yellow; hind tarsi dark; wings subhyaline but darker along the anterior area.

Abdomen black except for subequal bands on terga 2, 3, 4, 5, and 6, all of which become much broader laterally; lateral patches on sterna 2, 3, 4, and 5, those on sterna 3 and 4 much larger; pygidium as illustrated (Figure 154b).

FEMALE.—Unknown. This quite distinctive male can well be the male of one of the several females described for which the male is unknown.

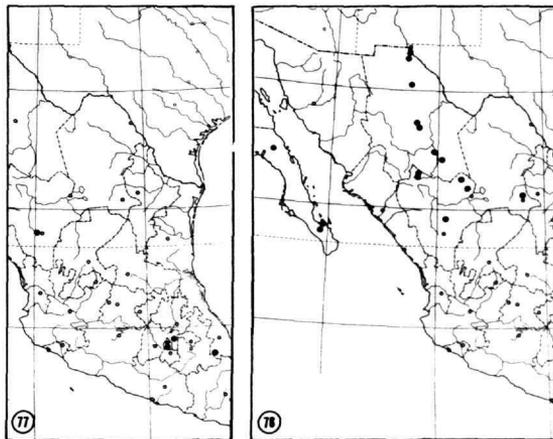
TYPE.—The type male of *Cerceris flavotrochanterica* Rohwer, taken from the Federal District of Mexico (Prof. G. Gandara), is at the National Museum of Natural History (USNM 14179).

DISTRIBUTION.—Later collection of this species determined by the present author have come from higher altitudes of central and southern Mexico. Specimens are as follows:

MEXICO: DURANGO: 12♂, 20 mi W Durango, 7100 ft, 17 June 1964 (DB); ♂, Encino, 6200 ft, 27 July 1947 (RME). DISTRITO FEDERAL: ♂, Chapingo, August 1924; ♂, Federal District (GG); ♂, same locality (LCo). MEXICO: ♂, Teotihuacan, 16 June 1957 (HEw); 3♂, same locality, 15 June, 6 July 1951 (PDH). VERACRUZ: ♂, Orizaba, 12–22 August 1961 (R and KD).

PREY RECORD.—None.

PLANT RECORD.—None.



FIGURES 77–78.—77, *C. flavotrochanterica* Rohwer; 78, *C. frontata frontata* Say.

#### 65. *Cerceris frontata frontata* Say

FIGURES 78, 155a–c

*Cerceris frontata* Say, 1823:80.—Le Conte 1883:167.—Cresson 1865:129.—Packard 1866:64.—Cresson 1875:717; 1887:282.—Schletterer 1887:492.—Dalla Torre, C. G., 1897:461.—Ashmead 1899:295.—Vioreck and Cockerell 1904:130.—Banks 1912:16.—Mickel 1917b:447.—Banks 1947:9.—Scullen 1951:1008; 1961:46–47.

*Cerceris texensis* Saussure, 1867:89.—Schletterer 1887:504.

—Dalla Torre, C. G., 1897:478.—Scullen 1951:1010.  
*Cerceris occidentalis* Saussure, 1867:100.—Schletterer 1887:498.—Dalla Torre, C. G., 1897:469.—Scullen 1951:1009.  
*Cerceris frontata frontata*.—Scullen 1965a:345, 350, 480–482, figs. 81, 162a, b, c, 183a, b, pl. 1.—Krombein 1960a:76–77; 1960b:300.

**TYPES.**—Say's types appear to have been lost. *C. frontata* Say was described from Arkansas. From the description, the type appears to have been a light form. A neotype female, taken from 19 miles east of Lordsburg, N. Mex., 4600 feet elevation, 1 August 1946 (H. A. Scullen), designated by the writer, is deposited at the National Museum of Natural History.

The type female of *C. occidentalis* Saussure and the type female of *C. texensis* Saussure were not found in Vienna or Geneva by the writer in 1959. A male at the Museum d'Histoire Naturelle, Geneva, determined by Saussure as *C. texensis* Saussure, was considered a representative of that species. A female of *C. occidentalis* Saussure, designated a lectotype by the writer, is at the Museum d'Histoire Naturelle, Geneva. Both of the above were typical light forms of *C. frontata* Say and were from Texas. This is the largest species of *Cerceris* known to occur in North America.

**DISTRIBUTION.**—Common on the north-central plateau area in Mexico with limited records from southern Baja California. Specimens are as follows:

**MEXICO: BAJA CALIFORNIA:** ♀, La Paz, 7 October 1941 (R and B); ♂, 7 mi SW La Paz, 4 August 1966 (PDH); 2♂, 2 mi S La Paz, 4 August 1966 (PDH); 2♂, Las Parras, October 1923 (WMM); ♂, 15 mi N San Ignacio, 29 September 1941 (R and B); ♀, ♂, San Pedro, 7 October 1941 (R and B). **CHIHUAHUA:** 4♂, Catarinas, 5800 ft, 25 July 1947 (CDM); 2♀, ♂, same locality, 26 July 1947 (MAC); 4♀, ♂, Chihuahua, 11–12 August 1951 (HEE); ♀, same locality and date (PDH); 2♀, 3♂, 25 mi S Chihuahua, 11 August 1951 at *Baccharis glutinosa* (PDH); 2♀, 2♂, 6 mi SE Chihuahua, 4850 ft, 12 September 1963 (S and B); ♀, Jimenez, 4550 ft, 11 September 1963 (S and B); ♂, 13 mi S Juarez, 8 August 1952 (EEG, CDMc); 4♀, 5♂, 18 mi W Jimenez, 10 August 1951 (HEE); 11♀, 12♂, same locality and date (PDH); ♂, 34 mi SE Jimenez, 4450 ft, 11 September 1963 (S and B); 2♀, Moctezuma, 4 July 1954 (EIS); ♂, Samalayuca, 6 August 1950 (RFS). **COAHUILA:** ♂, Chiqueros, Cuatro Ciénegas Basin, 11 August 1968 (C and B); 3♀, 2♂, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B). **DURANGO:** ♂, 8 mi S Canutillo, 9 August 1951 (HEE); 2♂, 7 mi SE Seballos, 3900 ft, 9 September 1963 (S and B); 2♂, 24 mi and 30 mi NW Ceballos, 4300 and 4400 ft, respectively, 10 September 1963 (S and B); 3♀, 9♂, 40 and 45 mi NW

Gomez Palacio, 3700 and 3800 ft, 10 September 1963 (S and B); ♂, 65 mi S Hidalgo del Parral, 6350 ft, 20 July 1956 (HAS); ♀, ♂, 34 mi NW La Zarca, 5800 ft, 25 July 1953 (UKE); ♀, ♂, San Juan del Rio, 5200 ft, 30 July 1947 (CDM); 2♂, same locality and date (WJG); ♀, ♂, same locality, 7 August 1951 (HEE); ♀, ♂, same locality and date, at *Baccharis* (PDH).

**PREY RECORD.**—None in Mexico.

**PLANT RECORD.**—*Baccharis glutinosa* (Chihuahua, Durango).

## 66. *Cerceris gandari* Rohwer

FIGURES 79, 156a–d

*Cerceris gandari* Rohwer, 1912:470, fig. 9.

**FEMALE.**—Length 10 mm. Black with very light yellow to creamy-white markings; punctuation and pubescence average.

Head slightly wider than the thorax; black except for very large frontal eye patches, most of the clypeus, a rounded patch back of the eyes, and a small patch on the mandibles near the base, all of which are very light yellow; no clypeal process on the surface of the clypeus but the medial lobe with a semidivided, laminated extension (in some specimens completely divided into two rounded extensions); the black of the frons extending along the epistomal suture to the border of the eye; mandibles with one large denticle; antennae normal in form, scape and pedicel black, flagellum fulvous below on the more basal segments, fuscous otherwise.

Thorax black except for a divided band on the pronotum, an oval patch on the propodeum, and the tegulae, all of which are very light yellow or creamy white; tegulae normal; enclosure minutely pitted and with a medial groove; mesosternal tubercle small but definite; legs black except for narrow yellow rings on the first two trochanters, and most of the hind trochanter, which is also yellow; distal ends of all femora brown; tibiae and tarsi yellow infused amber, becoming darker on the hind leg; wings subhyaline with the usual clouded area along the anterior margin; stigma light.

Abdomen black with subequal medium bands on all terga narrowing medially, that on tergum 1 divided; venter immaculate except for large, lateral, wedge-shaped patches of yellow on sterna 3 and 4; pygidium as illustrated (Figure 156b).

**MALE.**—Length 9 mm. Black with creamy-white to

very light yellow markings; punctation average on the head and thorax but somewhat larger and more sparse on the abdomen.

Head slightly wider than the thorax; black except for very large frontal eye patches, the entire clypeus other than the free border, a small patch on the frons, and a small spot on the mandible, all of which are very light yellow to white; medial clypeal lobe extension subequal in width to the epistomal suture and without denticles; hair lobes extending over the entire lateral clypeal lobe; antennae normal in form, colored as in the female.

Thorax black except for a divided band on the pronotum, the metanotum, and a patch on the tegulae, all of which are very light yellow to creamy white; tegulae normal; enclosure with scattered, minute punctation and the usual medial groove; mesosternal tubercle absent; legs black to near distal ends of femora except the fore- and midtrochanters, which have a trace of yellow and the hind trochanter, which are largely light yellow; distal ends of fore- and mid-femora are yellow and distal ends of hind femora are amber; all tibiae are yellow with small patches of fuscous; tarsi yellow infused with darker areas; wings as in the female.

Abdomen black except subequal medium bands on terga 2, 3, 4, 5, and 6, minute lateral spots on tergum 1, and lateral wedge-shaped patches on sterna 3 and 4; pygidium as illustrated (Figure 156*d*).

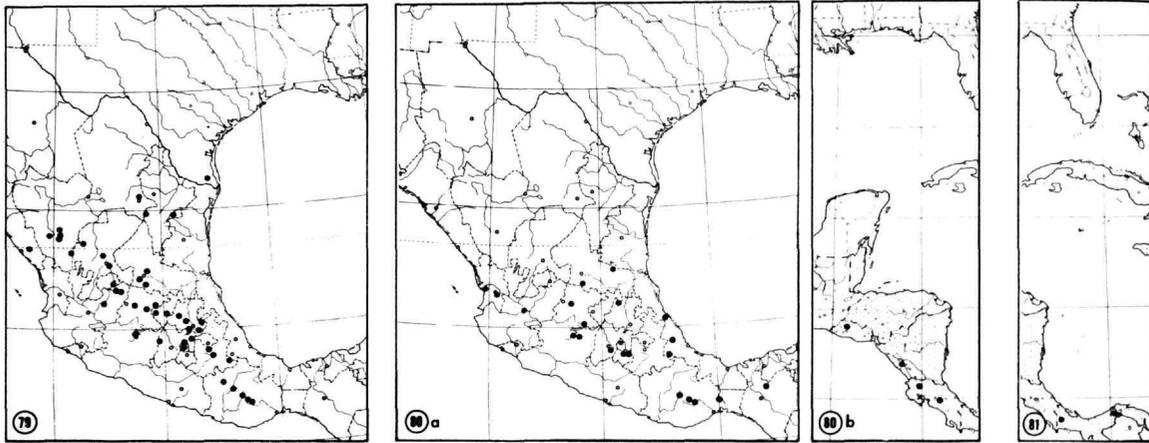
This species was described from the male. The female is described herein for the first time. It is distinguished most readily from closely related species by the brown or amber tip of the femora.

TYPE.—The male type from the Federal District, Mexico, is at the National Museum of Natural History (USNM 14180).

DISTRIBUTION.—Common on the central plateau of Mexico from the states of Durango, Jalisco, and southern Chihuahua to Oaxaca with one record from southern Texas. Specimens are as follows:

MEXICO: AGUASCALIENTES: ♀, Aguascalientes, 9 August 1955 (RMC, Ha); ♂, same locality, 3–5 August 1963 (PJS); ♂, 5 mi N Aguascalientes, 17 July 1954 (JWM, EIS); ♂, 19 mi S Aguascalientes, 4 August 1954 (RFS and party). CHIHUAHUA: ♂, Salaices, 5200 ft, 20 August 1947 (GMB). COAHUILA: ♂, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B). DISTRITO FEDERAL: ♂, Chapingo, 7 April 1924; ♀, same locality, 28 September 1962 (FMP); ♀, Distrito Federal (LCo); ♂, same locality, 1867 (OSi); ♀, ♂, same locality, 8 July, 1928 (GL); ♂,

Mexico City, 9 June 1947 (THH); ♀, same locality, 16 August 1956 (R and KD); 2♂, 25 mi E Mexico City, 8000 ft, 9 June 1956 (HAS); 3♂, San Jerónimo, 11 June, 1 July 1946 (JD and DP); ♂, Xochmilco, 22 July 1947 (HOW). DURANGO: ♂, Durango, 6500 ft, 23 October 1957 (HAS); ♂, 12 mi SW Durango, 7000 ft, 24 July 1953 (UKE); ♂, 10 mi W Durango, 12 July 1954 (JWM); ♂, same locality and date (EIS); ♂, 76 mi S Durango, 8100 ft, 16 June 1956 (HAS); 4♂, 12, 14, and 15 mi N of Durango, 6400 to 6550 ft, 17 September 1963 (S and B); ♂, 4 mi W Durango, 6300 ft, 18 September 1963 (S and B); 17♂, 10, 20, and 35 mi W of Durango, 6600 to 7900 ft, (DB); ♂, 5 mi W Durango, 7200 ft, 14 August 1965 (HEE); ♀, Nombrede, 13 August 1965 (HEE, MAE). GUANAJUATO: ♂, Guanajuato (ED); ♂, 2 mi N Guanajuato, 25 July 1954 (ESc); ♂, San Miguel Allende, 12 August 1953 (C and PV); ♂, Silae, 16 August 1953 (C and PV). HIDALGO: ♂, 22 mi SW Actopan, 6850 ft, 27 August 1962 (O and R); ♂, 10 mi W Ixmiquilpan, 6100 ft, 29 July 1951 (UKE); ♂, 14 mi SW Pachuca, 7500 ft, 9 July 1961 (UKE); ♂, 4 mi W Pachuca, 7900 ft, 16 June 1961 (UKE); ♂, 3 mi N Tepeapulco, 17 June 1961 (UKE); ♂, 13.5 mi NE Tizayuca, 7700 ft, 28 August 1962 (UKE); ♀, 6 mi E Tulancingo, 6900 ft, 24 August 1962 (O and R). JALISCO: ♀, Encarnacion de Diaz, 28 July 1951 (PDH); ♀, Jalostitlan, 6000 ft, 19 July 1954 (UKE); ♂, Lagos de Moreno, 19 August 1960 (PHA, ER, R). MEXICO: ♂, Atlacomulco, 8800 ft, 18 August 1954 (UKE); 2♀, 3♂, same locality, 8550 ft, 30 August 1963 (S and B); ♂, 8 mi N Atlacomulco, 8550 ft, 30 August 1963 (S and B); ♀, Chapingo, 2 August 1962 (FLo); ♂, same locality, 23 June 1961 (FMP); ♀, 19♂, Teotihuacan, 15 June, 6–7 July 1951, at *Asclepias* species (PDH); 11♂, same locality, 15–16 June, 6–7 July 1951, 3 July 1959 (HEE); 4♂, 8♂, same locality, 21 July 1956 (R and KD); 5♂, Tepexpan, 26 July 1953 (P and S); 2♂, same locality, 6900 ft, 12 August 1954 (UKE); ♀, 7♂, Texcoco, 7000 ft, 12 August 1954 (JGC); 2♂, same locality and date (UKE); 5♂, 11 mi W Texcoco, 20 June 1962 (DHJ); 2♂, 10 mi S junction Highways 55 and 45, 7400 ft, 30 August 1963 (S and B). MICHOACÁN: 2♂, 10 mi N Morelia, 5900 ft, 28 July 1962 (UKE). NUEVO LEON: ♂, 13 mi W Linareas, 4600 ft, 10 September 1963 (S and B); 3♂, 41 mi S Saltillo, 6200 ft, 7 September 1962 (UKE). OAXACA: 8♀, 16♂, Mitla, 5600 ft, 27–28 June, 20 August 1963 at *Baccharis glutinosa* (S and B); ♀, 9 mi NW Nochixtlan, 6850 ft, 23 August 1963 (S and B); ♂, Oaxaca, 5068 ft, 24 August 1957 (HAS); 2♂, 24 mi SE Oaxaca, 22 August 1963 (S and B); ♂, 2 mi NW Tamazulapan, 6000 ft, 28 June 1961 (UKE). PUEBLA: 4♂, Puebla (JGC); ♂, same locality, 3 July 1952 (EEG, CDMc); 8♂, 13, 28, and 35 mi SE Puebla, 25 June, 24 August 1963, 6600–6900 ft, (S and B); 2♂, Tehuacan, 23 June 1951 (PDH); ♂, same locality and date (HEE); ♂, same locality, 7 June 1956 (HAS); ♂, 7 mi SE Tlaxcopec, 6200 ft, 24 August 1963 (S and B). QUERÉTARO: ♂, 10 mi NW Leon, 6700 ft, 19 August 1954 (JGC); ♀, 11 mi W Querétaro, 6000 ft, 18 August 1954 (JGC); ♂, 54 mi E Querétaro (in Guanajuato), 7400 ft, 13 June 1956 (HAS);



FIGURES 79-81.—79, *C. gandari* Rohwer; 80a, 80b, *C. imperialis* Saussure; 81, *C. lutzi*, new species.

3 ♀, 46 ♂, 41 m N Querétaro, 6500 ft, 19 September 1963 (S and B). SAN LUIS POTOSÍ: ♀, ♂, 10 mi NE San Luis Potosí, 6200 ft, 22 August 1954 (RRD); 3 ♀, ♂, 15 mi E and 18 mi SW San Luis Potosí, 6500 and 7300 ft, 2-3 October 1957 (HAS); 2 ♂, 27 mi SW San Luis Potosí, 6550 ft, 25 July 1962 (UKE); 9 ♀, 41 ♂, 17 mi NE 16 ♀, 5 ♂, 40 mi S, and 3 ♂, 19 mi SW San Luis Potosí, 6200, 5700, and 7200 ft, respectively, 5, 6 September 1963 (S and B). SINALOA: ♂, 25 mi E Mazatlan, 6100 ft, 19 June 1964 (DB). VERACRUZ: 2 ♂, 5 mi E Aculzingo, 5000 ft, 9 July 1959 (HEE). ZACATECAS: ♂, Fresnillo, 7000 ft, 15 August 1957 (CDM); ♂, 4 mi N Fresnillo, 20 August 1960 (PHA, ER, R); ♀, ♂, Sombrerete, 6000 ft, 2 July 1961 (R and KD); 2 ♂, Trancosa, 3 July 1961 (R and KD); 2 ♂, 12 mi SE Zacatecas, 20 August 1960 (PHA, ER, R); 2 ♂, km 55, Highway 45, 3 July 1961 (R and KD).

UNITED STATES: TEXAS: ♀, 10 mi S Falfurrias, Brooks Co., 9 April 1954 (REB and party).

PREY RECORD.—None.

PLANT RECORD.—*Asclepias* species (state of Mexico) *Baccharis glutinosa* (Oaxaca).

### 67. *Cerceris imperialis* Saussure

FIGURES 80a, b, 157a-e

*Cerceris imperialis* Saussure, 1867:98, fig. 56.—Schletterer 1887:494.—Cameron 1890:122, pl. vii: figs. 21, 21a, b, c, d, e, f.—Dalla Torre, C. G., 1897:463.—Ashmead 1899:296.—Scullen 1961:47.

*Cerceris exsecta* F. Smith, 1873: 410.—Schletterer 1887: 491.—Cameron 1890:123.—Dalla Torre, C. G., 1897: 459.—Ashmead 1899:296.

*Cerceris pilosa* Cameron, 1890:128, pl. viii: fig. 9, 9a, b, c.

—Dalla Torre, C. G., 1897:470.—Ashmead 1899:296.

FEMALE.—Length 18 mm. Black (becoming fuscous on some specimens) with yellow markings; punctation and pubescence average.

Head one-fifth wider than the thorax; black except for large frontal eye patches, the apical half of the clypeal process, a small spot on the frons, and a small spot back of the eyes, all of which are yellow; clypeal margin with four denticles, the medial pair the larger and widely separated with a carina connecting the two; clypeal process spreading apically; mandibles with two denticles; antennae normal in form, dark fuscous.

Thorax black except for a divided band on the pronotum, two lateral spots on the scutellum, the metanotum, lateral patches on the propodeum, and a small spot on the tegulae, all of which are yellow; tegulae normal in form; enclosure smooth except for micropunctation and an indistinct medial groove; propodeum closely and deeply pitted; mesosternal tubercle absent; legs black, immaculate; wings subhyaline but darker than the average.

Abdomen black except for emarginate bands on terga 1 and 3 (in some specimens bands of yellow appear on terga 4 and 5 and with lateral patches on tergum 2, also small lateral spots may appear on sternum 2, 3, 4, and 5 and large medial patches on sternum 1 and 2), venter usually immaculate except for patches of yellow on sternum 1 and 2; pygidium as illustrated (Figure 157c).

**MALE.**—Length 13–14 mm. Black with yellow markings; punctation large and crowded; pubescence average; body slender.

Head subequal in width to the thorax, black except for large frontal eye patches, the medial lobe of the clypeus, basal half of the mandibles, and most of the scape, all of which are yellow; clypeal border black with three denticles, the medial one somewhat the larger; mandibles with two denticles, the more apical one much the smaller; antennae normal in form.

Thorax black except for a widely divided band on the pronotum, two lateral patches on the scutellum, a patch on each side of the propodeum, and a patch on the tegulae, all of which are yellow; mesosternal tubercle absent; legs black to distal ends of femori except the hind trochanter, which is light yellow, and the distal tips of the fore- and midfemori, which are light; the more apical leg segments are yellow infused with amber except for dark patches on the fore- and midtibiae and most of the hind tibiae, which are largely dark; wings subhyaline but somewhat darker than average.

Abdomen black with subequal narrow bands on terga 3, 4, 5, and 6; venter immaculate; pygidium as illustrated (Figure 157*e*).

Specimens from the Oaxaca area and nearby show much of the black background color becoming fuscous. This form possibly should be recognized as a subspecies. Some male specimens from El Salvador show yellow patches on the sides of tergum 2. One specimen taken north of San Luis Potosí has bands on terga 3, 4, 5, and 6 broader than normal.

**TYPES.**—The holotype of *C. imperialis* Saussure was not found either in Geneva or Vienna in 1959 by the present author. A female so labeled at Geneva, apparently by Saussure, was designated a lectotype. The holotypes of *C. exsecta* F. Smith (21.1,429) and *C. pilosa* Cameron (21.1,436) are at the British Museum.

