

## SCORPIONS OF THE GENUS *DIPLOCENTRUS* FROM OAXACA, MEXICO (Scorpionida, Diplocentridae)

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### ABSTRACT

*Diplocentrus mexicanus* Peters is reestablished as the valid type species of the genus *Diplocentrus* Peters. The type of *D. mexicanus* has been lost, but the published information is sufficient to establish that this taxon is not synonymous with *D. whitei* (Gervais) as previously maintained. Accordingly, a neotype for *D. mexicanus* is designated and described. The exact type locality of *D. mexicanus* is still unknown because the incomplete data accompanying the neotype, and one additional known specimen referable to this species, only indicate that they were collected in Mexico. A new subspecies has been found in the state of Oaxaca, *D. mexicanus oaxacae*, n. sp., and for this reason alone the description of the nominate subspecies is included here. Seven other species of *Diplocentrus* are recorded from Oaxaca, including four new ones: *D. tehuano*, n. sp., *D. hoffmanni*, n. sp., *D. reticulatus*, n. sp., and *D. mitlae*, n. sp.. The holotype of *D. rectimanus* Pocock is redescribed, establishing that this taxon is not a synonym of *D. keyserlingi* Karsch as formerly held, and the controversy over its type locality is solved. *D. keyserlingi tehuacanus* Hoffmann is given specific recognition, and redescribed accordingly. Finally, *D. ochoterenai* Hoffmann is redescribed from the holotype, which is a female rather than a male as originally believed by Hoffmann, and the male is described for the first time.

### INTRODUCTION

The genus *Diplocentrus* was erected by Peters (1861) for a new species from Mexico, appropriately named *mexicanus* by its author. Peters considered the genus to be monotypic, and gave only a short diagnosis that applied to both the genus and the type species. Peters failed to indicate, however, other characters that would have been useful in separating *D. mexicanus* from other species that might have been subsequently discovered. Karsch (1879a) referred the Mexican species *Scorpio whitei* Gervais, 1844 to the genus *Diplocentrus* and cited *D. mexicanus* as its junior synonym. Thus, *Diplocentrus whitei* (Gervais) became established as the type species of the genus, an opinion that has prevailed ever since. Subsequently however, Karsch (1879b) after examining the type of *D. mexicanus* and studying carefully Gervais' description of *D. whitei* came to the conclusion that both were valid species, gave a short key to separate them, and provided a brief description of *D. mexicanus*. Finally, Karsch (1880) maintained this view and provided some additional specific characters for *D. mexicanus*.

Unfortunately, Karsch's views (1879b, 1880) have been either neglected, overlooked, or ignored by all scorpion taxonomists working with the genus *Diplocentrus* since then,

and *D. mexicanus* has been regarded as a junior synonym of *D. whitei*. As part of an ongoing revision of the family Diplocentridae (Francke 1975, and in press) I have examined the holotype of *D. whitei* in addition to more than 200 specimens belonging to this species (redescription in preparation), arriving at the conclusion that *D. mexicanus* is indeed a distinct taxon, and thus the rightful type species of the genus *Diplocentrus*. The type specimen of *D. mexicanus* could not be located at the Zoologisches Museum, Humboldt-Universität zu Berlin where it was supposedly deposited, and was apparently destroyed during World War II (Dr. M. Moritz, pers. comm.). Amongst the thousands of specimens from Mexico examined, I found one adult male that agrees remarkably well with all the known facts about *D. mexicanus*. Because the type species of the genus is involved in this complex taxonomic problem, that specimen is designated as the neotype of *D. mexicanus* and described below.

The exact type locality for *D. mexicanus* is still unknown, as the data accompanying the neotype male, and the other specimen known (adult female), indicate that the specimens originated in Mexico. A new subspecies of *D. mexicanus* has been found in the state of Oaxaca, and for this reason the redescription of the nominate subspecies is included here, even though I am fully aware that it might not occur within the geopolitical boundaries of the state of Oaxaca.

The center of distribution of a given taxon is often defined as the geographical area containing the highest number of taxa in the next lower category belonging to that particular taxon (Darlington, 1957). Using this criterion, Oaxaca appears to be the center of distribution of the genus *Diplocentrus*. Large areas of Oaxaca still remain unexplored in terms of their scorpion fauna (Map 1), and potentially still more species can be found within its territory in the future. Two of the eight species were originally described from specimens collected in the state of Oaxaca, and are unknown outside its boundaries: *D. rectimanus* Pocock, which is redescribed below because it had been erroneously synonymized under *D. keyserlingi* Karsch; and *D. ochoterenai* Hoffman, also redescribed below because it was previously known only from the holotype, which is an adult female rather than a male as stated in the original description. A third taxon, *D. keyserlingi tehuacanus* Hoffmann is given specific recognition, and is redescribed for this reason. The remaining five species, one of which is represented by a subspecies, represent new taxa endemic to Oaxaca.