**DISTRIBUTION.**—Central Mexico south through Central America. Specimens are as follows:

**MEXICO:** CHIAPAS: 2♂, Simojovel, Santa Domingo, 1–6 August, 18–31 July (JAC); ♂, 15 mi SE Simojovel, Santa Domingo, 8–15 July 1958 (JAC). GUANAJUATO: ♂, Guanajuato (ED); 2♂, Salvatierra, 5600 ft, 7 August 1962 (HEE). HIDALGO: ♀, 12♂, Jacala, 4500 ft, 1 September 1963 (S and B). JALISCO: ♂, El Molino, 10 July 1956 (R and KD); 5♀, 11♂, Guadalajara, 17 July 1951, 17–20, 23–28 July, 4, 10–11 August 1965 (HEE); 3♀, same locality, 23–24 July 1951 (PDH); ♀, ♂, same local-

ity, 17 September 1957 (R and KD). MEXICO: 2♂, Atlahuca, 24 July 1963 (P and S). MICHOACÁN: 2♀, 2♂, Morelia, 15 July 1956 (R and KD); 2♂, Tuxpan, 11 July 1951 (HEE). MORELOS: ♂, Cuernavaca, 12–19 July 1961 (RRD); ♂, Yautepec, 13 July 1963 (P and S); ♀, 7.3 mi SSW Yautepec, 2 July 1961 (UKE). NAVARIT: ♀, San Blas, 2 July 1956 (R and KD); ♂, Tepic, 5 July 1956 (same collectors); 2♂, 18 mi S Tepic, 7 July 1963 (P and S). OAXACA: ♂, 12 mi S Chivela, 18 August 1958 (LAS, ASM); ♀, 23 mi S Matias Romero, 200 ft, 25 June 1961 (UKE); 2♀, 3♂, Mitla, 5700 ft, 2 September 1957 (HAS); 5♂, same locality, 5600 ft, 28 June, 20 August 1963 (S and B); ♂, Monte Alban Ruins, 3 August 1964 (AVD); 3♀, 25♂, Oaxaca, 5400 ft, 24 August, 1 September 1957 (HAS); 5♀, 31♂, 5, 7, 12, 20, 22, and 24 mi SE Oaxaca, 5350, 5700, 6150 ft, 2 September 1957, 21–22 August 1963 (S and B); ♂, Palomares, 5–21 September 1961 (R and KD). SAN LUIS POTOSÍ: 4♀, 2 and 5 mi E Ciudad del Maiz, 4700 ft, 22–23 August 1954 (UKE); 5♀, same location, 23, 25 August 1954 (RRD); ♀, El Salto, 1600 ft, 24 August 1954 (UKE); 3♂, Rascion, SW San Luis Potosí to Tampico, August 1911 (SVP); ♂, 40 mi S San Luis Potosí, 5700 ft, 5 September 1963 (HAS). VERACRUZ: 4♂, Cordoba, 6, 20, 25 July 1966 (JCB, MRG, RCG); ♂, Coatepec; 4♀, 7♂, Fortin de Flores, 13–17 September 1954 (FXW); ♀, 7♂, Lago Catemaco, 14 July 1968 (MAW, JSI); 17♀, 15♂, Jalapa, 1, 6, 12, 22 August 1961 (R and KD); ♂, same locality, 22 September 1961 (JA); ♀, Jesus Carranza, June 1944 (MG); 2♂, Orizaba, 1920 (PS); 5♀, 3♂, same locality, 1862 (LB); ♂, San Andres Tuxtla, 25 October 1957 (R and KD).

**CENTRAL AMERICA:** COSTA RICA: ♂, 16 mi SE Liberia, 300 ft, 27 July 1963 (S and B); 2♂, San José, 1928 (MV); ♂, same locality, 15 June 1963 (CDM). EL SALVADOR: ♂, Conchaqua, 27–29 May 1958 (OLC); 3♀, 49♂, Quezaltepeque, 17, 19, 27 June 1961, 17–19, 22 June, 1 July, 12 August 1963 (MEI, DQC); 9♂, same locality, 3 July 1963 (S and B). NICARAGUA: ♂, Granada (B).

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

### 68. *Cerceris lutzi*, new species

FIGURES 81, 158*a–g*

**FEMALE.**—Length 15 mm. Black with much of the body taken over by yellow markings; punctation average; pubescence somewhat longer on parts of the head and thorax but average on the abdomen; body slender.

Head one-seventh wider than the thorax; black except most of the face, very large frontal eye patches, most of the clypeus, two large oval patches on the vertex converging mesad back of the ocelli, most of the genae except for a large black patch back of the eye, the basal two-thirds of the mandibles, and an

irregular area on the scape, all of which are yellow; the head is thus largely yellow, leaving only four more or less distinct areas of black as follows: (a) a broad V-shaped band on the vertex connecting the compound eyes, embodying the ocelli and extending through the antennal scrobes to, and along, the epistomal suture, (b) a broad band caudad of the oval patches on the vertex, also connecting the compound eyes and fused medially with (c) a dark area along the occipital region of the head next to the cervix, (d) the large patches back of the eyes; clypeal margin with five denticles, the two lateral denticles very small and the three medial ones very prominent; clypeal process inverted scoop shaped, terminated by two broad carina-like denticles; mandibles bidentate, the more apical one rounded and the basal one acute; antennae normal in form.

Thorax with the black largely replaced with yellow markings; pronotum with a semidivided band along the posterior margin, an irregular area along the cervix and most of the lateral and ventral parts, all of which are yellow; scutum largely black with a single irregular yellow stripe along the meson and lateral yellow margins; scutellum with two large lateral yellow patches separated by a black area; metanotum yellow divided along the meson by a black area; tegulae normal in form, yellow; enclosure smooth medially but slightly rugose laterally and with the usual medial groove, largely yellow with a dark area along the meson becoming broader cephalad and spreading out along the anterior border; propodeum largely yellow but black along the meson and border of the enclosure to the alar area, a spur-like extension of the dark area extending caudad into the yellow area; venter of the thorax yellow with dark lines along the sutures; mesosternal tubercle small on an inflated area; legs yellow with a variable dark stripe along the dorsal surface of all trochanters, femori, and tibiae; wings subhyaline.

Abdominal tergum 1 with a dark irregular patch bordered with yellow, tergum 2 largely yellow with an irregular dark area medially on the basal half, terga 3, 4, and 5 with yellow bands along the distal margins deeply emarginate; venter largely yellow clouded with dark areas on sterna 2 to 4; pygidium as illustrated (Figure 158d).

MALE.—Length 11–12 mm. Black with extensive yellow markings; punctation crowded on the head and the thorax, less so on the abdomen; pubescence nor-

mal in general but very long on the genae, the pleuron of the thorax, the propodeum, and the first abdominal segment; body slender.

Head one-sixth wider than the thorax; color pattern very close to that of the female; clypeal margin with a carina-like extension on the medial lobe with little evidence of dentation; hair lobes extending over the entire lateral lobe of clypeus, light fulvous; mandibles without denticles; antennae normal in form, fulvous with darker bands on most segments, scape dark but with a yellow patch.

Thorax color pattern as on the female; tegulae normal in form, yellow; enclosure and propodeum as on the female; mesosternal tubercle absent; legs as on the female but somewhat darker; wings as on the female.

Abdomen as on the female for the first five terga, tergum 6 mostly yellow, venter yellow; pygidium as illustrated (Figure 158g).

TYPE.—The holotype female of *Cerceris lutzii*, taken at El Volcan, Chiriqui, Republic of Panama, 18 February 1936 (F. E. Lutz), is at the American Museum of Natural History. Paratypes are as follows:

PANAMA: ♀, Barro Colorado, Canal Zone, 10 February 1936 (FEL); ♀, El Volcan Chiriqui, 22 February 1936 (WJG); ♂, same locality, 18 February 1936 (FEL).

DISTRIBUTION.—Known only from Panama.

PREY RECORD.—None.

PLANT RECORD.—None.

#### 69. *Cerceris micheneri*, new species

FIGURES 82, 159a–d

FEMALE.—Length 10 mm. Black with yellow markings; punctation average; pubescence short.

Head about one-sixth wider than the thorax; black except for two large frontal eye patches, most of the clypeus and the basal half of the mandibles, all of which are yellow; clypeal margin black with five black denticles, the two lateral ones slightly smaller than the three medial ones; the clypeal process with the base subequal in width to the epistomal suture, narrowing to a low truncate apex; mandibles with two medial denticles, the apical one the larger; antennae normal in form, black basally with the flagellum dark above and lighter below.

Thorax black except for two widely separated patches on the pronotum, the metanotum, and the

tegulae, all of which are yellow; tegulae low and smooth; enclosure finely pitted with a row of coarse pits along the mesal groove; mesosternal tubercle small; fore- and midlegs dark fuscous basally to near the apical ends of the femora, beyond which they are yellow infringed with fulvous; hind legs dark fuscous basally to the apical ends of the femora except the trochanter, which is yellow, the tibiae yellow except the apical ends, which are fuscous, and the tarsi, which are yellow basally becoming darker apically; wings subhyaline becoming slightly clouded on the anterior area, stigma light.

Abdomen black except for two small lateral yellow spots on tergum 1, broad but deeply emarginate yellow bands on terga 2, 3, 4, and 5; venter dark fuscous except for lateral yellow patches on sterna 3 and 4; pygidium broadly rounded apically but narrowing to a truncate end basally (Figure 159b).

**MALE.**—Length 7 mm. Black with yellow markings; punctuation average; pubescence average.

Head slightly wider than the thorax; black except the entire face below the antennal scrobes, basal half of the mandibles and anterior surface of the scape, all of which are yellow; extension on the medial lobe of the clypeus with two distinct but not prominent lateral denticles and a very inconspicuous medial denticle; clypeal surface convex; hair lobes extending from the eyes to near the medial lobe; mandibles without distinct denticles; antennae normal in form, fulvous below and darker above.

Thorax black except for two widely separated patches on the pronotum, the metanotum, and the tegulae, all of which are yellow; tegulae low and smooth; enclosure finely rugose and with a row of coarse pits along the mesal groove; mesosternal tubercles absent; legs largely yellow except for the following parts, which are dark fuscous: the fore- and midcoxae, most of the hind coxae, the dorsal surfaces of the fore- and midtrochanters, the basal half of the fore- and midfemora, apical third of the hind femora, and the apical ends of the hind tibiae; the dark area on the apical end of the hind femora has a characteristic shape, being much more prolonged on the dorsal surface than on the ventral surface; wings subhyaline, stigma light.

Abdomen black except for wide but deeply emarginate yellow bands on terga 2, 3, 4, 5, and 6; venter dark fuscous except for large lateral patches of yellow on sterna 3 and 4; pygidium with sides slightly con-

vex, both ends subequal in width and the apical end semitruncate (Figure 159d).

**TYPES.**—The holotype female and allotype male are both from Matachic, Chihuahua, Mexico, 7 July 1947 (C. D. Michener) and are deposited at the American Museum of Natural History. Paratypes are as follows:

**MEXICO: CHIHUAHUA:** ♀, 3♂, Medera, 7200 ft, 6 July 1947 (CDM); 4♀, 22♂, Matachic, 6400 ft, 6–7 July 1947 (CDM); 30♂, same locality, 8 July 1947 (MAC); 2♀, 43♂, same locality, same date (MAC, WJG). **DISTRITO FEDERAL:** ♂, San Jeronimo, 11 June 1946 (JP and DP). **DURANGO:** ♀, 10 mi W Durango, 12 July 1945 (JWMc); 3♀, 5♂, 20 mi W Durango, 7100 ft, 17 June 1964 (DB); 3♀, 3♂, 35 mi W Durango, 7900 ft, 18 June 1964 (DB); ♀, 60♂, 40 mi W Durango, 8100 ft, 15 June 1964 (DB); ♀, El Salto, 3 August 1951, at *Ranunculus* species (PDH); ♂, 13 mi E El Salto, 8400 ft, 19 July 1956 (HAS); 2♂, 18 mi E El Salto, 8600 ft, 19 July 1956 (HAS). **HIDALGO:** ♂, 14 mi SW Pachuca, 7500 ft, 9 July 1961 (UKE). **MEXICO:** 2♂, Teotihuacan, 15 June, 6 July 1951 (PDH); ♂, Tlalpam, 2 July 1942 (WFF); 3♀, 16 mi E Toluca, 9500 ft, 31 July 1962 (UKE). **MICHOACÁN:** ♀, 3 mi E Carapan, 10 July 1963 (P and S); 3♀, 6 mi NW Quiroga, 11 July 1963 (same collectors); ♀, ♂, Urapan, 12 July (Koeb); 2♀, 5 km W Zacapu, 13 July 1951 (HEE); ♀, Zamora, 28 August 1954 (EGI, JWMc); ♂, 10 km W Zitacuaro, 11 July 1951 (PDH). **ZACATECAS:** ♀, ♂, 61 mi W Fresnillo, 8000 ft, 25 June 1954 (RHB); ♂, 15 km E Sombrerete, 28–31 July 1951 (PDH); 2♂, 34 mi S Zacatecas, 6900 ft, 15 June 1956 (HAS).

**DISTRIBUTION.**—Central Mexico from the state of Mexico north to western Chihuahua, 6400–9500 feet elevation.

**PREY RECORD.**—None.

**PLANT RECORD.**—*Ranunculus* species (state of Mexico).

## 70. *Cerceris mimica* Cresson

FIGURES 83, 160a–d

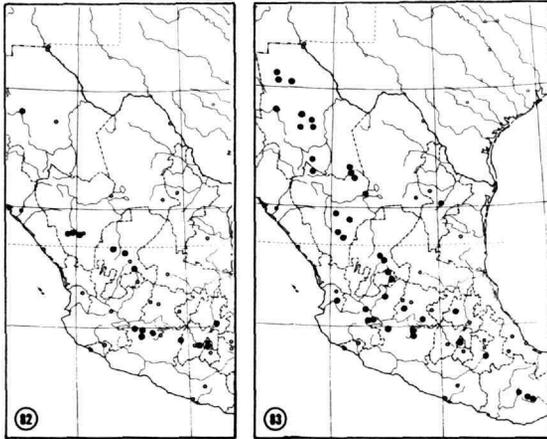
*Cerceris mimica* Cresson, 1872:228; 1887:282.—Dalla Torre, C. G., 1897:467.—Ashmead 1899:295.—Banks 1912:13, 14.—Scullen 1951:1009; 1961:47; 1965a:345, 349, 488–489, figs. 86, 166a, b, c, d.—Carrillo and Gibson, 1966:111.

*Cerceris esau* Schletterer, 1887:458.—Dalla Torre, C. G., 1897:459.—Cameron 1890:123, pl. VIII: figs. 1, 1a, b, c.—Ashmead 1899:296.

*Cerceris minima* [sic].—Schletterer, 1887:497.

*Cerceris englehardti* Banks, 1947:12, 13.

**TYPES.**—The type female of *C. mimica* Cresson,



FIGURES 82-83.—82, *C. micheneri*, new species; 83, *C. mimica* Cresson.

from Texas, is at the Academy of Natural Sciences of Philadelphia (1943). The lectotype female of *C. esau* Schletterer, from Mexico, is at the Naturhistorisches Museum, Vienna. The type male of *C. engelhardti* Banks, from St. John, Ariz., 27 June 1931 (G. P. Engelhardt), is at the Museum of Comparative Zoology (27638).

**DISTRIBUTION.**—Through the central high plateaus in Mexico from the state of Chihuahua south to Oaxaca. Not recorded from Central America. Specimens are as follows:

**MEXICO:** AGUASCALIENTES: ♂, Aguascalientes, 28 July 1951 (HEE); ♂, same locality, 4 August 1954 (LSM and M); ♂, 12 km N Rincon de Romos, 28 July 1951 (PDHjr). CHIHUAHUA: 6♀, 5♂, Catarinas, 5800 ft, 25, 26 July 1947 (MAC, CDM, WJG, Spi); ♂, 25 mi S Chihuahua, 11 August 1951, at *Baccharis*, (HEE); ♂, 30 mi NW Chihuahua, 4900 ft, 27 July 1953, at *Asclepias* species (UKE); 2♀, 10♂, 6 mi SE Chihuahua, 7850 ft, and 2♂, 33 mi SE Chihuahua, 4100 ft, all 12 September 1963 (S and B); ♂, Colonia Dublan, July (B and C); ♂, 16 mi W Flores Magon, 5000 ft, 13 September 1963 (S and B); ♂, 7 mi SE Galeana, 4850 ft, 13 September 1953 (S and B); ♂, 12 mi W Hidalgo del Parral, 6200 ft, 14 July 1964 (JPo); ♂, 16 mi S same locality, 6250 ft, 24 October 1957 (HAS); 2♂, 33 mi S same locality, same date and collector, 6400 ft; ♀, 2♂, 60 mi S same locality, same date and collector, 6250 ft; 2♂, 34 mi SE Jimenez, 4450 ft, 11 September 1963 (S and B); ♀, 2 mi S Matachic, 21 August 1950 (RFS); ♂, Santa Barbara, 17 August 1947 (GMB); 2♂, 12 mi S Villa Matamoros, 21, 26 July 1967 (Ko, RCG, KL). DISTRITO FEDERAL: ♀, 3♂, 28 July, 28, 31 August 1903 (WLT); ♀, 38♂, Mexico City, July 1897 (CWB); ♂, same locality, no date (JCG). DURANGO:

♀, 8 mi S Canutillo, 9 August 1951 (PDHjr); ♀, 8♂, 7 mi SE Ceballos, 3900 ft, 9 September 1963 (S and B); 11♂, 14 mi NW Ceballos, 4100 ft, 10 September 1963 (S and B); 2♂, 24 mi NW Ceballos, 4300 ft, 19 September 1963 (S and B); 2♂, 30 mi NW Ceballos, 4400 ft, 10 September 1963 (S and B); 3♂, Durango, 13 August 1962 (AMi); ♂, same locality, 6300 ft, 18 June 1956 (HAS); 2♀, 4♂, 14, 20, and 23 mi N Durango, 6200-6300 ft, 17-18 June 1956 (HAS); 10♀, 29♂, 20 mi N, 4 mi W, and 6 mi SE Durango, 6200-6300 ft, 16-19 September 1963 (S and B); ♀, 6♂, 40 and 45 mi NW Gomez Palacio, 3700-3800 ft, 10-11 September 1963 (S and B); ♂, Graceros, 6000 ft, 6 July 1961 (RAS); ♀, 14 mi NE Guadalupe Victoria, 5900 ft, 15 August 1963 (UKE); 4♀, 3♂, Nombro de Dios, 1, 5-6 August 1951 (HEE); 7♀, 2♂, same locality and dates (PDHjr); 4♀, 4♂, same locality, 13 July 1954 (EIS); ♂, San Juan del Reo, 5200 ft, 30 July 1947 (CDM); ♀, ♂, same locality, 7 August 1951 (PDHjr). GUANAJUATO: ♂, 40 mi W Irapuato, 21 August 1963 (ARH); ♀, Salvatierra, 7 August 1962 (HEE). HIDALGO: ♂, 11 mi W junction Highways 45 and 85, 6500 ft, 2 September 1963 (S and B). JALISCO: ♀, ♂, Ajijic, 28 July 1954 (MAC, WJG, JMB); 3♀, 2♂, same locality, 5200 and 5300 ft, 31 July, 12, 16 August 1964 (WLN and sons); 5♂, Chapala, 19 June 1963 (S and B); ♀, 2♂, Guadalajara (JGC); ♀, 11♂, same locality, 19 June, 9, 11, 27 July, 14 September 1903 (Mc); ♀, 10 mi S Guadalajara, 28 July 1954 (MAC, WJG, JMB); ♂, El Tigre, 18 July 1954 (JWM); 2♂, San Juan Lagos, 27 July 1951 (PDHjr). MICHOACÁN: ♂, Morelia, 15 July 1956 (R and KD); ♀, 10 mi N Morelia, 5900 ft, 28 July 1962 (UKE); ♀, Zamora, 23 July 1955 (PAO). NAYARIT: ♀, Ahuacatlan, 18 July 1951, at *Donnellsmithia Hintonii* (HEE). NUEVO LEÓN: ♂, Montemorelos, 1300 ft, 8 September 1963 (S and B). OAXACA: 4♀, 10♂, Mitla, 5600 ft, 27-28 June, 20, 22 August 1963 (S and B); ♂, Oaxaca, September 1923 (EGS); 2♂, 25 mi SE Oaxaca, 5600 ft, 27 June 1963 (S and B). PUEBLA: ♂, 35 mi S Puebla, 4900 ft, 8 June 1956 (HAS). ZACATECAS: ♂, Fressnillo, 28 July 1951 (HEE); ♂, Sain Alto, 7000 ft, 14 August 1947 on *Gutierrezia* (MAC); ♂, Zacatecas, 3 July 1961 (R and KD).

**PREY RECORD.**—None.

**PLANT RECORD.**—*Baccharis* (Chihuahua), *Donnellsmithia Hintonii* (Nayarit), *Gutierrezia* (Zacatecas).

### 71. *Cerceris montezuma* Cameron

*Cerceris montezuma* Cameron, 1890:108-109.—Dalla Torre, C. G., 1897:467.—Ashmead 1899:296.

**TYPES.**—The type of *Cerceris montezuma* Cameron was not found in the British Museum by the author in 1959. Two quite different female specimens found in the above museum were both labeled "*C. montezuma* Cameron"—by whom, it is not known. One of the specimens is very close to the new species

herein being described as *C. williamsi*, new species, and belongs to Group III as recognized in Scullen (1965). This group has the laminated clypeal process.

The second specimen so labeled is close to the female of *C. marginula* Dalla Torre (= *C. marginata* Cameron). Neither of the above specimens conform entirely with Cameron's description of *C. montezuma* in structure of the clypeal process, form of the first abdominal segment, and very limited light markings; however, *C. marginula* Dalla Torre has a strong narrow band of creamy white along the distal margin of tergum 3 and usually two small patches on the propodeum. Cameron does not indicate that *C. montezuma* is closely related to *C. marginata* Cameron.

Until more positive information is found relative to the correct identification of this species, *C. montezuma* Cameron must stand as a valid species, but not recognized.

**DISTRIBUTION.**—Type-locality as given by Cameron is "Mexico (coll. Saussure)."

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

## 72. *Cerceris morata* Cresson

FIGURES 84, 161a-c

*Cerceris morata* Cresson, 1872:230; 1887:282.—Schletterer 1887:497.—Dalla Torre, C. G., 1897:468.—Ashmead 1899:295.—Banks 1912:19.—Scullen 1942:188; 1951:1009; 1965:344, 350, 489-491, figs. 87, 167a, b, c.—Carrillo and Gibson 1966:111.

*Cerceris nasica* Viereck and Cockerell, 1904:132.—Viereck 1906:233, 239.—Banks 1947:20.

**TYPES.**—The type female of *C. morata* Cresson, from Texas (Belgrave), is at the Academy of Natural Sciences of Philadelphia (1944). The type female of *C. nasica* Viereck and Cockerell, from New Mexico (F. H. Snow), is also at the Academy of Natural Sciences of Philadelphia (10382).

*Cerceris morata* Cresson is close to *C. clypeata* *clypeata* Dahlbom in some respects, and possibly it should be considered a subspecies of the latter. Geographically its distribution is mostly between that of the nominate subspecies of eastern and central United States and *C. clypeata tepaneca* Saussure, which is the form most common in south-central Mexico. The males and some females of *C. morata* Cresson from southern Mexico are difficult or impossible to separate

from *C. clypeata tepaneca* Saussure. The more southern records indicated on the map (Figure 84) may be open to question.

The entire group of *C. clypeata* needs more careful study. Here is a group in which a careful study of genitalia might prove helpful.

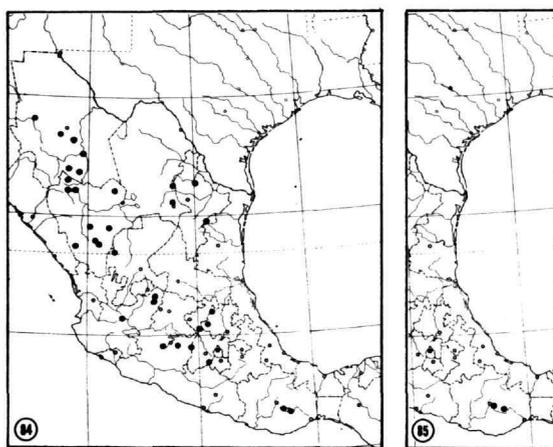
**DISTRIBUTION.**—*Cerceris morata* Cresson, which is common in the south-central United States, is not uncommon through Mexico south to Oaxaca. Specimens from Mexico are as follows:

**MEXICO: CHIHUAHUA:** ♂, 8 mi S Camargo, 10 August 1951 (HEE); ♀, 20 mi SW Camargo, 4500 ft, 13 July 1947 (CDM); ♀, 33 mi SE Chihuahua, 4100 ft, 12 September 1963 (S and B); ♀, 2♂, Colonia Dublan, July 1931 (B and C); 2♂, 12 mi NW Gran Morelos, 15 August 1950 (RFS); ♂, 29 mi E Hidalgo del Parral, 5000 ft, 21 June 1956 (HAS); ♂, 18 mi W Jimenez, 10 August 1951 (HEE); 2♀, 2♂, Matachic, 7-8 July 1947 (CDM); ♀, 14♂, 2 mi and 8 mi W Matachic, 6400 ft, 7-8 July 1947 (CDM); ♀, 2 mi S Matachic, 21 August 1950 (RFS); ♂, Santa Clara Canyon, 5 mi W Parrita, 6 July 1954 (EIS). **COAHUILA:** 4♀, 2♂, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B); ♂, 61 m N Saltillo, 11 August 1959 (ASM, LAS). **DURANGO:** ♀, ♂, 8 mi S Canutillo, 9 August 1951 (PDH); 4♀, Coyotes, Durango District, 8300 ft, 8 August 1947 (CDM); ♂, 5 mi E Coyotes, 4 August 1951 (PDH); ♀, Durango, 6200 ft, 14 August 1947 (CDM); ♂, 156 mi N Durango, 6400 ft, 20 June 1956 (HAS); 2♀, 6 mi NE El Salto, 8500 ft, 10 August 1947 (Spi, S); ♂, 13 mi E El Salto, 8400 ft, 19 June 1956 (HAS); ♀, Encino, 6200 ft, 27 July 1947 (Spi); 2♂, 40 mi NW Gomez Palaco, 3700 ft, 10 September 1963 (S and B); ♀, Guadalupe Victoria, 7 September 1951 (JJM); 2♀, ♂, 65 mi S Hidalgo del Parral, 6350 ft, 20 June 1956 (HAS); ♂, 34 mi NW La Zarca, 5800 ft, 25 July 1953 (UKE); ♀, 2♂, Nombre de Dios, 5-6 August 1951 (PDH); ♀, ♂, same locality and date (HEE); ♂, 10 km N same locality, same date and collector; ♀, San Juan del Rio, 7 August 1951 (PDH); ♀, Verbanis, Cuencame District, 6700 ft, 19 August 1947 (S); ♀, San Juan del Rio, 7 August 1951 (HEE); 2♂, Vicente Guerrero, 7 September 1951 (JJM). **HIDALGO:** ♀, 7 mi W Huichapan, 7250 ft, 2 September 1963 (S and B); ♂, Jacala, 28 June 1939 (RHa). **JALISCO:** ♂, El Tigre, 18 July 1954 (EIS); ♀, ♂, Guadalajara, 5000 ft, 14 July 1959, 23-28 July 1954 (HEE); 2♂, 8 mi S Guadalajara, September 1954 (FXW); ♀, 116 mi E Guadalajara, 6150 ft, 1 October 1957 (HAS); ♂, Lagos de Moreno, 6300 ft, 12 August 1954 (RRD); ♀, 22 mi NW La Piedad (Michoacán) 23 July 1954 (EIS); ♂, Villa Guadalupe, 26 July 1951 (PHD). **MEXICO:** ♂, 5 mi W San Juan del Rio (Guerrero), 6300 ft, 2 September 1963 (S and B); ♂, 33 mi N Taxco (Guerrero), 5700 ft, 29 August 1963 (S and B). **MICHOACÁN:** ♀, Patzcuaro, 2100 m, 27 July (THu); ♀, 5 mi E Tuxpan, 6500 ft, 22 June 1963 (S and B); ♀, ♂, 10 km W Zitacuaro, 11 July 1951 (PDH).  **NUEVO LEÓN:**

♀, 40 mi W Linares, 5200 ft, 7 September 1963 (S and B); ♂, Vallecillo, 2–5 June 1951 (HEE). OAXACA: ♀, 6♂, Mitla, 5600 ft, 27–28 June, 20 August 1963 (S and B); 2♂, 22 mi SE Oaxaca, 5700 ft, 2 September 1957 (HAS); 2♀, 4♂, 5, 7, 12, and 25 mi SE Oaxaca, 5350–6150 ft, 27 June, 21–22 August 1963 (S and B). VERACRUZ: ♂, 10 mi SW Ciudad Mendoza, 5300 ft, 25 August 1963 (S and B). ZACATECAS: ♀, 15 km E Sombrerete, 28–31 July 1951 (PDH).

PREY RECORDS.—None.

PLANT RECORDS.—None.



FIGURES 84–85.—84, *C. morata* Cresson; 85, *C. oaxaca*, new species.

### 73. *Cerceris oaxaca*, new species

FIGURES 85, 162a–e

**FEMALE.**—Length 9 mm. Entire body black except for very limited light markings on the head, tibiae, and the first two abdominal segments; punctuation average; pubescence short except on the vertex of the head, much of the thorax, and the third, fourth, and fifth sterna.

Head subequal in width to seven-sixths the width of the thorax; black except for frontal eye patches and a small patch on the basal part of the mandibles, all of which are light yellow; clypeal border with five subequal denticles; clypeal process small with sides subparallel and with the terminal border emarginate; mandibles bidentate, the more distal denticle much the larger; antennae black with the ventral surface of the flagellum testaceous.

Thorax black except for clouded yellow stripes on

each of the first two tibiae; tegulae low and smooth; enclosure lightly pitted and slightly rugose with the usual medial groove; mesosternal tubercle small but conspicuous; legs black except for the clouded stripe on each of the first two pair of tibiae; wings subhyaline but darkly clouded along the anterior margins.

Abdomen black except for a yellow broken band on tergum 1, most of sternum 1, and two spots on sternum 2, all of which are yellow, somewhat clouded; bands of closely packed short bristles appear along the distal margins of sterna 3, 4, and 5; pygidium as illustrated (Figure 162c).

**MALE.**—Length 8 mm. Black with very limited yellow markings; punctuation more coarse than normal; pubescence normal.

Head subequal in width to the thorax; black except for an evanescent frontal eye patch; clypeal border with a broad carina-like extension on the medial clypeal lobe showing no evidence of dentation; hair lobes “waxed” and extending over most of the lateral clypeal lobe; mandibles without denticles; antennae dark with limited testaceous areas on both the basal and terminal segments.

Thorax black except for evanescent spots on the pronotum and the mesoscutum, the entire scutellum, the tegulae, and two evanescent patches on the pro-podeum, all of which are yellow clouded with amber; enclosure smooth except for pitting along the lateral margins and along the medial groove; mesosternal tubercles absent; legs black except for clouded yellow stripes on the fore- and hind tarsi; wings as on the female.

Abdomen black except for most of the first abdominal segment, an evanescent narrow line on the distal border and lateral spots on tergum 2, and an area on the basal half of sterna 2, all of which are yellow, often deeply clouded with amber; pygidium as illustrated (Figure 162e).

**TYPES.**—The type and allotype of *C. oaxaca*, taken 12 miles southeast of Oaxaca, Mexico, 5400 feet elevation, 22 August 1963 (H. A. Scullen and Duis Bolinger), are at the National Museum of Natural History (USNM 71069). Paratypes are as follows:

MEXICO: OAXACA: 4♂, Mitla, 5600 ft, 28 June, 20 August 1963 (S and B); 11♂, 5, 12, and 25 mi SE Oaxaca, at 6150, 5350, and 5600 ft, respectively, 27 June, 21–22 August 1963 (S and B).

GUATAMALA: ♂, 16 mi S Panajachel, Coloa, 6300 ft, 7 August 1963 (S and B).

DISTRIBUTION.—Known only from the state of Oaxaca, Mexico, and one record from Guatemala.

PREY RECORDS.—None.

PLANT RECORDS.—None.

#### 74. *Cerceris obsoleta* Cameron

FIGURES 86, 163a, b

*Cerceris obsoleta* Cameron, 1890:118, pl. VII: fig. 15, 15a, b.—Dalla Torre, C. G., 1897:469.—Ashmead 1899:296.

FEMALE.—Length 10 mm. Black with creamy-white markings; punctation coarse and crowded; pubescence short; pygidium shield shaped.

Head subequal in width to the thorax; black except for narrow frontal eye patches, a small round spot back of the eyes, and the base of the mandibles, all of which are creamy white; clypeal border with four prominent rounded denticles and a deep depression mesad; clypeal process converging distally with the terminal margin emarginate; mandibles with a single denticle terminating a prominent carina, which extends basad; antennae normal in form, dark above and lighter below.

Thorax black except for a divided band on the pronotum, two lateral spots on the scutellum, and the metanotum, all of which are creamy white; tegulae low and smooth; enclosure deeply pitted along the lateral margins, without the usual medial groove; mesosternal tubercle absent; legs dark fuscous becoming lighter distally with small creamy-white patches on all tibiae; wings subhyaline but dark along the anterior margins.

Abdomen black except for narrow bands on terga 1 and 3, a hair line on terga 5, and small lateral spots on sternum 3, all of which are creamy white; pygidium somewhat shield shaped (Figure 163b).

MALE.—Unknown.

TYPES.—The type female of *C. obsoleta* Cameron, taken at Teapa in Tabasco, Mexico (H. H. Smith), is at the British Museum (21.1,368).

DISTRIBUTION.—Only six specimens of this rare but very distinctive species have been identified by the present author as listed below:

COSTA RICA: ♀, Hamburg (FHe).

MEXICO: CHIAPAS: 2 ♀, Bochil, 16 March 1953 (RCB, EIS); ♀, Finca La Concepcion, 15 km NE Bochil, 28 September 1961 (FMP). VERACRUZ: ♀, Fortin de Flores, 17 September 1954 (FXW). STATE UNKNOWN: ♀, "Octap.," probably in Mexico.

The exact locations of Manberg in Costa Rica and Bochil, Chiapas, in Mexico have not been located on a map.

PREY RECORD.—None.

PLANT RECORD.—None.

#### 75. *Cerceris occipitamaculata* Packard

FIGURES 164a-c

*Cerceris occipitamaculata* Packard, 1866:62.—Cresson 1872:229; 1887:282.—Schletterer 1887:498.—Dalla Torre, C. G., 1897:469.—Bridwell 1898:209.—Ashmead 1899:295.—Smith, H. S., 1908:368.—Stevens 1917:422.—Mickel 1917:499.—Catrener 1925:133.—Scullen 1951:1009; 1965a:343, 350, 500-502, figs. 93, 173a, b, c.

*Cerceris fasciola* Cresson, 1872:230; 1887:282.—Schletterer 1887:491.—Dalla Torre, C. G., 1897:459.—Ashmead 1899:295.—Vioreck 1906:234.—Banks 1912:23.—Vioreck 1916:695-696.—Washburn 1918:226, fig. 115.—Britton 1920:342.—Scullen 1951:1007.

*Cerceris novomexicana* Vioreck and Cockerell, 1904:137.—Scullen 1951:1009.

TYPES.—The type female of *C. occipitamaculata* Packard, from Kansas (Norton), has not been located. Recognition of this species is based on specimens so labeled by E. T. Cresson and other early workers. A neotype from Hunt Co., Tex., has been designated by the writer and is deposited at the National Museum of Natural History.

The type male of *C. fasciola*, taken in Comal Co., Tex., is at the Academy of Natural Sciences of Philadelphia (1950). The type female of *C. novomexicana* Vioreck and Cockerell, from Jackson Park, N. Mex., at skunk cabbage, 7 July 1903 (Anna Gohrman), is at the Academy of Natural Sciences of Philadelphia (10383).

DISTRIBUTION.—This species, which is widely distributed in the central states from South Dakota to the Mexican border, is represented south of the border by only the one specimen: ♀, Santa Clara, Namiqupa District, Chihuahua, Mexico, 6500 ft, 3 July 1947 (Spieth, D. Rockefeller Expedition).

PREY RECORD.—None.

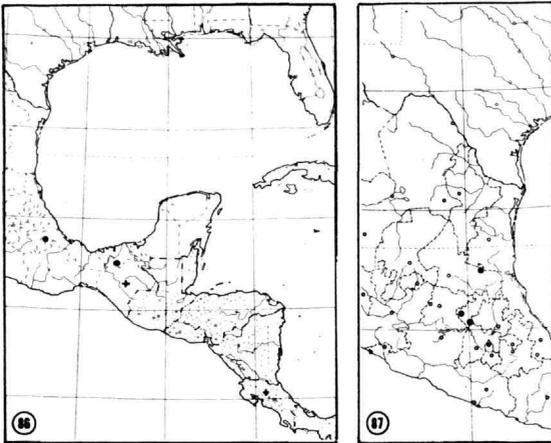
PLANT RECORD (south of the border).—None.

#### 76. *Cerceris queretaro*, new species

FIGURES 87, 165a-f

FEMALE.—Length 10 mm. Black with light yellow markings; punctation and pubescence average.

Head slightly wider than the thorax; black except



FIGURES 86-87.—86, *C. obsoleta* Cameron; 87, *C. quere-taro*, new species.

for large frontal eye patches, large patches on both the medial and lateral lobes of the clypeus, and a small area on the mandibles near the base, all of which are light yellow; clypeal border with five denticles, the two lateral ones much smaller than the medial three; clypeal process small and rounded; mandibles bidentate, the more distal denticle the larger.

Thorax black except for a broken band on the pronotum, the metanotum, and a large patch on the tegulae, all of which are light yellow; tegulae low and smooth; enclosure minutely rugose and with the usual medial groove; mesosternal tubercle small but conspicuous; legs black except for the hind trochanter, a long stripe on each tibiae, and much of the tarsi, which are light yellow infused with amber; wings subhyaline but clouded along the anterior borders, stigma amber.

Abdomen black except for narrow bands on all terga 1 to 5 and minute lateral spots on sternum 3, all of which are light yellow; pygidium as illustrated (Figure 165c).

**MALE.**—Length 9 mm. Black with light yellow markings; punctation average; pubescence average except somewhat longer on limited areas.

Head subequal in width to the thorax; black except for large frontal eye patches and a large patch on the medial clypeal lobe, which are yellow; medial clypeal lobe with three indistinct denticles; mandibles without denticles.

Thorax black except for two widely separated patches on the pronotum, the metanotum, and the tegulae, all of which are light yellow; tegulae normal; enclosure lightly pitted and with the usual medial groove; mesosternal tubercle absent; legs black except for the hind trochanter, a broad stripe on all tibiae, and most of the fore- and midtarsi, all of which are light yellow; wings as on the female.

Abdomen black except for two small spots on tergum 1, medium to narrow bands on terga 2, 3, 4, 5, and 6, and small lateral spots on sternum 3; pygidium as illustrated (Figure 165f).

This species is very close to *C. stigmosa* Cameron, especially the males. The females of *C. quaretaro*, new species, are separated from the females of *C. stigmosa* Cameron by the different clypeal parts, the black antennae of the latter, the black hind trochanter and yellow markings of the venter, of *C. stigmosa* Cameron. The males of these two species are more difficult to separate except when associated with the females.

	<i>C. quaretaro</i>	<i>C. stigmosa</i>
clypeus	black except for a patch of yellow on the medial lobe	yellow
	punctuation sparse	punctuation crowded
antennae	testaceous below	black except distal segment, which is testaceous
3rd sternum	small lateral yellow spots only	broad band, which may be divided medially

**TYPES.**—The type female and allotype male were both taken 41 miles north of Querétaro [city], Mexico, 6500 feet elevation, 19 September 1963 (H. A. Scullen and Duis Bolinger). They are deposited at the National Museum of Natural History (USNM 71072). Paratypes are as follows:

**MEXICO: QUERÉTARO:** ♀, 5 mi E San Juan del Rio, 6300 ft, 2 September 1963 (S and B); 2♂, 41 mi N Querétaro, 6500 ft, 19 September 1963 (S and B). **SAN LUIS POTOSÍ:** ♂, 5 mi E Ciudad del Maiz, 23 August 1954 (RRD).

**DISTRIBUTION.**—Known only from the states of Querétaro and San Luis Potosí in Mexico.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

77. *Cerceris rostrata* F. Smith

FIGURES 88, 166a-c

*Cerceris rostrata* F. Smith, 1873:409-410.—Schletterer 1887:500.—Cameron 1890:127.—Dalla Torre, C. G., 1897:473.—Ashmead 1899:296.

FEMALE.—Length 14 mm. Black to dark fuscous with a large part of its body covered with markings of light fulvous and in limited areas ferruginous; punctation average; pubescence longer than average on parts of the head and thorax, short on the abdomen; body more slender than average.

Head about one-eighth wider than the thorax; black except the entire clypeus, large frontal eye patches, the frons, two large oval patches on the vertex converging mesally back of the ocelli, most of the genae except for a black patch back of the eye, all of which are light fulvous; the head is largely light fulvous, leaving only four areas that are more or less distinct as follows: (1) an irregular dark area connecting the compound eyes, embodying the ocelli, and extending through the antennal scrobes, (2) a dark area connecting the eyes back of the two large oval fulvous patches on the vertex, (3) a dark area along the occipital region of the head next to the cervix, and (4) the two large round patches back of the compound eyes; clypeal margin with five distinct denticles, the two lateral ones somewhat the smallest; the clypeal process scoop shaped with the terminal margin darker and with three denticles giving the overall view of the margin a "wishbone" shape; mandibles with two subequal denticles, the denticles and distal two-thirds of the mandibles dark fuscous, otherwise light fulvous; antennae normal in form, ferruginous with darker areas on the flagellum and scape, the latter yellow below.

Thorax black above heavily marked with light fulvous becoming almost entirely light fulvous on the pleuron and venter; pronotum with a broad divided band on the posterior margin, likewise colored along the area next to the cervix, and with an irregular area of black between the lighter areas; scutum with a black area on the dorsum divided into three parts by two fulvous stripes, which become broader posteriorly; scutellum with two large rounded light patches; metanotum yellow divided medially; tegulae normal in form, light fulvous; enclosure smooth, becoming lightly rugose in the lateral angles, and the usual medial groove, fulvous laterally, dark

fuscous medially and along the outer margins; propodeum largely fulvous with a dark area extending along the meson to the enclosure, along the junction with the enclosure to the alar area, a spurlike extension of the dark area extending caudad into the lighter area; mesosternal tubercle small and acute, extending out from an inflated area; legs light fulvous except for variable elongate dark patches on all femori and tarsi; wings subhyaline shaded with light fulvous.

Abdomen with variable dark area on all terga and with distinct fulvous bands on terga 2, 3, 4, and 5; tergum 1 largely ferruginous, fulvous laterally and darker along the meson, tergum 2 dark above but ferruginous to fulvous laterally, entire venter largely fulvous with a dark patch on sternum 5; pygidium as illustrated (Figure 166c).

MALE.—Unknown. It is doubtless very similar to the male of *C. simulans* Saussure.

The female of *C. rostrata* F. Smith is very similar in general form and color pattern to the females of *C. rufonigra turrialba*, new subspecies, and *C. lutzii*, new species, but the form of the clypeal processes and color pattern of the scutum are different from both species.

TYPE.—The type female of *C. rostrata* F. Smith from "Mexico" is at the British Museum (21.1,441).

DISTRIBUTION.—Known only from the above type-locality and one female specimen at the University of California at Davis as follows: Jalapa, Veracruz, Mexico, 17 August 1959 (ASM, LAS).

PREY RECORD.—None.

PLANT RECORD.—None.

78. *Cerceris simulans* Saussure

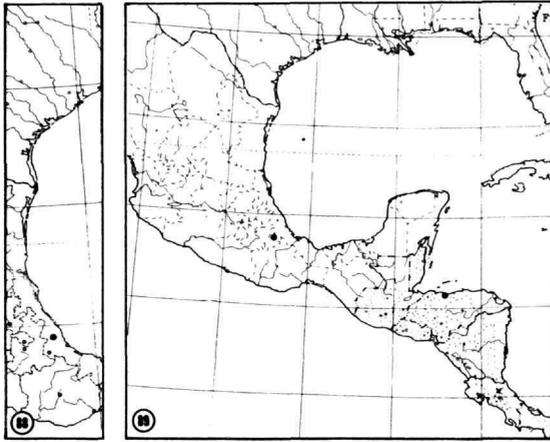
FIGURES 89, 167a-e

*Cerceris simulans* Saussure, 1867:87-88, pl. iv: fig. 53.—Schletterer 1887:502.—Cameron 1890:108.—Dalla Torre, C. G., 1897:477.—Ashmead 1899:296.

*Cerceris scapularis* Schletterer, 1887:457, 502.—Dalla Torre, C. G., 1887:476.—Cameron 1890:129.—Ashmead 1899:296.—Ashmead 1899:296. [New synonymy.]

*Cerceris chrysogastra* Schletterer, 1887:458, 488.—Cameron 1890:127.—Dalla Torre, C. G., 1897:455.—Ashmead 1899:296. [New synonymy.]

FEMALE.—Length 15 mm. Black with fulvous markings, which cover well over half of the body surface; punctation and pubescence average; body slender.



FIGURES 88–89.—88, *C. rostrata* F. Smith; 89, *C. simulans* Saussure.

Head subequal in width to the thorax; black of head reduced to the following areas, which fuse with each other: (1) a broad area embodying the ocelli and antennal scrobes, (2) an area covering the genae, the vertex, and the occiput; these combined black areas surrounding two oval fulvous patches on the vertex, which converge mesad back of the ocelli, and two large round patches of fulvous back of the compound eyes. This color pattern closely resembles that on the heads of *C. rostrata* F. Smith, *C. lutzi*, new species, and *C. rufinoda terrialba*, new subspecies (species numbers 77, 68, 39, respectively).

Clypeal free border with six low but distinct denticles; clypeal process a low, truncate, compressed cone with the terminal margin emarginate; many short bristles covering the lateral clypeal lobes with fewer but stronger bristles on the medial lobe below the process; mandibles largely fulvous and with a single denticle on a very broad base; antennae normal in form with a fulvous scape and the more distal segments fulvous below and darker above.

Thorax black largely replaced with fulvous as follows: a solid band on the anterior portion of the pronotum, a semidivided band on the posterior margin of pronotum, two parallel patches on the mesoscutum, two large patches and two small spots on the scutellum, the metanotum, two large patches on the enclosure, most of the propodeum, two large irregular areas on the mesopleuron, small spots on the metapleuron, and most of the venter of the thorax; the

pronotum with two prominent lateral elevations; tegulae normal; enclosure ridged at approximately a 45° angle; mesosternal tubercle absent; legs largely fulvous but with prominent black to dark fuscous stripes on the dorsal surfaces of most leg segments except the tarsi; wings subhyaline but clouded with amber.

Abdomen black with wide bands of fulvous on terga 1, 2, 3, and 4, all of tergum 5, all of tergum 6 except the pygidium, and the entire venter except for small medial patches on sterna 2, 3, and 4; pygidium as illustrated (Figure 167c).

MALE.—Length 11 mm. Same general color and color pattern as on the female; punctation heavy and somewhat more sparse than average; pubescence average; body slender.

Head subequal in width to the thorax; color and color pattern close to that of the female; extension of the medial clypeal lobe without denticles, hair lobes extending over the entire lateral lobes; mandibles without denticles; antennae normal in form, ferruginous but slightly darker above, scape with a patch of fulvous.

Thorax color pattern much as on the female, the large patch of fulvous on the propodeum penetrated by an arm of black, giving an inverted comma shape to the patch; tegulae normal; enclosure smooth except for the medial groove; mesosternal tubercle absent; legs largely fulvous except for a strip above on all femora; wings as on the female.

Abdomen colored as on the female but without black on the venter; pygidium as illustrated (Figure 167e).

TYPES.—No type material of *C. simulans* Saussure was found at Vienna or Geneva by the writer in 1959. A headless female labeled "*simulans*," apparently in the handwriting of Saussure, was found at Geneva (Museum D'Histoire Naturelle). It was designated a neotype by the writer. The type-locality as given by Saussure is "Mexico Temperata." The original description and illustration (his figure 53) appears to be of a male as indicated. The above female appears to agree well with the original description and the illustration of the male.

A female at Vienna (Naturhistorisches Museum), apparently determined as *C. scapularis* by Schletterer, was designated a lectotype by the present writer in 1959. The type-locality as given by Schletterer is "Mexico, Orizaba." The above lectotype has the

following locality label: "Bilimek Mexico 1871 Orizaba."

A male apparently of the original series of *C. chrysogastra* determined by Schletterer is at Vienna (Naturhistorisches Museum). It was designated a lectotype by the present author in 1959. The original type-locality as given by Schletterer is "Orizaba, Cornuvacca." The locality label on the above lectotype is "Bilimek Mexico 1871 Orizaba."

**DISTRIBUTION.**—Southern Mexico and Central America. Specimens are as follows in addition to the above records:

**CENTRAL AMERICA: COSTA RICA:** 2 ♀, San Jual, 1928 (MV). **HONDURAS:** ♀, Tela (Jilamo farm) 25 May 1943 (THHu).

**MEXICO: MEXICO:** ♂, "Mex.". **VERACRUZ:** ♂, 12–22 August 1961 (R and KD).

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

### 79. *Cerceris stigmosalis* Banks

FIGURES 90, 168a–c

*Cerceris stigmosalis* Banks, 1916:64.—Stevens 1917:422.—Scullen 1951:1010; 1960:79; 1965a:343, 351, 506–508, fig. 95, 175a, b, c.—Carrillo and Gibson 1966:111.

*Cerceris fugatrix* Mickel, 1917a:335, 336; 1917b:452.—Scullen 1951:1008.

*Cerceris sayi* Banks, 1923:21.—Scullen 1951:1008.

*Cerceris stevensi* Banks, 1923:22.—Scullen 1951:1008.

**TYPES.**—The type male of *C. stigmosalis* Banks, taken from Fargo, N. Dak., September, on *Solidago* species (Stevens), is at the Museum of Comparative Zoology (13778). The type male of *C. fugatrix* Mickel, taken from Mitchell, Nebr., 14 August 1916 (C. E. Mickel), is at the University of Nebraska. The type female and allotype male of *C. sayi* Banks, taken from Steele, N. Dak., 13 July (Stevens), are at the Museum of Comparative Zoology (14706). The type female of *C. stevensi* Banks, taken from Steele, N. Dak. (Stevens), is at the Museum of Comparative Zoology (14707).

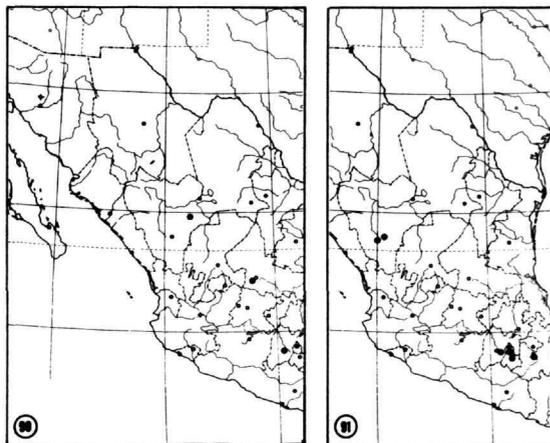
**DISTRIBUTION.**—This species, which occurs as far north as South Dakota and southern Minnesota and ranges south to Texas in the United States, has been taken on the central plateau area of Mexico as recorded below. Specimens in Mexico are as follows:

**MEXICO: DURANGO:** 3 ♀, 64 mi NE Durango, 6500 ft, 19 October 1957 (HAS). **SAN LUIS POTOSÍ:** 6 ♀, 4 ♂, 18 mi SW San Luis Potosí, 7300 ft, at *Baccharis glutinosa*, 1–

2 October 1957 (HAS). **MEXICO:** 3 ♀, Toluca, 26 June 1937 (GEB). **SONORA:** ♀, Esperanzo, June (CAB).

**PREY RECORD.**—None.

**PLANT RECORD.**—*Baccharis glutinosa* (San Luis Potosí).



FIGURES 90–91.—90, *C. stigmosalis* Banks; 91, *C. strigosa* Cameron.

### 80. *Cerceris strigosa* Cameron

FIGURES 91, 169a–e

*Cerceris strigosa* Cameron, 1890:110, pl. vii: figs. 5, 5a, b, c, d.—Dalla Torre, C. G., 1897:478.—Ashmead 1899:296.

**FEMALE.**—Length 10–11 mm. Black with light yellow markings; punctuation forming fine striae on the scutum, scutellum, and enclosure, those on the abdominal terga more shallow and sparse than normal; pubescence longer than normal on parts of the thorax.

Head subequal in width to the thorax; black except for large frontal eye patches and large patches on the medial and lateral lobes of the clypeus, all of which are light yellow; clypeal border with five subequal denticles; clypeal process in the form of a thin, narrow extension, terminally rounded and black in color on a broad base, which is yellow above and black below; mandibles with two small denticles fused at their bases; antenna normal in form, black and immaculate.

Thorax black except for a broken band on the pronotum, the metanotum, and large patches on the tegulae, all of which are light yellow; tegulae normal

in form; surface of the scutum, scutellum, and enclosure finely striated; mesosternal tubercles small but conspicuous; legs black except for narrow stripes of yellow on all tibiae; wings subhyaline but darker over the anterior half.

Abdomen black with medium bands of light yellow on terga 1 to 5; punctation shallow and sparse; two elongate light yellow patches on sternum 3; pygidium as illustrated (Figure 169c).

**MALE.**—Length 10 mm. Light yellow over the entire face below the antennal scrobes except the frons, which is black with a small patch of yellow above the epistomal suture; entire head otherwise black; clypeal margin with a broad extension on the medial lobe subequal in width to the epistomal suture, without denticles but lightly sinuate; hair lobes extending over most of the lateral lobes of the clypeus; mandibles without denticles but with a carina along the lower margin.

Thorax colored as on the female; sculpturing of the dorsal surface as on the female; pubescence longer than normal on much of the surface; tegulae normal; mesosternal tubercle absent; legs black except for the hind trochanter and stripes extending over all tibiae and onto the tarsi, all of which are light yellow; wings as on the female.

Abdomen with light yellow bands of medium width on all terga 1 to 6, an emarginate or broken band on sternum 3, and an evanescent small lateral spot on sternum 4; pygidium as illustrated (Figure 169e).

**TYPE.**—The type female of *C. strigosa* Cameron from Ciudad Durango, Mexico, is at the British Museum (21.1,440).

**DISTRIBUTION.**—Known only from south-central Mexico and the state of Durango. Specimens are as follows:

**MEXICO: DISTRITO FEDERAL:** ♀, Prto. [sic] de las Cruces, 1000 ft, 1 August 1962 (HEE). **DURANGO:** ♂, El Salto, 3 August 1937 (JMa); 4 ♂, same locality, 3 August 1961 (PDH). **MEXICO:** ♀, 18 mi E Santa Barbara, 30 June 1961 (GWB); 15 ♀, 69 ♂, 9 mi E Toluca, 9600 ft, 23 June 1963 (S and B); 2 ♀, 16 mi E of Toluca, at 9500 ft, and 20 mi E same locality at 8900 ft, 31 July 1962 (UKE). **MORELOS:** 9 ♂, mountains near Cuernavaca (JCC). **PUEBLA:** ♂, 13 mi S Puebla, 6900 ft, 25 June 1963 (S and B). **STATE UNKNOWN:** ♂, Meadow Valley (CTO); 4 ♀, Ciudad Californien, 8000 ft, (SFo).

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

### 81. *Cerceris thermophila* Schletterer

FIGURES 170a-c

*Cerceris thermophila* Schletterer, 1887:463, 504.—Cameron 1890:129.—Dalla Torre, C. G., 1887:478.—Ashmead 1899:296.

**FEMALE.**—Length 12 mm. Black with fulvous markings; punctation small and crowded; pubescence average.

Head about one-fifth wider than the thorax; black except for frontal eye patches, a large patch on the clypeal process, the base of the mandibles, a small evanescent spot back of the eyes, and much of the scape, all of which are fulvous; clypeal border with two prominent denticles widely spaced with a deep depression between them; clypeal process inverted scoop shaped with sides slightly converging distally, and terminal border slightly emarginate; mandibles with two small denticles; antennae normal in form, largely ferruginous, becoming darker distally.

Thorax black except for the scutellum, which has a variable amount of fulvous; tegulae fulvous; enclosure deeply ridged, with the ridges spreading distally; mesosternal tubercles absent; legs black to dark fuscous, becoming lighter distally; wings more clouded than usual.

Abdomen black except for an evanescent narrow fulvous band on tergum 1, a medium band of fulvous on terga 2 and 3, terga 4 and 5 entirely fulvous; venter with lateral patches on sterna 2 to 5, becoming larger on the more distal sterna; pygidium as illustrated (Figure 170c).

**MALE.**—Unknown.

*Cerceris thermophila* Schletterer is close to *C. clypeata tepaneca* Saussure in structure but color pattern is different.

**TYPE.**—No type of *C. thermophila* Schletterer was found at Vienna or Geneva by the writer in 1959. One female specimen so named by Schletterer at the Naturhistorisches Museum, Zoolische Abteilung, Vienna, was found and designated a lectotype by the writer in 1959. It carries the locality label: "Bilimek Mexico 1871."

**DISTRIBUTION.**—Known only from the type-locality and east-central Mexico. Specimens are as follows: 2 ♀, "Mexico"; ♀ Bilimek (state unknown), 1871; 4 ♀, Orizaba, Veracruz, 1862 (LB).

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

82. *Cerceris tolteca* Saussure

FIGURES 92a, b, 171a-f

*Cerceris tolteca* Saussure, 1867:94.—Schletterer 1887:504.—Cameron 1890:109, pl. VII: fig. 4, 4a, b, c.—Dalla Torre, C. G., 1897:478.—Ashmead 1899:296.—Scullen 1961:48; 1965a:512-514, figs. 98, 178a, b, c.  
*Cerceris cosmiocephala* Cameron, 1904:67.

**TYPES.**—The original type female of *C. tolteca* Saussure from Cuernavaca, Mexico, was not found by the author at Vienna in 1959. A female from Cuernavaca at the Museum d'Histoire Naturelle was designated a lectotype by the author. The holotype male of *C. cosmiocephala* Cameron, from San Marcos, Nicaragua (C. F. Baker), is at the British Museum (21.1,373).

**DISTRIBUTION.**—Widely recorded from the southwestern states through Mexico to Costa Rica, Central America. Specimens from Mexico and Central America are as follows:

**MEXICO:** BAJA CALIFORNIA (north): 2♀, Las Animas, Sierra Laguna, 12 October 1941 (R and B); ♀, Big Canyon, same locality, 13 October 1941 (R and B). CHIAPAS: 4♂, Suchiapa, 18 July 1957 (PDHjr); ♂, Tuxtla Gutierrez, 12 August 1963 (P and S). CHIHUAHUA: ♂, 10 mi N Chihuahua, 17 August 1965 (HEE); ♂, Concho, 22 July 1938 (LJL); 2♀, 9 mi S Hidalgo del Parral, 6 July 1967 (RCG, Ko, KL); 2♂, 12 mi W Hidalgo del Parral, 6200 ft, 14 July 1964 (C and P); ♀, Garcia, July 1931 (B and C); ♂, 12 mi NW Gran Morelos, 15 August 1950 (RES); ♂, Santa Clara Canyon, 5 mi W Parrita, 21 June 1956 (JWM, DDL). DURANGO: ♂, Nombre de Dios, 1 August 1951 (PDHjr); ♀, San Juan del Rio, 5200 ft, 30 July 1947 (Spi). GUANAJUATO: ♂, Guanajuato (ED). GUERRERO: ♀, 20 mi E Acapulco, 11 August 1962 (UKE); ♂, Chilpancingo, 6 July 1963 (FMP). JALISCO: ♀, 3♂, Ajijic, 8-9, 13 July 1966 (RWi); ♂, Chapala, 19 July 1963 (S and B); ♀, ♂, Guadalajara, 22 June, 22 August 1903 (Mc); ♀, 6♂, same locality (C); ♀, 2♂, 8 mi SW San Juan de las Lagos, 4 August 1954 (L, S, and M); 2♀, 3 mi SE Plan de Barrancas, 8 July 1963 (P and S); ♀, San Juan Lagos, 27 July 1951 (PDHjr); 2♂, "Jalisco," 1900 (LDi). MORELOS: ♂, 5 km N Alpuyeca, 3400 ft, 10 August 1962 (HEE); ♂, Cuautla, 5 July 1961 (FMP); ♂, same locality, 27 August 1961 (FMP); 18♂, 14 mi S Cuernavaca, 3600 ft, 28 August 1963 (S and GEB); ♂, 35 mi S Cuernavaca, 2600 ft, 4 August 1954 (UKE); 3♀, 2♂, Huajintlan, 22 August 1956 (R and KD); ♂, Matamoros, 12 August 1903 (WLT); ♂, Puente de Ixtla, 31 August 1962 (FMP); ♂, Tequesquitengo, 15 July 1961 (R and KD); ♀, Xochicalco, 4000 ft, 13 July 1961 (R and KD); ♀, 4 mi SW Yautapec, 3800 ft, 2 July 1961, on *Euphorbia* (CDM); ♀, 10♂, 7.3 mi S Yautapec, 3000 ft, 15-17 August 1962 (MGN, RR, Nau); ♂, 8 mi S Yautapec, 16 August 1962 (RR, NM). NAYARIT: ♀, ♂, Ahuacatlan, 18-

22 July 1951, at *Donellsmithia Hintonii* (PDH); 2♂, same locality and dates (HEE); 11♂, Arroyo Refelion, New Compostela, 8 August 1965 (HEE); ♂, 4 mi S Santa Isabel, 9 October 1950 (RFS); 3♂, Jesus Maria, 26 June, 27 July 1955 (BM); ♀, Tepic, 2-7 August 1947 (BM); ♂, same locality, 13 September 1957 (R and KD). NUEVO LEON: ♂, 50 mi SE Monterrey, 1700 ft, 13 October 1957 (HAS). OAXACA: 2♂, 7 mi NE Tehuantepec, 1300 ft, 9 July 1953 (UKE); ♂, 11 mi N junction Highways 190 and 185, 100 ft, 11 August 1963 (S and B). SAN LUIS POTOSÍ: ♂, 4 mi NE El Naranjo, 800 ft, 5 September 1962 (UKE); ♀, ♂, El Salto, 21 July, 4 September 1962, at Leguminosae (EO, R and M); ♂, same locality, 1700 ft, 15 July 1963 (UKE). SINALOA: ♂, 10 mi W Concordia, 30 October 1965 (GEB, ASB); ♂, 8 mi S Elota, 2 July 1963 (P and S); ♂, Mazatlan, 15-20 August 1962 (HEE). VERACRUZ: ♂, Acayucan, 23 October 1957 (R and KD); 2♂, 100 mi S Acayucan, 600 ft, 18 August 1963 (S and B); ♂, 20 mi SE Alvarado, 500 ft, 24 June 1961 (UKE); 4♀, 22♂, Minatitlan, 26 August-1 September 1961 (R and KD); ♂, 5 mi NE Tinajas, 18 August 1963 (P and S); ♂, Veracruz, 28 July-11 August 1956 (R and KD). YUCATAN: 5♀, Chichen Itza, 29 June (JB); 2♂, Merida, 22-25 July 1962 (HEE); ♂, Temax (Gau); ♀, ♂, N Yucatan (Gau).

**CENTRAL AMERICA:** COSTA RICA: ♂, Coco, Guanacaste Province, 25 ft, 5 August 1962 (W and CDM); 44♂, Liberia, 400 ft, 7 and 16 mi SE Liberia, 300-400 ft, 3, 8, and 12 mi NW Liberia, 400 ft, 27-29 July 1963 (S and B); ♀, 2.5 mi W Liberia, 500 ft, 20 July 1961 (MEI); ♂, Liberia, Guanacaste Province, 6 August 1964 (GCE); 3♂, same locality and date (MN); ♂, Ototina, 1 May 1924 (JBr); ♂, Playas del Coco, Guanacaste Province, 5 August 1964 (R and GR). EL SALVADOR: 18♂, 1 to 3 mi NW and W Quezaltepeque, 25, 27, 30 June, 3, 5-6, 14, 17 July, 4, 24 August 1961 (MEI); 4♀, 43♂, Quezaltepeque, 500 ft, 21, 23 June, 1, 3, 6, 16-17 July, 2, 6 August 1963 (C and I); 14♂, same locality, 3 July 1963 (S and B). GUATAMALA: ♂, Variedades, 500 ft, 28 August 1947 (FJ, C and PV). HONDURAS: ♂, 18 mi NW Choluteca, 350 ft, 6 July 1963 (S and B); 2♂, Tegucigalpa (FJD). NICARAGUA: ♂, Granada (CFB); ♀, ♂, La Calera, 16, 17 August 1954 (WPF); ♂, San Marcos (B).

**PREY RECORD.**—None.

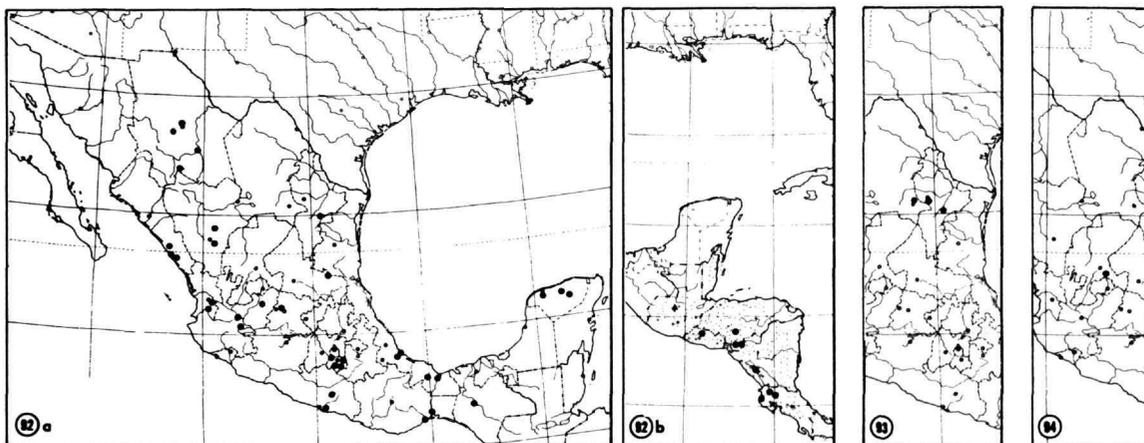
**PLANT RECORD.**—*Donellsmithia Hintonii* (Nayarit), *Euphorbia* species (Morelos).

83. *Cerceris trichiosoma* Cameron

*Cerceris trichiosoma* Cameron, 1890:127-128.—Dalla Torre, C. G., 1897:478.—Ashmead 1899:296.

**MALE.**—Length 10 mm. Black with cream-colored markings.

Head black except for the cream-colored face; hair lobes somewhat wider than average; the three marginal denticles of the medial lobe of the clypeus closer



FIGURES 92a-94.—92a, 92b, *C. tolteca* Saussure; 93, *C. verticalis* F. Smith; 94, *C. zacatecas*, new species.

together than normal and with a cluster of four silvery bristles between the denticles.

Thorax black except for a widely divided band on the pronotum, a patch on the tegulae, and a narrow band on the scutellum, all of which are cream colored; mesosternal tubercles absent; legs black except for considerable yellow on the mid- and hind coxae and trochanters; enclosure pitted laterally.

Abdomen black except for a band on tergum 1, narrow bands on terga 3, 4, 5, and 6, narrow bands on sterna 2, 3, 4, 5, and 6.

**TYPES.**—The male type of *C. trichiosoma* Cameron, from Ciudad Durango, Mexico, is at the British Museum (21.1,434).

**DISTRIBUTION.**—Known only from the above type-locality. No specimens of this species have been identified by the writer.

**PREY RECORD.**—None.

**PLANT RECORD.**—None.

#### 84. *Cerceris verticalis* F. Smith

FIGURES 93, 172a-f

*Cerceris verticalis* F. Smith, 1856:466.—Cresson 1865:130.—Packard 1866:64.—Cresson 1887:282.—Schletterer 1887:505.—Dalla Torre, C. G., 1897:481.—Ashmead 1899:296.—Scullen 1951:1010; 1961:48; 1965a:344, 349, 515-517, figs. 100, 180a, b, c.

*Cerceris gnara* Cresson, 1872:229; 1887:282.—Schletterer 1887:483.—Dalla Torre, C. G., 1897:462.—Ashmead 1899:295.—Banks 1912:22.—Mickel 1917b:449.—Scullen 1951:1010; 1961:48.

*Cerceris firma* Cresson, 1872:229, 1887:282.—Schletterer 1887:491.—Dalla Torre, C. G., 1897:460.—Ashmead 1899:295.—Banks 1912a:14, 20.—Scullen 1951:1007; 1960:78.

**TYPES.**—The type female of *C. verticalis* F. Smith, from Georgia, is at the British Museum (21.1,431). The type male of *C. gnara* Cresson and the type female of *C. firma* Cresson, both from Texas, are at the Academy of Natural Sciences of Philadelphia (1938 and 1945, respectively).

**DISTRIBUTION.**—Southeastern United States into Texas and in northeastern Mexico. Specimens from Mexico are as follows:

MEXICO: COAHUILA: ♂, 15 mi N Saltillo, 4450 ft, 9 September 1963 (S and B). NUOVO LEÓN: ♂, Apodaca, 10 March 1954 (JA); ♂, 5 mi S Monterrey, 1700 ft, 13 October 1957 (HAS); ♀, ♂, Monterrey, 5 March 1954 (JA). TAMAULIPAS: ♂, 15 mi S Matamoros, 6 June 1961 (UKE).

**PREY RECORD.**—None.

**PLANT RECORD (in Mexico).**—None.

#### 85. *Cerceris zacatecas*, new species

FIGURES 94, 173a-c

**FEMALE.**—Length 12 mm. Black with creamy-white markings and limited amber on the hind femori; punctuation and pubescence average.

Head slightly wider than the thorax; black except for very large frontal eye patches, the entire clypeus except the margin, a spot on the frons, the basal half of the mandibles, and a large spot back of the

eyes, all of which are creamy white; clypeal process somewhat truncate, sides converging, its free terminal border with three low denticles, the lateral two little more than carina; mandibles with two small subequal denticles; antennae normal in form, largely black to dark fuscous, the basal three segments of the funicle more fuliginous.

Thorax black except two widely separated patches on the pronotum, the metanotum and the tegulae, all of which are creamy white; tegulae low and smooth; enclosure smooth except for the lateral angles, which are lightly rugose, and a light medial groove; mesosternal tubercles absent; legs black except the distal ends of the first two femora, most of the hind femora, which are largely amber, the tibiae, which are largely yellow with some amber, and all tarsi, which are largely amber; wings subhyaline with a darkened area along the anterior distal end.

Abdomen black with emarginate creamy-white bands on terga 2, 3, 4, and 5; venter black with variable creamy-white patches on sterna 3 and 4; pygidium as illustrated (Figure 173c).

*Cerceris zacatecas* is close to *C. calochorti hidalgo*, new subspecies, in general appearance, but the clypeal processes are quite different.

MALE.—Unknown.

TYPES.—The type female of *C. zacatecas*, taken 9 miles north of Ojo Caliente, Zacatecas, Mexico, 12 May 1962 (F. D. Parker), is at the University of California at Davis, Calif. Paratypes are as follows:

MEXICO: ZACATECAS: 2♀, 9 mi N Ojo, Caliente, 12 May 1962 (FDP).

DISTRIBUTION.—Known only from the type-locality.

PREY RECORD.—None.

PLANT RECORD.—None.

### Literature Cited

- Ashmead, W. H.  
1890. On the Hymenoptera of Colorado. *Colorado Biological Association Bulletin*, 1: 47 pages.  
1894. Habits of the Aculeate Hymenoptera, III. *Psyche*, 7:59-66.  
1899. Classification of the Entomophilous Wasps, or the Superfamily Sphegoidea. *Canadian Entomologist*, 31:145-155, 161-174, 212-225, 238-251, 291-300, 345-357.
- Banks, Nathan  
1912. Notes on the Eastern Species of *Cerceris*. *Annals of the Entomological Society of America*, 5:11-30, 2 plates.
1913. New American Philanthidae. *Bulletin of the American Museum of Natural History*, 32:421-425, plate 67.  
1916. Two New Species of *Cerceris* (Hymenoptera: Philanthidae). *Entomological News*, 27:62-65.  
1917. New Fossorial Hymenoptera. *Bulletin of the Museum of Comparative Zoology*, 61:97-115.  
1919. New Psammocharidae and Philanthidae. *Canadian Entomologist*, 51:81-85.  
1947. Synopsis of West Coast *Cerceris* (Hymenoptera: Cerceridae). *Psyche*, 54: 35 pages.
- Bequaert, J.  
1928. The Diplopterous Wasps of Fabricius, in the Banksian Collection at the British Museum. *Bulletin of the Brooklyn Entomological Society*, 23: 53-63.
- Bodkin, G. E.  
1917. Notes on some British Guiana Hymenoptera (Exclusive of the Formicidae). *Transactions of the Entomological Society of London*, 1917:297-321, plates XXI-XXIII, 1 map.
- Bridwell, J. C.  
1898. A List of Kansas Hymenoptera. *Transactions of the Kansas Academy of Science*, 16:203-211.
- Britton, W. E.  
1920. Check-list of the Insects of Connecticut. *Connecticut State Geological Natural History Survey Bulletin*, 31: 397 pages.
- Cameron, Peter  
1888-1900. Hymenoptera, volume 2. Volume 34 in Godman and Salvin, *Biologia Centralia-Americana*.  
1904. New Hymenoptera Mostly from Nicaragua. In C. F. Baker, editor, *Invertebrata Pacifica*, 1:46-691.
- Carrillo S., José Luis, Alejandro Ortega C., and William W. Gibson  
1966. Lista de insectos en la colección entomológica del Instituto Nacional de Investigaciones Agrícolas. Supplement 1 to Gibson and Carrillo, *Lista de insectos en la colección entomológica de la Oficina de Estudios Especiales*, S. A. G. 133 pages.
- Cartwright, O. L.  
1929. The Maise Billbug in South Carolina (*Calendra maidis* Chittenden). *South Carolina Agricultural Experiment Station Bulletin* 257:31.
- Cheesman, L. Evelyn  
1929. Hymenoptera Collected on the St. George Expedition in Central America and the West Indies. *Entomological Society of London*, 1929:141-154.
- Cockerell, T. D. A.  
1897. New Hymenoptera from New Mexico, U.S.A. *Entomologist*, 30:135-138.  
1901. Flower and Insect Records from New Mexico. *Entomological News*, 12:38-43.
- Cresson, Ezra T.  
1865. Monograph of the Philanthidae of North America. *Proceedings of the Entomological Society of Philadelphia*, 5:85-132.

- 1872-3. Hymenoptera Texana. *Transactions of the American Entomological Society*, 4:153-292.
1875. Report upon the Collections of Hymenoptera Made in Portions of Nevada, Utah, Colorado, New Mexico and Arizona During the Years 1872 and 1874. Chapter 7 in volume 5 (Zoology) of *Geographical and Geological Explorations and Surveys West of the One Hundredth Meridian*, pages 707-728, plates 33-34.
1887. Synopsis of the Families and Genera of Hymenoptera of America North of Mexico, Together with a Catalogue of the Described Species, and Bibliography. *Transactions of the American Entomological Society*, supplemental volume: 351 pages.
- Cresson, E. T., Jr.  
1928. The Types of Hymenoptera in the Academy of Natural Sciences of Philadelphia Other Than Those of Ezra T. Cresson. *Memoirs of the American Entomological Society*, 5: 90 pages.
- Dahlbom, Andrea Gustavo  
1845. *Hymenoptera Europaea praecipue Borealia* . . . . Volume 1. Berolini.
- Dalla Torre, C. G.  
1897. Fossores (Sphegidae). In *Catalogus Hymenopterorum Hucusque Descriptorum Systematicus et Synonymicus*, 8:449-481.
- Dalla Torre, K. W. von  
1890. Hymenopterologische Notizen. *Wiener Entomologische Zeitung*, 9:199-204.
- Davidson, Jerry M.  
1970. Unpublished thesis. Oregon State University.
- Fox, William J.  
1895. Third Report on Some Mexican Hymenoptera, Principally from Lower California. *Proceedings from the California Academy of Science*, series 2, 5:260-272.
- Gibson, William W., and José Luis Carrillo S.  
1959. *Lista de insectos en la colección entomológica de la Oficina de Estudios Especiales, S. A. G.* Programa Cooperativo de Agricultura Entre la Secretaría de Agricultura y Gadería y la Fundación Rockefeller, 9: 254 pages.
- Guérin-Méneville, F.  
1845. Insects. Volume 7 in Cuvier, *Inconographie du règne animal*.
- Guiglia, D.  
1948. I. Tipi di imenotteri del Guérin esistenti nelle collezione del Museo di Genova. *Annali del Museo Civico di Storia Naturale*, 63:175-179.
- Hendrickson, George O.  
1930. Studies in the Insect Fauna of Iowa Prairies. *Iowa State Journal of Science*, 4:49-175, plates 1, 2.
- Johnson, Charlott, and Ruth Ledig  
1918. Early Specimens of Hymenoptera from the Claremont-Leguna Region. *Journal of Entomological Zoology*, 10:23-26.
- Krombein, Karl V.  
1952. Biological and Taxonomic Observations on the Wasps in a Coastal Area of North Carolina (Hymenoptera: Aculeata). *Wasmann Journal of Biology*, 10:257-341.
1953. Kill Devil Hills Wasps, 1952 (Hymenoptera: Aculeata). *Proceedings of the Entomological Society of Washington*, 55:113-135.
1954. A List of Wasps Collected in Florida, March 29 to April 5, 1953, with Biological Annotations (Hymenoptera: Aculeata). *Proceedings of the Entomological Society of Washington*, 56:225-236.
- 1958a. Hymenoptera of America North of Mexico. *U. S. Department of Agriculture Monograph*, 2(supplement 1): 305 pages.
- 1958b. Biological Notes on Some Wasps from Kill Devil Hills, North Carolina, and Additions to the Faunal List (Hymenoptera: Aculeata). *Proceedings of the Entomological Society of Washington*, 60:97-110.
- 1960a. Biological Notes on Several Southwestern Ground-Nesting Wasps (Hymenoptera: Sphecidae). *Bulletin of the Brooklyn Entomological Society*, 55: 75-79.
- 1960b. Life History and Behavioral Studies of Solitary Wood- and Ground-Nesting Wasps and Bees in Southeastern Arizona. *Year Book of American Philosophical Society*, 1960:299-300.
- Latreille, P. A.  
1802. *Histoire naturelle, générale et particulière, des crustacés et des insectes*. Volume 3.
- Le Conte, John E.  
1883. *The Complete Writings of Thomas Say on the Entomology of North America*. 2 volumes.
- Linsley, E. G., and J. W. MacSwain  
1956. Some Observations on the Nesting Habits and Prey of *Cerceris californica* Cresson (Hymenoptera: Sphecidae). *Annals of the Entomological Society of America*, 49:71-84.
- Mickel, C. E.  
1916. New Species of Hymenoptera of the Superfamily Sphecoidea. *Transactions of the American Entomological Society*, 42:399-434.
- 1917a. New Species of Sphecoidea from the Central and Western States. *Nebraska University Studies*, 17: 319-341.
- 1917b. A Synopsis of the Sphecoidea of Nebraska (Hymenoptera). *Nebraska University Studies*, 17: 342-456.
- Packard, A. S.  
1866-7. Revision of the Fossorial Hymenoptera of North America, I: Crabronidae and Nyssonidae. *Proceedings of the American Entomological Society*, 6:37-115, 353-444.
- Patton, W. H.  
1880. Notes on the Philanthinae. *Proceeding of the Boston Society of Natural History*, 20:397-405.

- Rau, Phil  
 1928. Field Studies in the Behavior of the Non-social Wasps. *Transactions of the Academy of Science of St. Louis*, 25:319-489.  
 1933. *The Jungle Bees and Wasps of Barro Colorado Island*. Published by the author.
- Robertson, Charles  
 1887. Insect Relations of Certain Asclepiads, I. *Botanical Gazette*, 12:207-216, 244-250, plate 12.  
 1889. Flowers and Insects, III. *Botanical Gazette*, 14: 297-304.  
 1890. Flowers and Insects, V. *Botanical Gazette*, 15: 199-204.  
 1892a. Flowers and Insects: Labiatae. *Transactions of the Academy of Science of St. Louis*, 6:101-131.  
 1892b. Flowers and Insects. *Botanical Gazette*, 17(7):56-71; (8):173-179; (9):269-276.  
 1894a. Flowers and Insects: Rosaceae and Compositae. *Transactions of the St. Louis Academy of Science*, 6:435-480.  
 1894b. Flowers and Insects, XII. *Botanical Gazette*, 19: 103-112.  
 1896. Flowers and Insects, XVII. *Botanical Gazette*, 22:154-165.
- Rohwer, S. A.  
 1908. New Philanthid Wasps. *Canadian Entomologist*, 40:322-327.  
 1912. Descriptions of New Species of Wasps in the U.S. National Museum. *Proceedings of the U.S. National Museum*, 41:447-478.  
 1914. Vespid and Sphecoid Hymenoptera Collected in Guatamala By W. P. Cockerell. *Proceedings of the U.S. National Museum*, 47:513-523.  
 1917. A Report on a Collection of Hymenoptera (Mostly from California) Made by W. M. Giffard. *Proceedings of the U.S. National Museum*, 53: 233-249.
- Saussure, Henri L. F. de  
 1867. Hymenoptera: Familien der Vespiden, Sphegiden, Pompiliden, Crabroniden und Heterogynen. Volume 2 of Band II of Zoologischer Theil in *Reise der . . . Fregatte Novara*, pages 87-102, plate iv.
- Say, Thomas  
 1823. A Description of Some New Species of Hymenopterous Insects. *Western Quarterly Reporter*, 2(1):71-82.
- Schletterer, August  
 1887. Die Hymenopteran—Gattung *Cerceris* Latr. mit Vorzugsweiser Berücksichtigung der Paläarktischen Arten. *Zoologische Jahrbucher, Zeitschr. System.* 2:349-510.
- Scullen, Herman A.  
 1942. Notes on the Synonymy in the Genus *Cerceris*, I. *Pan-Pacific Entomologist*, 8:187-190.  
 1949. Identification of *Cerceris clypeata* Dahlbom. *Pan-Pacific Entomologist*, 25:71.  
 1951. Tribe Cercerini. In Muesebeck, Krombein, and Townes, Hymenoptera of America North of Mexico, *U.S. Department of Agriculture Monograph*, 2:1004-1013.
1960. Synonymical Notes on the Genus *Cerceris*, II (Hymenoptera: Sphecidae). *Pan-Pacific Entomologist*, 36:75-80.  
 1961. Synonymical Notes on the Genus *Cerceris*, III (Hymenoptera: Sphecidae). *Pan-Pacific Entomologist*, 37:45-49.  
 1962. Synonymical Notes on the Genus *Cerceris*, IV (Hymenoptera: Sphecidae). *Pan-Pacific Entomologist*, 38:57-68.  
 1965a. Review of the Genus *Cerceris* in America North of Mexico (Hymenoptera: Sphecidae). *Proceedings of the U.S. National Museum*, 116 (3506):333-548.  
 1965b. Synonymical Notes on the Genus *Cerceris*, V (Hymenoptera: Sphecidae). *Entomological News*, 76(10):272-274.  
 1968a. Cercerini Collection Notes, II (Hymenoptera: Sphecidae). *Entomological News*, 79:154-158, 8 figures.  
 1968b. A Revision of the Genus *Eucerceris* Cresson (Hymenoptera: Sphecidae). *U.S. National Museum Bulletin*, 268: 97 pages.  
 1969. Notes on the Taxonomic Status of *Cerceris tepaneca* Saussure and *C. sextoides* Banks (Hymenoptera: Sphecoides). *Entomological News*, 80: 283-284.
- Scullen, H. A., and Janet L. Wold  
 1969. Biology of Wasps of the Tribe Cercerini, with a List of the Coleoptera Used as Prey. *Annals of the Entomological Society of America*, 62:209-214.
- Smith, Frederick  
 1856. *Catalogue of Hymenopterous Insects in the Collection of the British Museum*. 4:436-467.  
 1873. Descriptions of New Species of Fossorial Hymenoptera in the Collection of the British Museum, and of a Species of the Rare Genus *Iswara* Belonging to the Family Dorylidae. *Annals and Magazine of Natural History*, series 4, 12:251-260, 291-300, 402-415.
- Smith, Harry S.  
 1908. The Sphegoidea of Nebraska. *Nebraska University Studies*, 8:323-410.
- Smith, John B.  
 1900. Insects of New Jersey. *New Jersey State Board of Agriculture, 27th Annual Report, 1899*, supplement.  
 1910. A Report of the Insects of New Jersey. *New Jersey State Museum Annual Report, 1909*.
- Spinola, M. Maximilien  
 1841. Hyménoptères, recueillis a Cayenne en 1839 per M. Leprieur, pharmacien de la Marine Royale. *Annales de la Société Entomologique de France*, 10:85-149.
- Stevens, O. A.  
 1917. Preliminary List of North Dakota Wasps Exclusive of Eumenidae. *Entomological News*, 28: 419-423.

## Strand, Embrik

1910. Beiträge zur Kenntnis der Hymenopterern Fauna von Paraguay auf Grund der Sammlungen und Beobachtungen von Prof. J. D. Anisits, I-VI: Unter Mitwirkung Mehrerer Spezialisten. *Zoologische Jahrbücher*, 29:125-242.

## Strandtmann, Russell W.

1945. Observations on the Nesting Habits of Some Digger Wasps. *Annals of the Entomological Society of America*, 38:305-313.

## Taschenberg, E.

1875. Nyssonidae und Crabronidae des Zoologischen Museums der Hiesigen Universität. *Zeitschrift Gesammten Naturwissenschaften*, 45:388-409.

## Viereck, H. L.

1903. Maryland Hymenoptera (Aculeata). *Entomological News*, 14:119-123.

1906. Notes and Descriptions of Hymenoptera from the Western United States. *Transactions of the American Entomological Society*, 32:173-247.

1916. The Hymenoptera, or Wasp-like Insects of Connecticut. *State Geologic Natural History Survey Bulletin*, 22.

## Viereck, H. L., and T. D. A. Cockerell

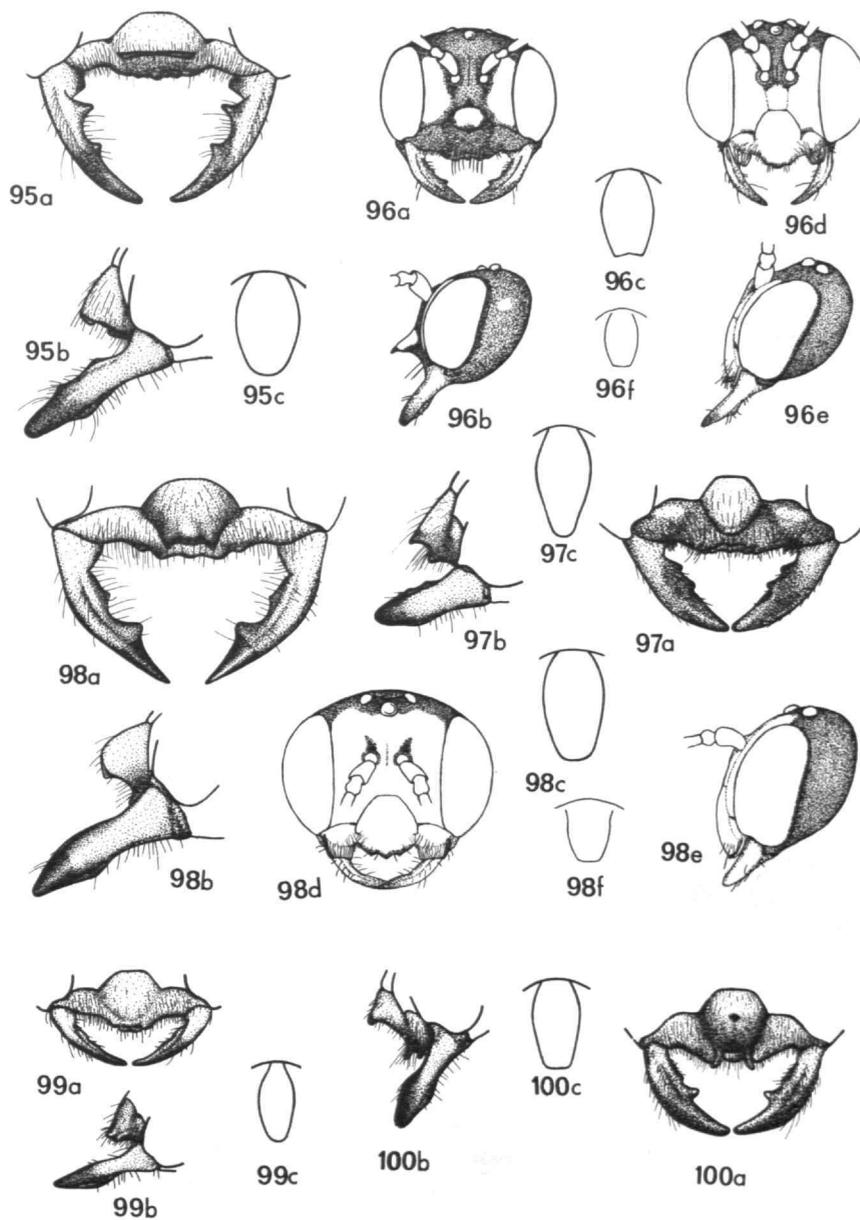
1904. The Philanthidae of New Mexico, II. *Journal of the New York Entomological Society*, 12:129-146.

## Wasbauer, M. S.

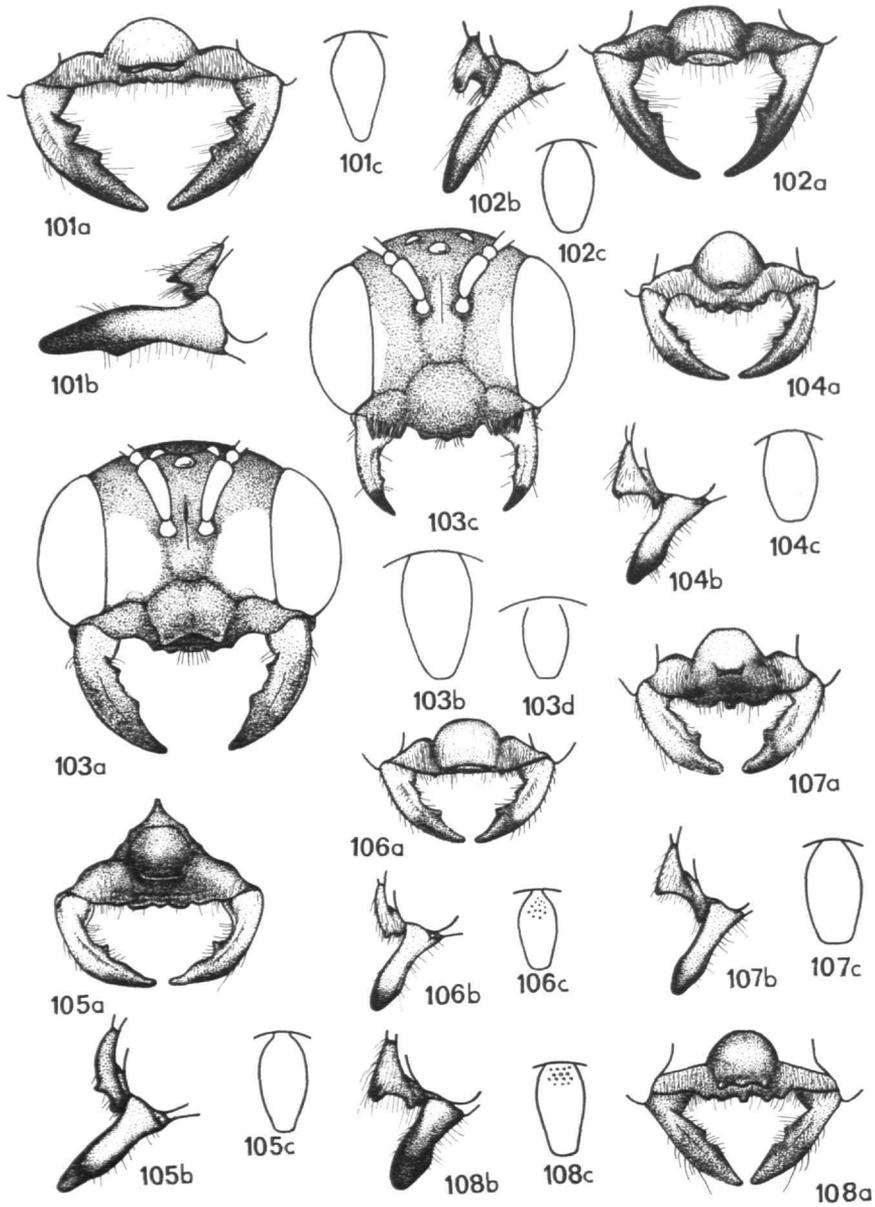
1957. A New Prey Record for the Genus *Cerceris*. *Pan-Pacific Entomologist*, 33:131.

## Werner, Floyd G.

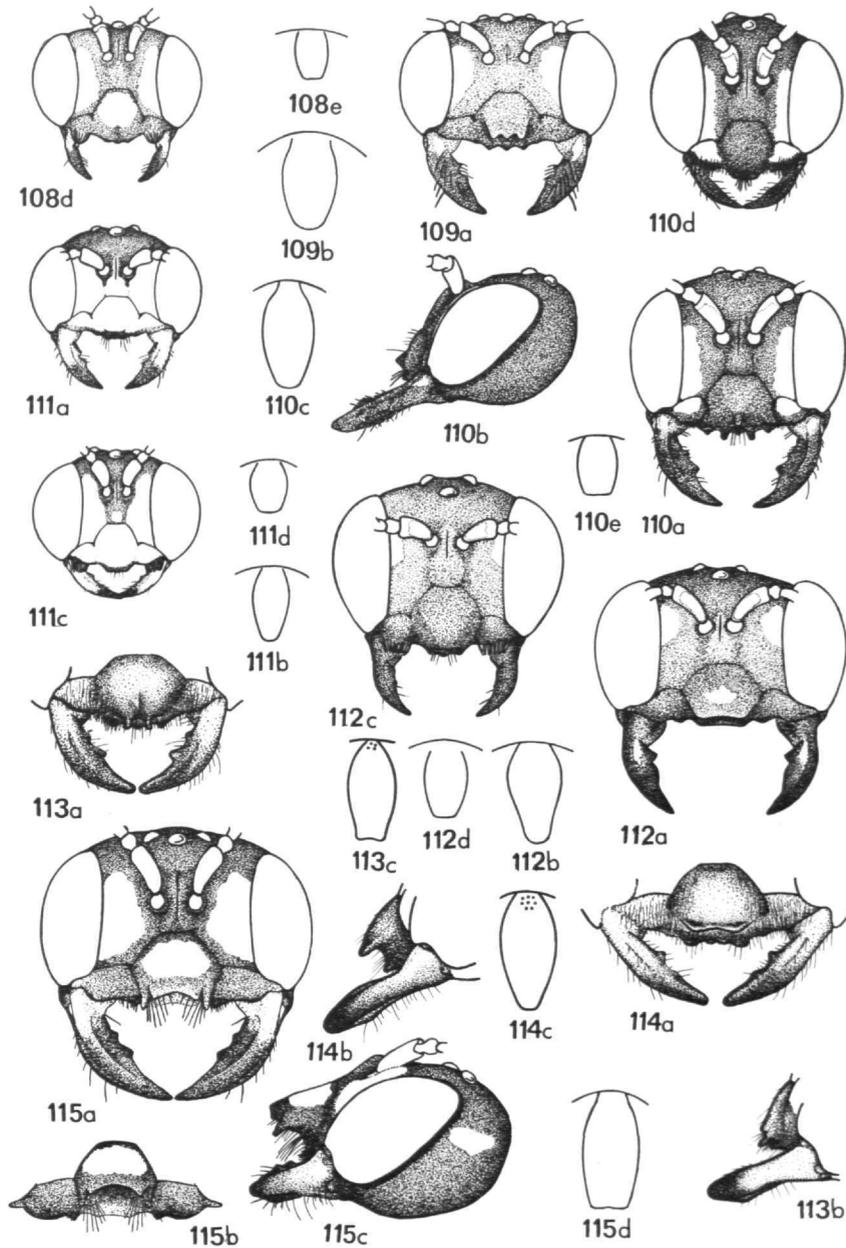
1960. A Note on the Prey and Nesting Site of *Cerceris truncata* Cameron (Hymenoptera: Sphecidae). *Psyche*, 67:43-44.



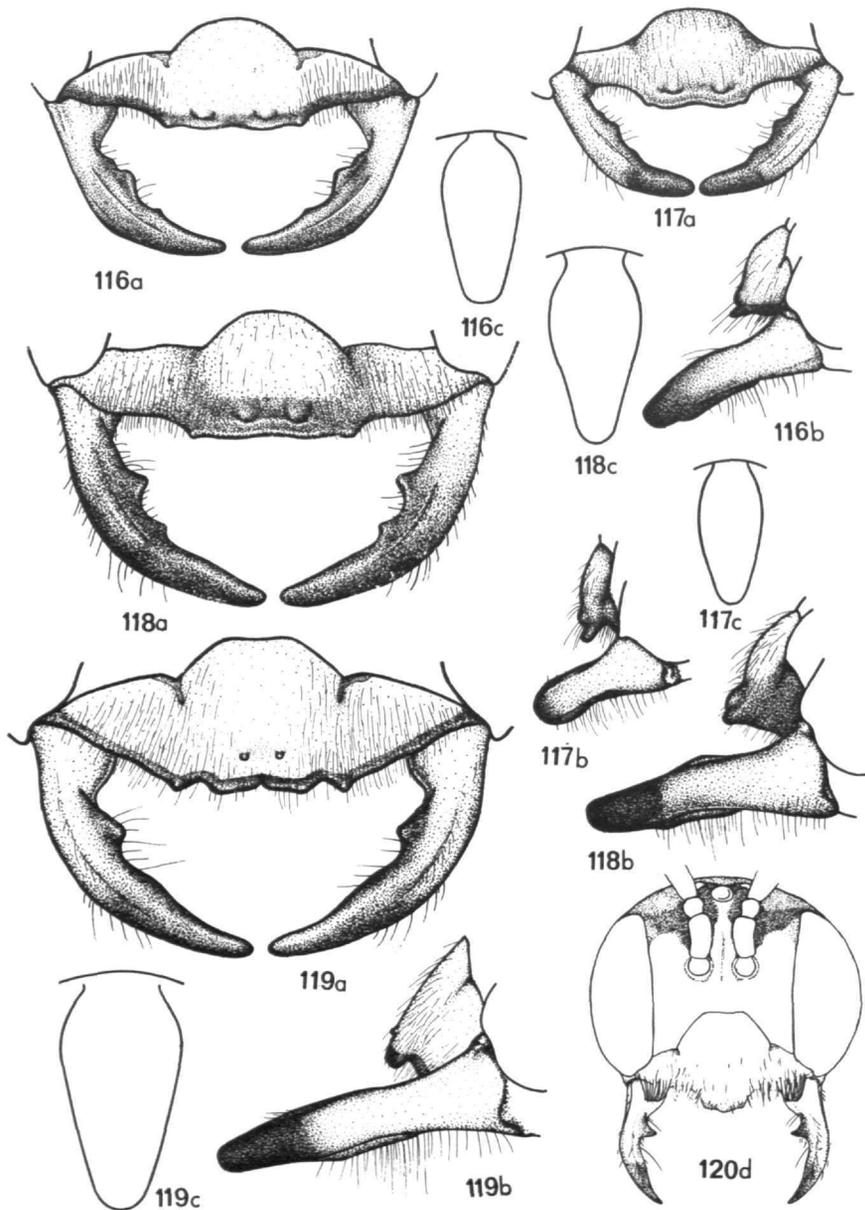
FIGURES 95-100.—95, *Cerceris acanthophila* Cockerell (*a*=♀ lower face, *b*=♀ lower profile, *c*=♀ pygidium); 96, *C. alamos*, new species (*a*=♀ face, *b*=♀ profile, *c*=♀ pygidium, *d*=♂ face, *e*=♂ profile, *f*=♂ pygidium); 97, *C. argia* Mickel (*a*=♀ lower face, *b*=♀ lower profile, *c*=♂ pygidium); 98, *C. bridwelli* Scullen (*a*=♀ lower face, *b*=♀ lower profile, *c*=♀ pygidium, *d*=♂ face, *e*=♂ profile, *f*=♂ pygidium); 99, *C. butleri* Scullen (*a*=♀ lower face, *b*=♀ lower profile, *c*=♀ pygidium); 100, *C. conifrons* Mickel (*a*=♀ lower face, *b*=♀ lower profile, *c*=♀ pygidium).



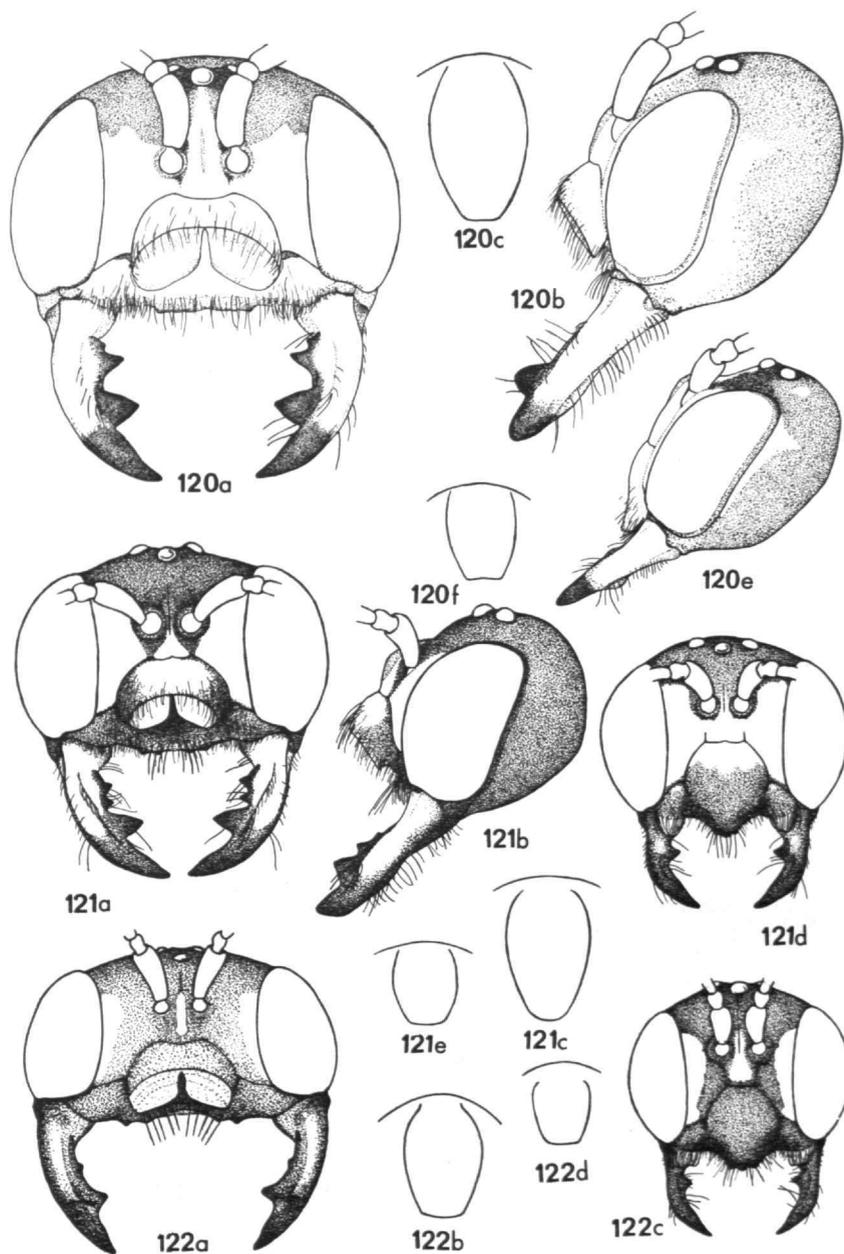
FIGURES 101-108c.—101, *Cerceris convergens* Viereck and Cockerell (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 102, *C. crandalli* Scullen (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 103, *C. cribrosa* Spinola (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium); 104, *C. crotonella* Viereck and Cockerell (*a* = ♀ lower face, *b* = ♀ profile, *c* = ♀ pygidium); 105, *C. echo* Mickel (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 106, *C. finitima finitima* Cresson (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 107, *C. irene* Banks (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 108, *C. kennicotti* Cresson (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium).



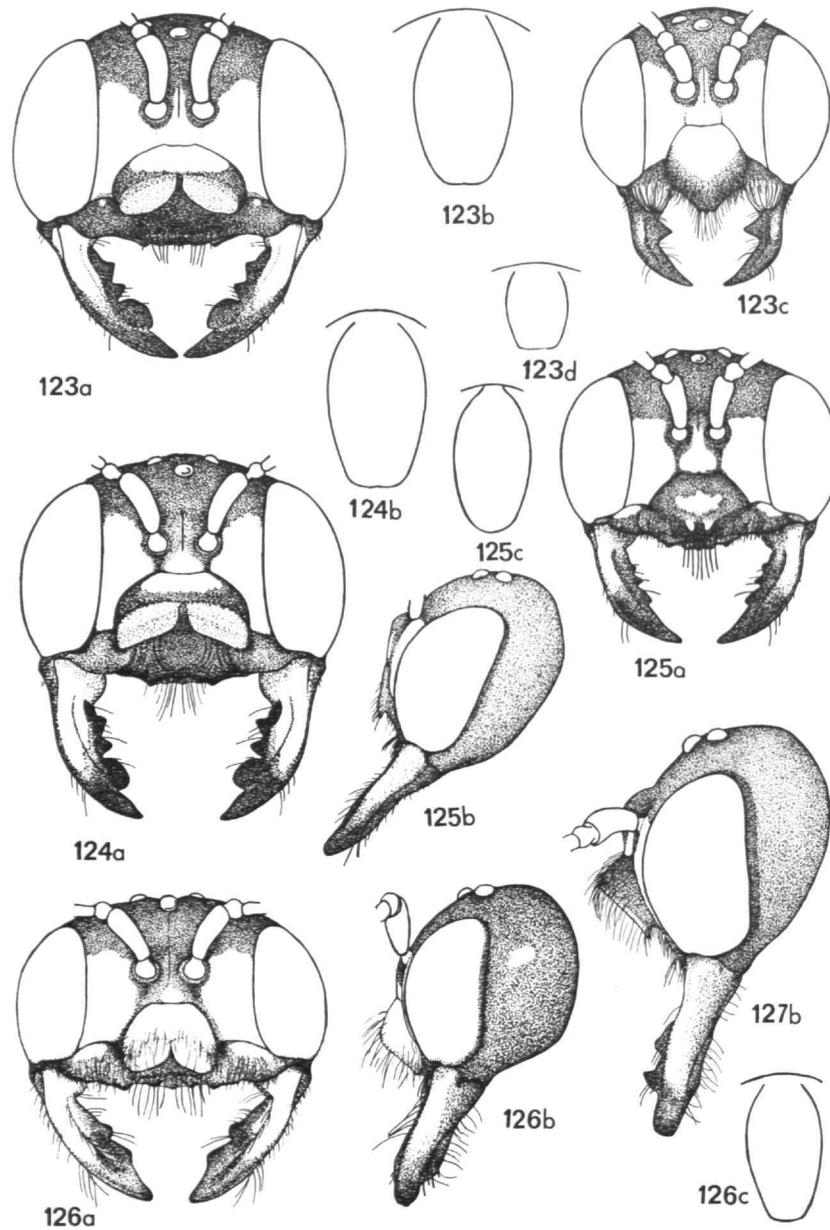
FIGURES 108d-115.—108, *Cerceris kennicottii kennicottii* Cresson ( $d = \delta$  face,  $e = \delta$  pygidium); 109, *C. k. zapoteca* Saussure ( $a = \text{♀}$  face,  $b = \text{♀}$  pygidium); 110, *C. marginula* Dalla Torre ( $a = \text{♀}$  face,  $b = \text{♀}$  profile,  $c = \text{♀}$  pygidium,  $d = \delta$  face,  $e = \delta$  pygidium); 111, *C. obregon*, new species ( $a = \text{♀}$  face,  $b = \text{♀}$  pygidium,  $c = \delta$  face,  $d = \delta$  pygidium); 112, *C. parkeri*, new species ( $a = \text{♀}$  face,  $b = \text{♀}$  pygidium,  $c = \delta$  face,  $d = \delta$  pygidium); 113, *C. rufinoda rufinoda* Cresson ( $a = \text{♀}$  lower face,  $b = \text{♀}$  lower profile,  $c = \text{♀}$  pygidium); 114, *C. truncata* Cameron ( $a = \text{♀}$  lower face,  $b = \text{♀}$  lower profile,  $c = \text{♀}$  pygidium); 115, *C. zumpango*, new species ( $a = \text{♀}$  face,  $b = \text{♀}$  clypeus,  $c = \text{♀}$  profile,  $d = \text{♀}$  pygidium).



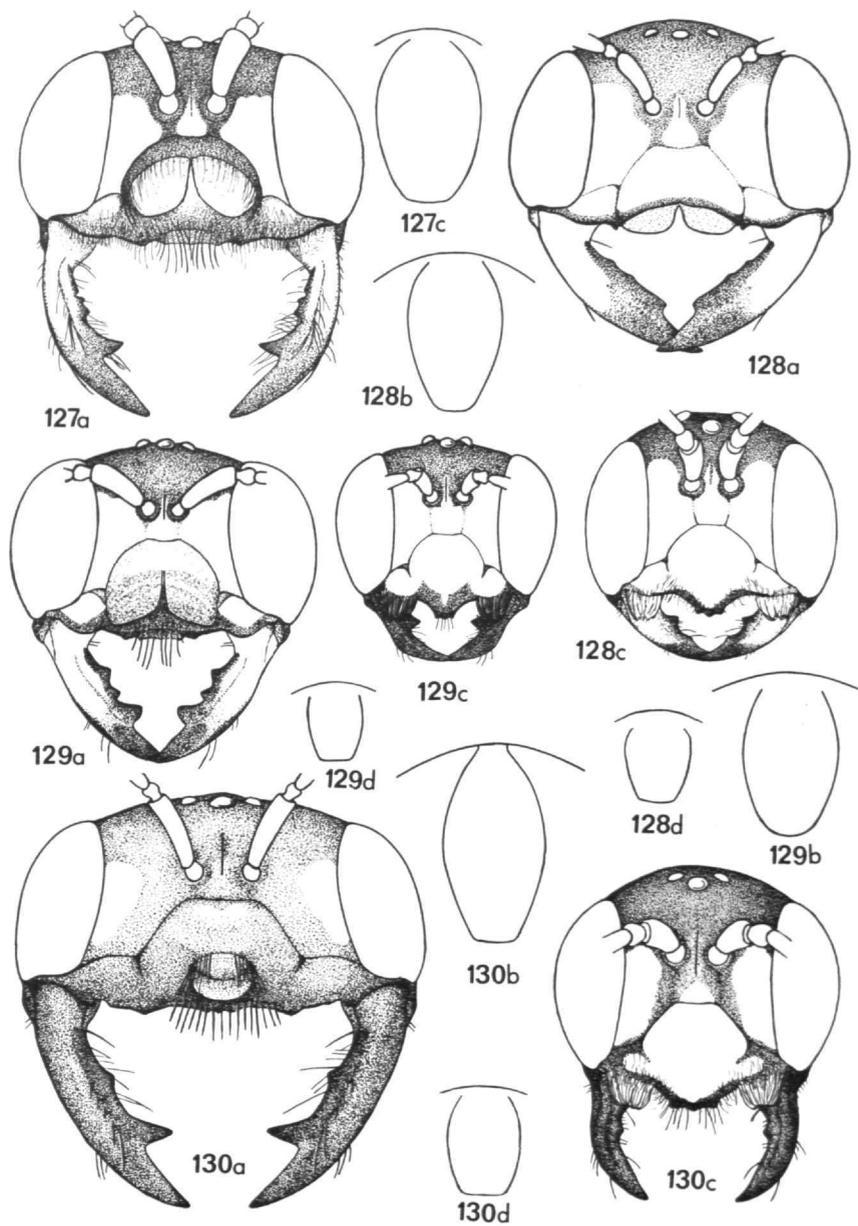
FIGURES 116-120 (in part).—116, *Cercheris californica californica* Cresson (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 117, *C. dilatata dilatata* Spinola (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 118, *C. fumipennis* Say (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 119, *C. grandis grandis* Banks (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 120, *C. cochisi* Scullen (*d* = ♂ face).



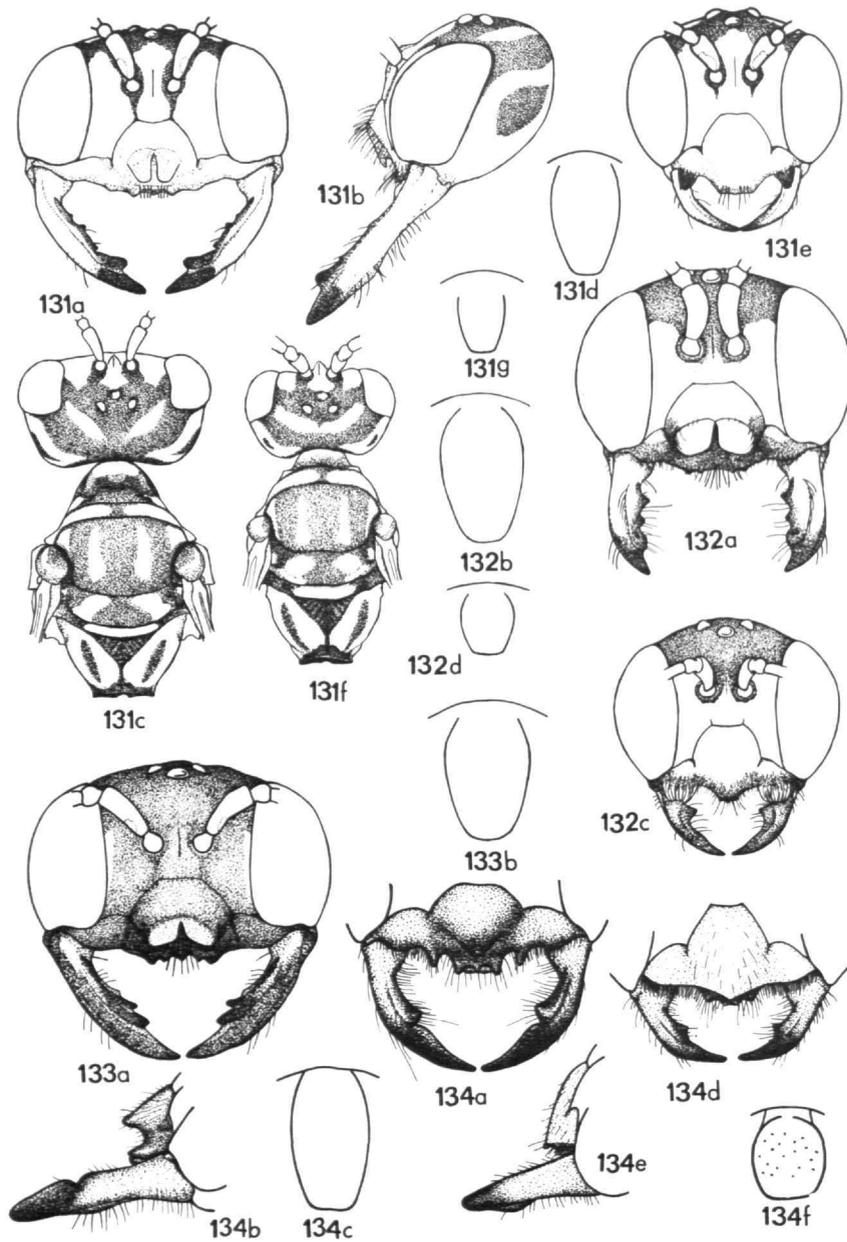
FIGURES 120(in part)-122.—120, *Cercheris cochisi* Scullen (*a*=♀ face, *b*=♀ profile, *c*=♀ pygidium, *e*=♂ profile, *f*=♂ pygidium); 121, *C. compacta compacta* Cresson (*a*=♀ face, *b*=♀ profile, *c*=♀ pygidium, *d*=♂ face, *e*=♂ pygidium); 122, *C. cooperi*, new species (*a*=♀ face, *b*=♀ pygidium, *c*=♂ face, *d*=♂ pygidium).



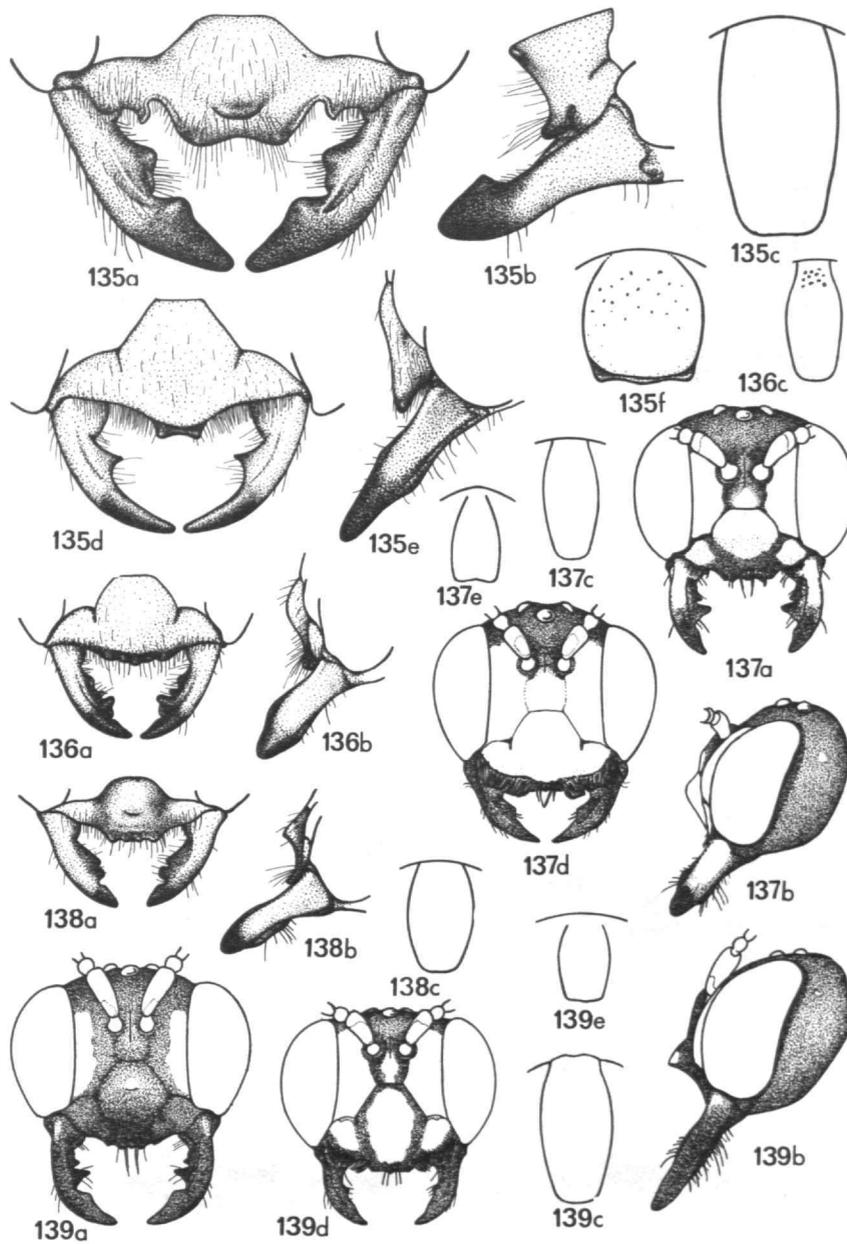
FIGURES 123-127 (in part).—123, *Cercheris costarica costarica*, new subspecies (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium); 124, *C. costarica mitla*, new subspecies (*a* = ♀ face, *b* = ♀ pygidium); 125, *C. cuernavaca*, new species (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium); 126, *C. duisi*, new species (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium); 127, *C. fortin*, new species (*b* = ♀ profile).



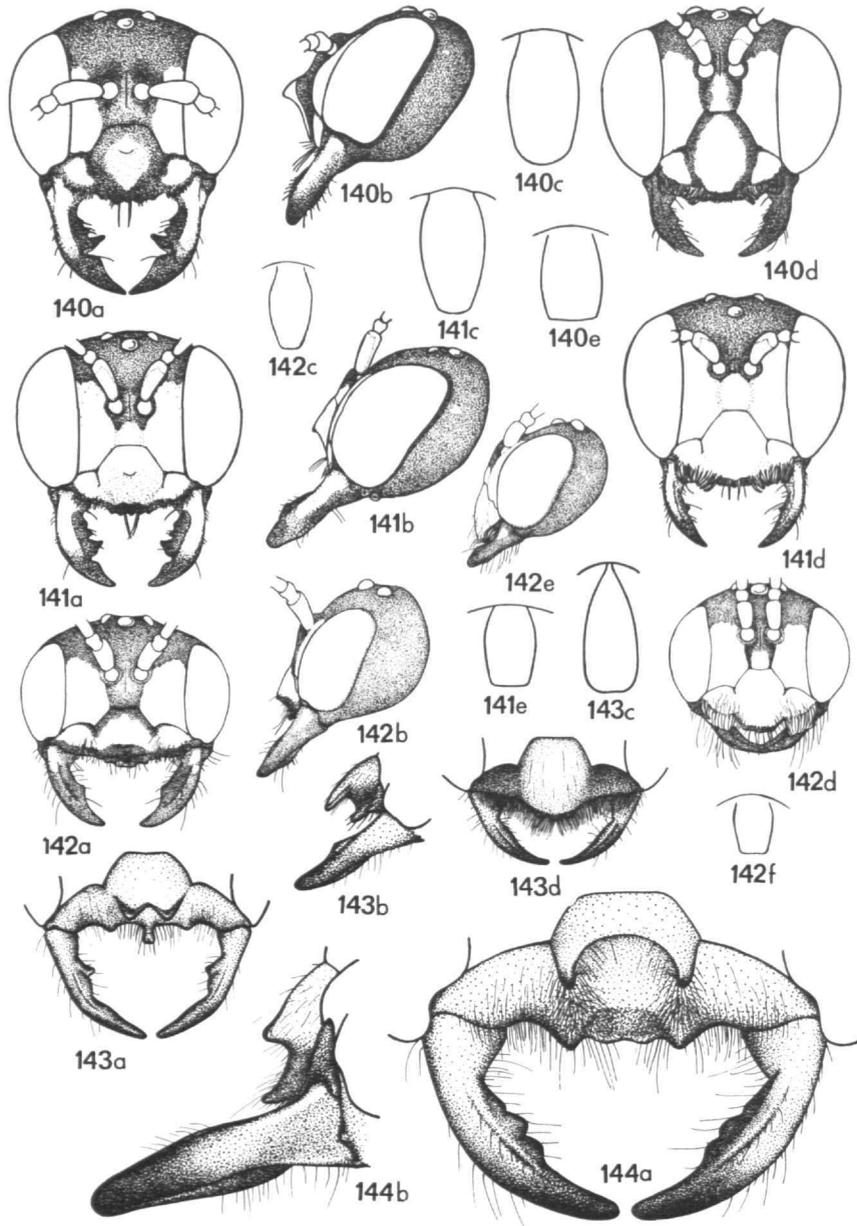
FIGURES 127 (in part)–130.—127, *Cerceris fortin*, new species (*a* = ♀ face, *c* = ♀ pygidium); 128, *C. hurdi*, new species (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium); 129, *C. irwini*, new species (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium); 130, *C. montealban*, new species (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium).



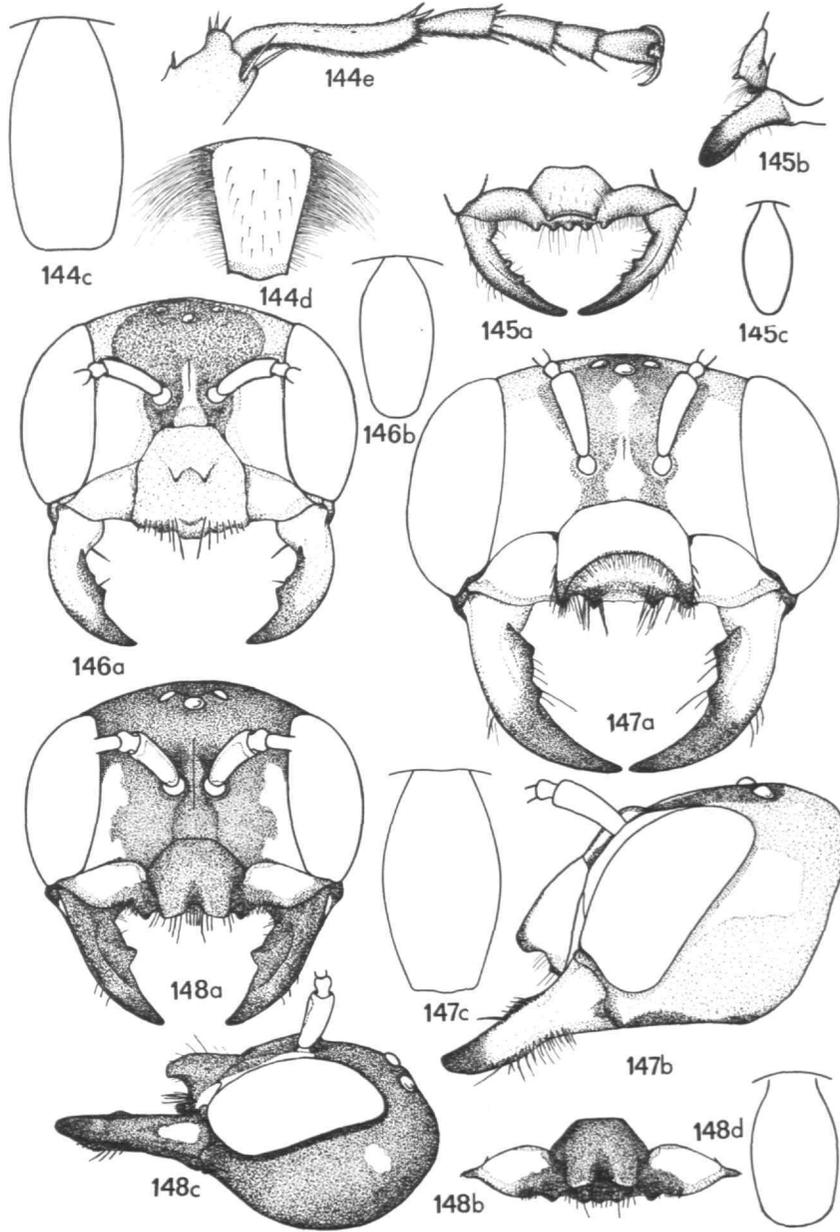
FIGURES 131-134.—131, *Cerceris rufonigra turrialba*, new subspecies (a=♀ face, b=♀ profile, c=♀ thorax, d=♀ pygidium, e=♂ face, f=♂ thorax, g=♂ pygidium); 132, *C. veracruz veracruz*, new subspecies (a=♀ face, b=♀ pygidium, c=♂ face, d=♂ pygidium); 133, *C. williamsi*, new species (a=♀ face, b=♀ pygidium); 134, *C. femurrubrum femurrubrum* Viereck and Cockerell (a=♀ lower face, b=♀ lower profile, c=♀ pygidium, d=♂ lower face, e=♂ lower profile, f=♂ pygidium).



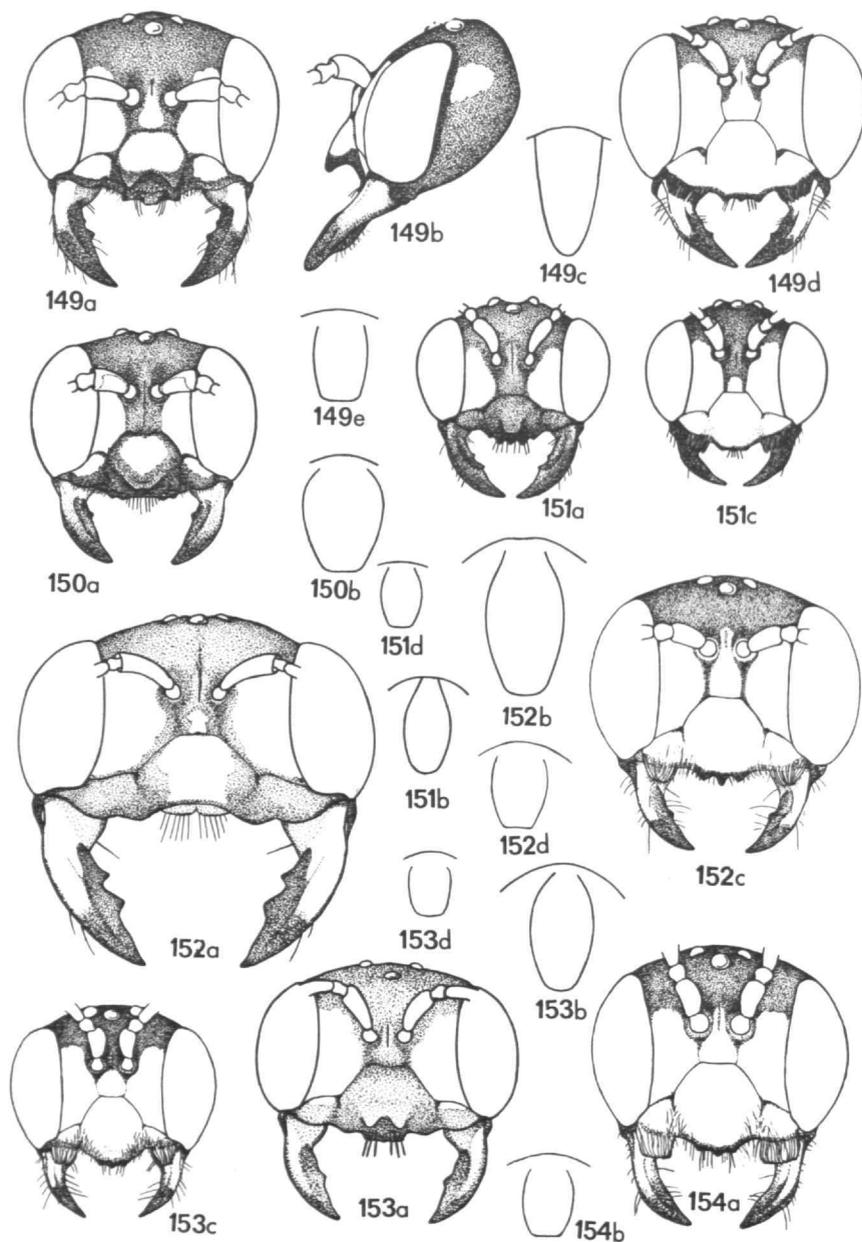
FIGURES 135-139.—135, *Cerceris simplex macrosticta* Viereck and Cockerell (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♂ pygidium, *d* = ♂ lower face, *e* = ♂ lower profile, *f* = ♂ pygidium); 136, *C. compar compar* Cresson (*a* = ♀ female lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 137, *C. compar albinota*, new subspecies (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium, *d* = ♂ face, *e* = ♂ pygidium); 138, *C. insolata atrafemori* Scullen (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 139, *C. insolita chiriquensis* Cameron (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium, *d* = ♂ face, *e* = ♂ pygidium).



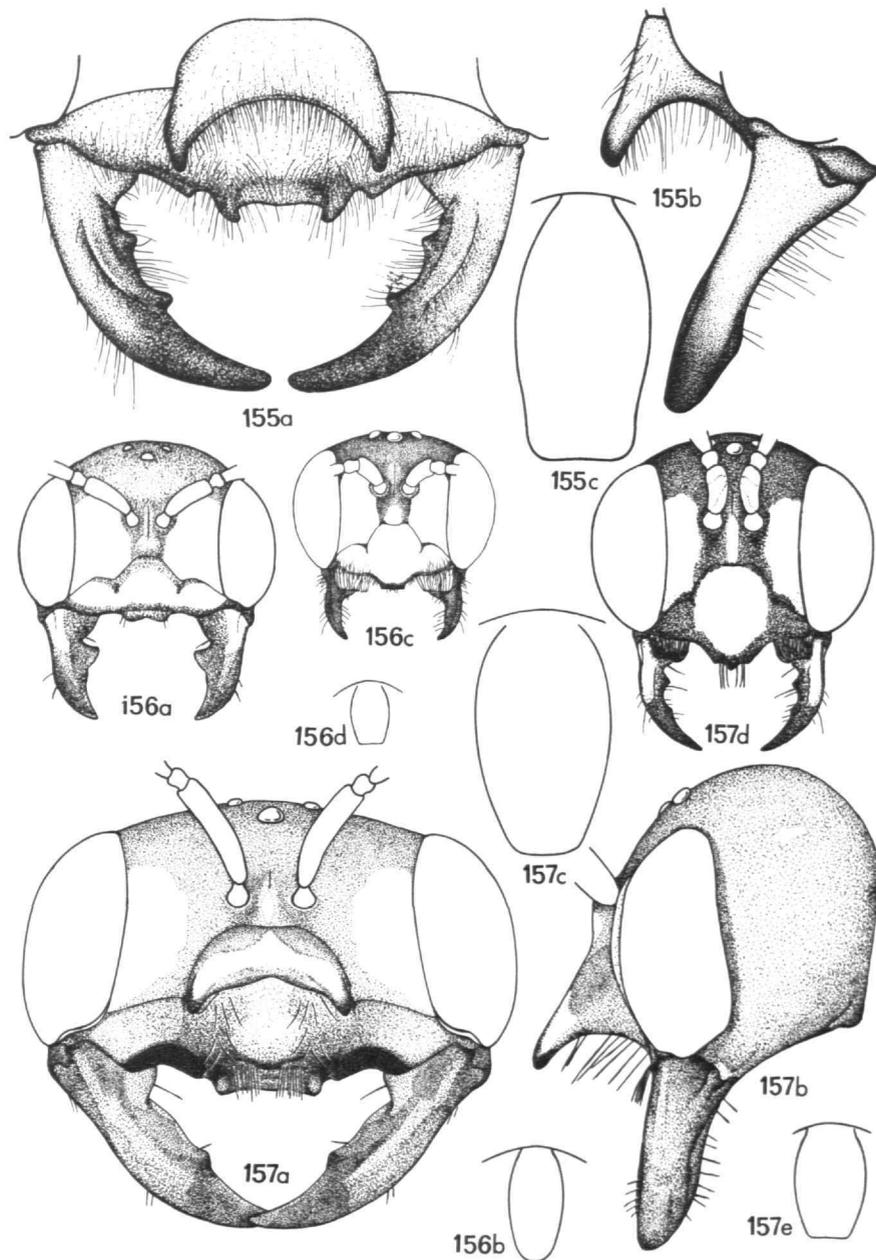
FIGURES 140-144 (in part).—140, *Cerceris insolita otomia* Saussure (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium, *d* = ♂ face, *e* = ♂ pygidium); 141, *C. insolita panama*, new subspecies (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium, *d* = ♂ face, *e* = ♂ pygidium); 142, *C. atlacmulca*, new species (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium, *d* = ♂ face, *e* = ♂ profile, *f* = ♂ pygidium); 143, *C. azteca* Saussure (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium, *d* = ♂ lower face); 144 (in part), *C. bicornuta bicornuta* Guérin (*a* = ♀ lower face, *b* = ♀ lower profile).



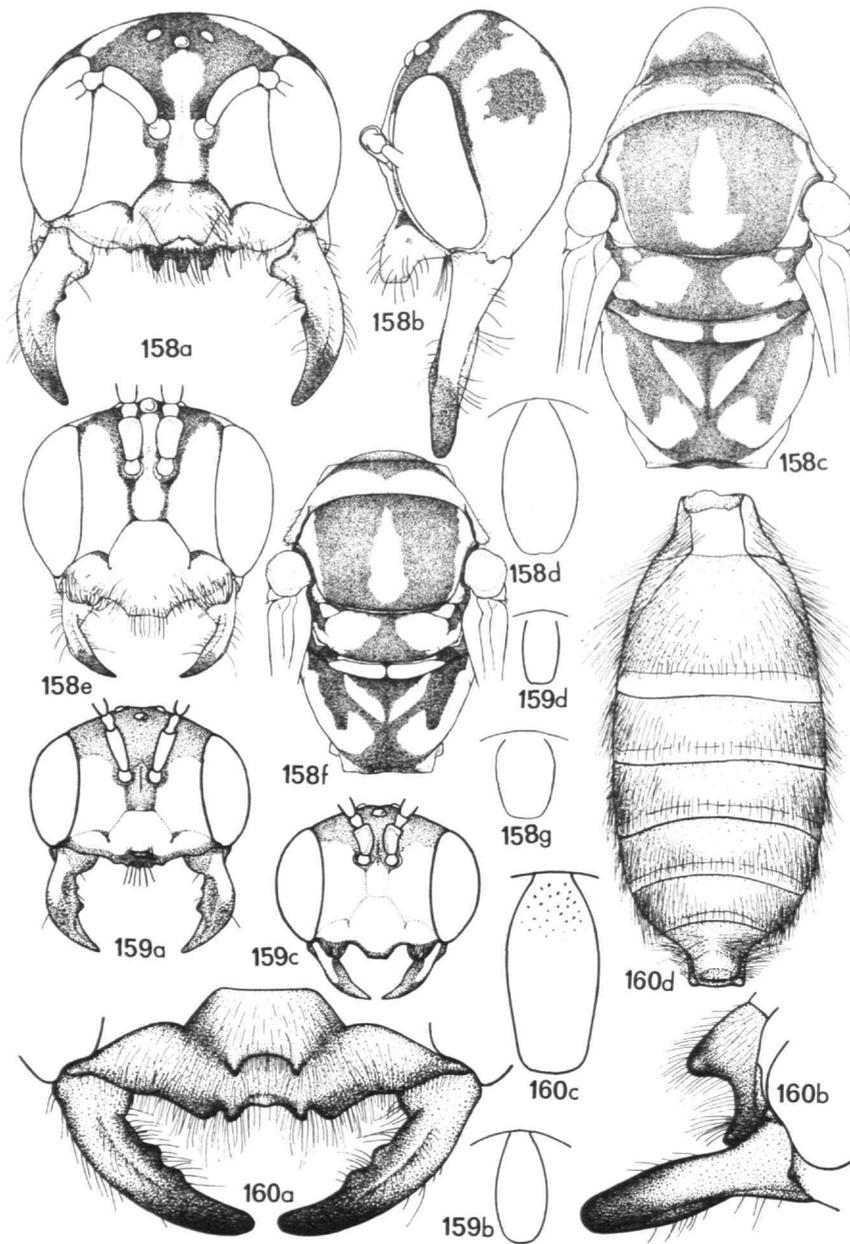
FIGURES 144(in part)-148.—144, *Cerceris bicornuta bicornuta* Guérin (*c*=♀ pygidium, *d*=♂ pygidium, *e*=♂ hind tarsi); 145, *C. boharti* Scullen (*a*=♀ lower face, *b*=♀ lower profile, *c*=♀ pygidium); 146, *C. bolingeri*, new species (*a*=♀ face, *b*=♀ pygidium); 147, *C. bradleyi*, new species (*a*=♀ face, *b*=♀ profile, *c*=♀ pygidium); 148, *C. cacaloapana*, new species (*a*=♀ face, *b*=♀ clypeus, *c*=♀ profile, *d*=♀ pygidium).



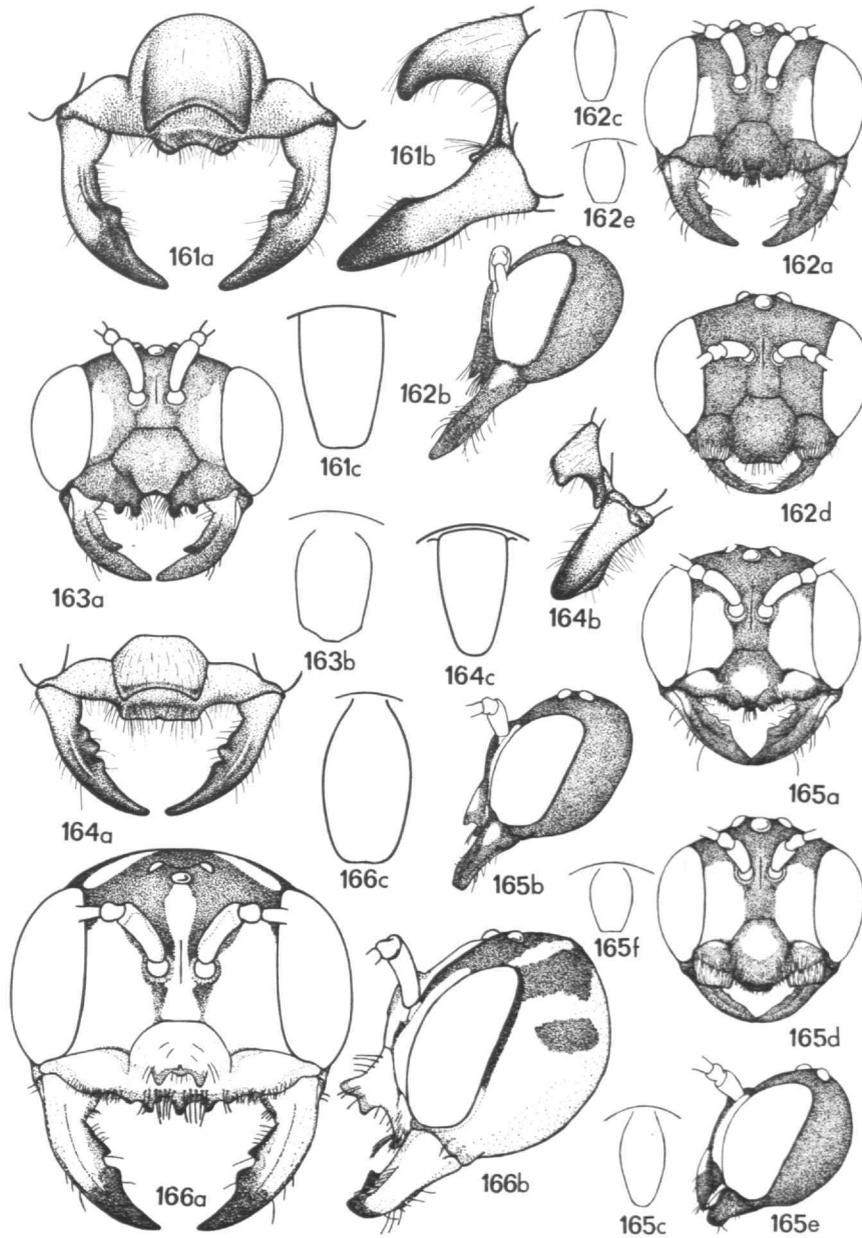
FIGURES 149-154.—149, *Cerceris calochorti hidalgo*, new subspecies (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium, *d* = ♂ face, *e* = ♂ pygidium); 150, *C. cavagnaroi*, new species (*a* = ♀ face, *b* = ♀ pygidium); 151, *C. dreisbachi*, new species (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium); 152, *C. durango*, new species (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium); 153, *C. evansi*, new species (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium); 154, *C. flavotrochanterica* Rohwer (*a* = ♂ face, *b* = ♀ pygidium).



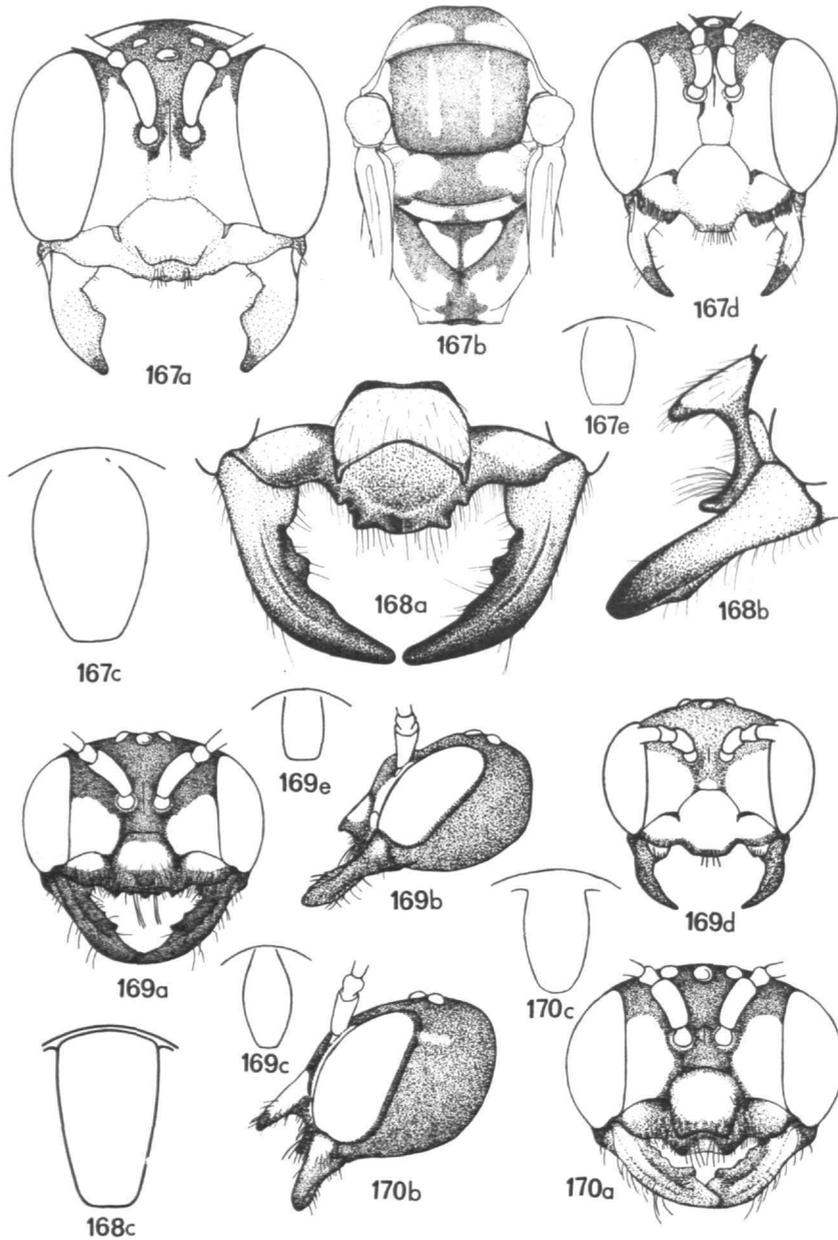
FIGURES 155-157.—155, *Cerceris frontata frontata* Say (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 156, *C. gandarai* Rohwer (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium); 157, *C. imperialis* Saussure (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium, *d* = ♂ face, *e* = ♂ pygidium).



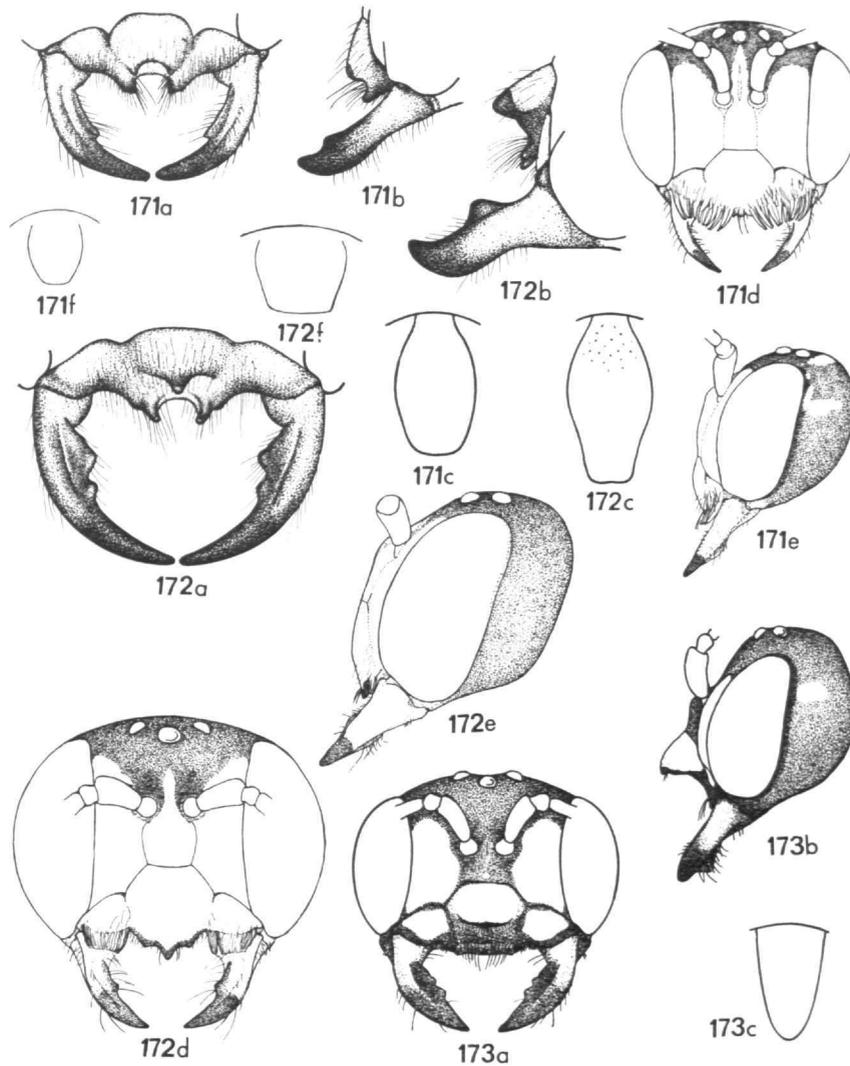
FIGURES 158–160.—158, *Cerceris lutzi*, new species (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ thorax, *d* = ♀ pygidium, *e* = ♂ face, *f* = ♂ thorax, *g* = ♂ pygidium); 159, *C. micheneri*, new species (*a* = ♀ face, *b* = ♀ pygidium, *c* = ♂ face, *d* = ♂ pygidium); 160, *C. mimica* Cresson (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium, *d* = ♂ venter).



FIGURES 161-166.—161, *Cercheris morata* Cresson (*a*=♀ lower face, *b*=♀ lower profile, *c*=♀ pygidium); 162, *C. oaxaca*, new species, (*a*=♀ face, *b*=♀ profile, *c*=♀ pygidium, *d*=♂ face, *e*=♂ pygidium); 163, *C. obsoleta* Cameron (*a*=♀ face, *b*=♀ pygidium); 164, *C. occipitomaculata* Packard (*a*=♀ lower face, *b*=♀ lower profile, *c*=♀ pygidium); 165, *C. queretaro*, new species (*a*=♀ face, *b*=♀ profile, *c*=♀ pygidium, *d*=♀ face, *e*=♀ profile, *f*=♂ pygidium); 166, *C. rostrata* F. Smith (*a*=♀ face, *b*=♀ profile, *c*=♀ pygidium).



FIGURES 167-170.—167, *Cerceris simulans* Saussure (*a* = ♀ face, *b* = ♀ thorax, *c* = ♀ pygidium, *d* = ♂ face, *e* = ♂ pygidium); 168, *C. stigmosalis* Banks (*a* = ♀ lower face, *b* = ♀ lower profile, *c* = ♀ pygidium); 169, *C. strigosa* Cameron (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium, *d* = ♂ face, *e* = ♂ pygidium); 170, *C. thermophila* Schletterer (*a* = ♀ face, *b* = ♀ profile, *c* = ♀ pygidium).



FIGURES 171-173.—171, *Cercheris tolteca* Saussure (*a*=♀ lower face, *b*=♀ lower profile, *c*=♀ pygidium, *d*=♂ face, *e*=♂ profile, *f*=♂ pygidium); 172, *C. verticalis* F. Smith (*a*=♀ lower face, *b*=♀ lower profile, *c*=♀ pygidium, *d*=♂ face, *e*=♂ profile, *f*=♂ pygidium); 173, *C. zacatecas*, new species (*a*=♀ face, *b*=♀ profile, *c*=♀ pygidium).

## Index

Valid names are not enclosed in punctuation; parentheses enclose synonyms; brackets enclose names changed in status from the original. Page numbers of principal references are in italics.

- acanthophila* Cockerell, 8, 17–18  
*alamos*, new species, 7, 8, 18–19  
*acolhua* Saussure, 68  
 (*albimana* Taschenberg), 22, 23  
 (*ampla* Banks), 59  
*argia* Mickel, 1, 8, 19, 20  
 (*arno* Banks), 39, 40  
 (*athene* Banks), 56  
*atlaconomulca*, new species, 14, 17, 68–70, 80  
 (*aureofacialis* Cameron), 42  
*azteca* Saussure, 16, 70–71
- [*bakeri* Cameron], 28  
 (*belfragei* Mickel), 42  
*bicornuta bicornuta* Guérin, 16, 68, 70, 71–72, 74  
*bicornuta fidelis* Viereck and Cockerell, 16, 72  
*boharti* Scullen, 14, 72  
*bolingeri*, new species, 14, 72–73  
*bothriophora* Schletterer, 15, 73  
*bradleyi*, new species, 16, 73–74  
*bridwelli* Scullen, 6, 8, 19–20  
*butleri* Scullen, 6, 20
- cacaloapana*, new species, 16, 74–75  
*californica californica* Cresson, 10, 38–39, 100  
*californica argyrotricha* Rohwer, 10, 39–40  
*calochorti hidalgo*, new subspecies, 15, 17, 74, 75, 99  
 (*calodera* Banks), 38, 39  
 (*catawba* Banks), 59  
*cavagnaroi*, new species, 15, 75–76  
 (*chilopsidis* Viereck and Cockerell), 17, 18  
 (*chrysogaster* Schletterer), 93  
 (*chinandegaensis* Cameron), 28  
 (*clypeata* Dahlbom), 73, 77, 79, 89, 101  
 (*clypeata prominens* Banks), 73  
*clypeata tepaneca* Saussure, 15, 17, 76–77, 89, 96  
 [*chiriquensis* Cameron], 63  
*cochise* Scullen, 10, 11, 42  
 (*cognata* Mickel), 38
- compacta compacta* Cresson, 10, 11, 12, 42–43, 44  
*compar albinota*, new subspecies, 13, 60  
*compar compar* Cresson, 13, 59–60  
*compar geniculata* Cameron, 13, 14, 60, 61, 62  
*compar orestes* Banks, 13, 14, 61, 62  
*conifrons* Mickel, 6, 8, 20, 21  
 (*contracta* Taschenberg), 40  
*convergens* Viereck and Cockerell, 6, 7, 8, 20–22  
*cooperi*, new species, 11, 43–44  
 [*cosmiocephala* Cameron], 97  
*costarica costarica*, new subspecies, 11, 12, 44–45, 46  
*costarica mitla*, new subspecies, 11, 12, 45–46  
*crandalli* Scullen, 8, 21, 22  
*cribrosa* Spinola, 7, 9, 22–24  
*crotonella* Viereck and Cockerell, 1, 8, 24  
*cuernavaca*, new species, 10, 46–47  
 (*curvicornis* Cameron), 71
- (*denticularis* Banks), 38, 39  
*dilatata dilatata* Spinola, 1, 9, 10, 40–41  
*dilatata chisosensis* Scullen, 9, 10, 41  
*dreisbachi*, new species, 15, 17, 76, 77–78, 80  
 (*dufourii* Guérin), 71  
*duisi*, new species, 11, 47  
*durango*, new species, 14, 16, 78–79
- echo echo* Mickel, 6, 8, 24  
 (*englehardtii* Banks), 87  
*eriononi* Viereck and Cockerell, 28  
*erythropoda* Cameron, 79  
 (*esau* Schletterer), 87  
*evansi*, new species, 15, 16, 80–81  
 (*exsecta* F. Smith), 1, 84, 85
- (*fasciola* Cresson), 91  
*femurrubra athene* Banks, 12, 55, 56  
*femurrubra femurrubra* Viereck and Cockerell, 12, 55–56  
*femurrubra rossi*, new subspecies, 12, 56–57
- (*feralis* Cameron), 60  
 (*ferruginior* Viereck and Cockerell), 38  
 [*fidelis* Viereck and Cockerell], 72  
*finitima finitima* Cresson, 7, 8, 24–25  
*finitima morelos*, new subspecies, 7, 8, 25–26  
 [*finitima* var. *nigroris* Banks], 25  
*finitima vierecki* Banks, 7, 8, 25, 26–27  
 (*firma* Cresson), 98  
*flavida* Cameron, 27  
*flavomaculata* Cameron, 27–28  
*flavotrochanterica* Rohwer, 16, 81  
*fortin*, new species, 11, 47–48  
*frontata frontata* Say, 16, 17, 68, 81–82  
 (*fugatrix* Mickel), 95  
*fumipennis* Say, 9, 10, 41
- gandarai* Rohwer, 14, 17, 69, 80, 82–84  
 (*garcians* Viereck and Cockerell), 38  
 [*geniculata* Cameron], 60  
 (*gnara* Cresson), 98  
*grandis grandis* Banks, 9, 10, 41–42  
 [*graphica* F. Smith], 1
- hebes* Cameron, 57  
 (*hesperina* Banks), 20  
 (*huachuca* Banks), 17, 18  
*huastecae* Saussure, 48, 49  
*hurdi*, new species, 10, 11, 48–49
- (*illota* Banks), 38, 39  
*imperialis* Saussure, 16, 17, 84–85  
 (*insolde* Banks), 38, 39  
*insolita albida* Scullen, 13, 14, 62–63  
*insolita atrafemori* Scullen, 13, 14, 63  
*insolita chiriquensis* Cameron, 13, 14, 63–64  
*insolita cortezi*, new subspecies, 13, 14, 64–65  
*insolita insolita* Cresson, 13, 14, 62  
*insolita otomia* Saussure, 13, 14, 64, 65–67  
*insolita panama*, new subspecies, 13, 14, 67–68  
 (*interjecta* Banks), 38, 39  
 (*intractibilis* Mickel), 62  
*irene* Banks, 6, 28  
*irwini*, new species, 11, 12, 49–50

- (*iresinides* Rohwer), 28  
 (*jucunda* Cresson), 59  
 (*jucunda caroline* Banks), 59
- kennicottii bakeri* Cameron, 7, 8, 9, 28–29  
 (*kennicottii beali* Scullen), 30, 31  
*kennicottii kennicottii* Cresson, 7, 9, 28, 31  
*kennicottii smithiana* Cameron, 7, 8, 9, 29–30  
*kennicottii zapoteca* Saussure, 7, 9, 30–32
- lutzi*, new species, 16, 85–86
- [*macrosticta* Viereck and Cockerell], 59  
*marginata* F. Smith, 32  
 [*marginata* Cameron], 32, 33  
*marginula* Dalla Torre, 7, 9, 32–34  
 (*maximillan* Saussure), 40  
*mexicana* Saussure, 11, 49, 50–51  
*micheneri*, new species, 15, 17, 86–87, 88  
*mimica* Cresson, 16, 17, 68, 87–88  
*minax* Mickel, 17, 18  
*montealban*, new species, 10, 11, 51  
*montezuma* Cameron, 88  
 (*montivaga* Cameron), 30, 31  
*morata* Cresson, 15, 17, 89–90
- (*nasica* Viereck and Cockerell), 89  
 (*novomexicana* Viereck and Cockerell), 91
- oaxaca*, new species, 15, 17, 90–91  
*obregon*, new species, 6, 8, 34–35  
*obsoleta* Cameron, 15, 91, 92  
 (*occidentalis* Saussure), 82  
*occipitomaculata* Packard, 15, 17, 91  
 (*olympionis* Strand), 40  
 [*orestes* Banks], 61  
 [*otomia* Saussure], 65
- parkeri*, new species, 7, 9, 35–36  
 (*pilosa* Cameron), 84, 85  
 (*populorum* Viereck and Cockerell), 38  
 (*pudorosa* Mickel), 20  
 (*pullatus* F. Smith), 22, 23
- queretaro*, new species, 15, 17, 91–92
- (*rinconis* Viereck and Cockerell), 20  
*rostrata* F. Smith, 1, 16, 93, 94  
 (*rufinoda crucis* Viereck and Cockerell), 20, 24  
*rufinoda rufinoda* Cresson, 6, 8, 36  
*rufonigra turrialba*, new subspecies, 10, 11, 51–52
- (*sayi* Banks), 95  
 (*scapularis* Schletterer), 93, 94  
 (*semiatra* Banks), 40  
 (*seminigra* Banks), 70  
*semipetiolata* Saussure, 52–53  
 (*serripes* Bequaert), 71  
*sextoides* Banks, 76, 79, 101  
*simplex graphica* F. Smith  
*simplex macrosticta* Viereck and Cockerell, 12, 59, 60
- simulans* Saussure, 15, 16, 93–95  
 [*smithiana* Cameron], 29  
 (*snowi* Banks), 20  
 (*solidaginis* Rohwer), 42  
 (*stevensi* Banks), 95  
*stigmatosalis* Banks, 15, 17, 95  
*strigosa* Cameron, 15, 95–96  
 (*subpetiolata* Saussure), 22, 23
- [*tepaneca* Saussure], 76, 77, 96, 101  
 (*texensis* Saussure), 81  
 (*thermophila* Schletterer), 96  
 [*thione* Banks], 56  
*tolteca* Saussure, 15, 17, 97  
*trichiosome* Cameron, 97–98  
*truncata* Cameron, 7, 8, 36–37, 38
- (*venator* Cresson), 71  
*veracruz josei*, new subspecies, 11, 12, 53–54  
*veracruz veracruz*, new subspecies, 11, 12, 44, 53, 54  
*verticalis* F. Smith, 1, 14, 17, 98  
 [*vierecki* Banks], 26
- williamsi*, new species, 11, 54–55
- zacatecas*, new species, 15, 98–99  
 [*zapoteca* Saussure], 30  
*zumpango*, new species, 7, 37–38







## Publication in Smithsonian Contributions to Zoology

*Manuscripts* for serial publications are accepted by the Smithsonian Institution Press, subject to substantive review, only through departments of the various Smithsonian museums. Non-Smithsonian authors should address inquiries to the appropriate department. If submission is invited, the following format requirements of the Press will govern the preparation of copy.

*Copy* must be typewritten, double-spaced, on one side of standard white bond paper, with 1½" top and left margins, submitted in ribbon copy with a carbon or duplicate, and accompanied by the original artwork. Duplicate copies of all material, including illustrations, should be retained by the author. There may be several paragraphs to a page, but each page should begin with a new paragraph. Number consecutively all pages, including title page, abstract, text, literature cited, legends, and tables. The minimum length is 30 pages, including typescript and illustrations.

The *title* should be complete and clear for easy indexing by abstracting services. Taxonomic titles will carry a final line indicating the higher categories to which the taxon is referable: "(Hymenoptera: Sphecidae)." Include an *abstract* as an introductory part of the text. Identify the *author* on the first page of text with an unnumbered footnote that includes his professional mailing address. A *table of contents* is optional. An *index*, if required, may be supplied by the author when he returns page proof.

Two *headings* are used: (1) text heads (boldface in print) for major sections and chapters and (2) paragraph sideheads (caps and small caps in print) for subdivisions. Further headings may be worked out with the editor.

In *taxonomic keys*, number only the first item of each couplet; if there is only one couplet, omit the number. For easy reference, number also the taxa and their corresponding headings throughout the text; do not incorporate page references in the key.

In *synonymy*, use the short form (taxon, author, date:page) with a full reference at the end of the paper under "Literature Cited." Begin each taxon at the left margin with subsequent lines indented about three spaces. Within an entry, use a period-dash (.—) to separate each reference. Enclose with square brackets any annotation in, or at the end of, the entry. For *references within the text*, use the author-date system: "(Jones, 1910)" and "Jones (1910)." If the reference is expanded, abbreviate the data: "Jones (1910:122, pl. 20: fig. 1)."

Simple *tabulations* in the text (e.g., columns of data) may carry headings or not, but they should not contain rules. Formal *tables* must be submitted as pages separate from the text, and each table, no matter how large, should be pasted up as a single sheet of copy.

Use the *metric system* instead of, or in addition to, the English system.

*Illustrations* (line drawings, maps, photographs, shaded drawings) can be intermixed throughout the printed text. They will be termed *Figures* and should be numbered consecutively; however, if a group of figures is treated as a single figure, the components should be indicated by lowercase italic letters on the illustration, in the legend, and in text references: "Figure 9*b*." If illustrations (usually tone photographs) are printed separately from the text as full pages on a different stock of paper, they will be termed *Plates*, and individual components should be lettered (Plate 9*b*) but may be numbered (Plate 9: figure 2). Never combine the numbering system of text illustrations with that of plate illustrations. Submit all legends on pages separate from the text and not attached to the artwork. An instruction booklet for the preparation of illustrations is available from the Press on request.

In the *bibliography* (usually called "Literature Cited"), spell out book, journal, and article titles, using initial caps with all words except minor terms such as "and, of, the." For capitalization of titles in foreign languages, follow the national practice of each language. Underscore (for italics) book and journal titles. Use the colon-parentheses system for volume, number, and page citations: "10(2):5-9." Spell out such words as "figures," "plates," "pages."

For *free copies* of his own paper, a Smithsonian author should indicate his requirements on "Form 36" (submitted to the Press with the manuscript). A non-Smithsonian author will receive 50 free copies; order forms for quantities above this amount with instructions for payment will be supplied when page proof is forwarded.