#### TAXONOMIC OBSERVATIONS

The species of the genus *Diplocentrus* are among the most taxonomically neglected scorpion taxa in North America, and I attribute this to be the result of two main factors. Firstly, all the species appear to be obligatory burrowers, exhibiting limited periods of nocturnal surface activities. Therefore, prior to the mid-1960's these scorpions were rarely collected by the traditional method of overturning rocks or other objects resting loosely on the substrate, and then only one or a few specimens could be obtained from any one locality. The scarcity of material seriously hampered studies on intraspecific variability, and limited the accuracy of interspecific comparisons for taxonomic purposes.

Secondly, intraspecific variability in *Diplocentrus* spp. is probably the highest among North American scorpions. Ontogenic changes and allometric growth rates often make the identification of immature specimens virtually impossible, unless these form part of a larger series containing adults. In addition, a marked degree of sexual dimorphism between adults further complicates the identification process, especially if a species was

originally described from a unique specimen and the taxonomist is confronted with a specimen of the opposite sex.

The introduction of ultraviolet detection techniques ("black-lighting") to collect scorpions in the last decade has produced moderate to large samples of a few species of *Diplocentrus*. These series of specimens have enabled me to obtain a basic understanding of the nature and extent of intraspecific and interspecific variability in the genus (Francke, 1975, and unpublished observations). Detailed examination of large and small samples of numerous species indicates that the characters discussed below are taxonomically useful in *Diplocentrus*.

A. Characters showing minimal intraspecific variability.

1. Cheliceral morphology and morphometrics (Figs. 1-8).
  - a. The morphometric ratios of chela length/chela width, fixed finger length/chela width, and movable finger length/chela length (method and landmarks used for obtaining the respective measurements in Francke, 1975).
  - b. On the movable finger of the chelicera, the relative lengths and position of the distal internal (**di**) and distal external (**de**) teeth (terminology after Vachon, 1963).
2. Pedipalp morphology and morphometrics.
  - a. The relative proportions of the femur, particularly the width/depth ratio.
  - b. The extent of carinal development on the tibia, and the relative positions of the trichobothria on its external face (Figs. 9-16).
3. Carapace morphology (Figs. 17-24).
  - a. The shape and dimensions of the anterior median notch.
  - b. The development of granulation on the anterior submargin and the area encompassed by the interocular triangle.
4. Tergite VII morphology.
  - a. The degree and extent of carinal development.
  - b. The degree and extent of development of postero-lateral bilobations on the disc of this sclerite (Figs. 25-26).
5. Metasomal segments.
  - a. Morphometrics. Several ratios, either between measurements of metasomal segments or between one metasomal and one non-metasomal measurement have been found to be extremely useful and reliable (Francke, 1975).
  - b. Carinal development. These structures have been used as taxonomic characters since the last century, but the terminology preferred by different authors is quite variable. The terminology used the text, and their respective abbreviations, is given below, followed by the term(s) most frequently used by other North American scorpion taxonomists.

Segments I-IV:

Ventral submedian (**Vsm**) = inferior median

Ventral lateral (**VI**) = inferior lateral

Lateral inframedian (**Lim**) = lateral

Lateral supramedian (**Lsm**) = dorsal lateral, superior lateral

Dorsal lateral (**DI**) = dorsal, superior

## Segment V:

Ventral median (**Vm**) = inferior median

Ventral lateral (**Vl**) = inferior lateral

Ventral transverse (**Vt**) = "crescent"

Lateral median (**Lm**) = lateral

Dorsal lateral (**Dl**) = dorsal

Anal arc;

Anal subterminal (**Ast**) = anterior crest

Anal terminal (**At**) = posterior crest.

6. Tarsomere II spine formula. The last tarsal segment on each leg bears ventrally two longitudinal rows of spines, and their count is best expressed as a fractional formula. The anterior row spine count is given in the numerator, the posterior row spine count in the denominator, starting with the first pair of legs and proceeding backwards. On individual tarsomere II spine formulas, the right leg precedes the left leg on any given pair. On subspecific and specific formulas the bilateral distinction disappears, and different numerals on a set of "paired" observations indicate that both spine counts occur with approximately the same frequency in the sample analyzed. For example, if on a given species the partial formula for tarsomere II of the second pair of legs is given as  $5/6$   $5/7$ , this indicates that the anterior rows normally bear five spines, while the posterior rows can normally bear either six or seven spines.

B. Characters reflecting sexual dimorphism.

The pectinal tooth count provides a significant diagnostic character for scorpions in general. *Diplocentrus* spp. males tend to have higher counts than females, even though the ranges of these parameters overlap in most species (Table 5).

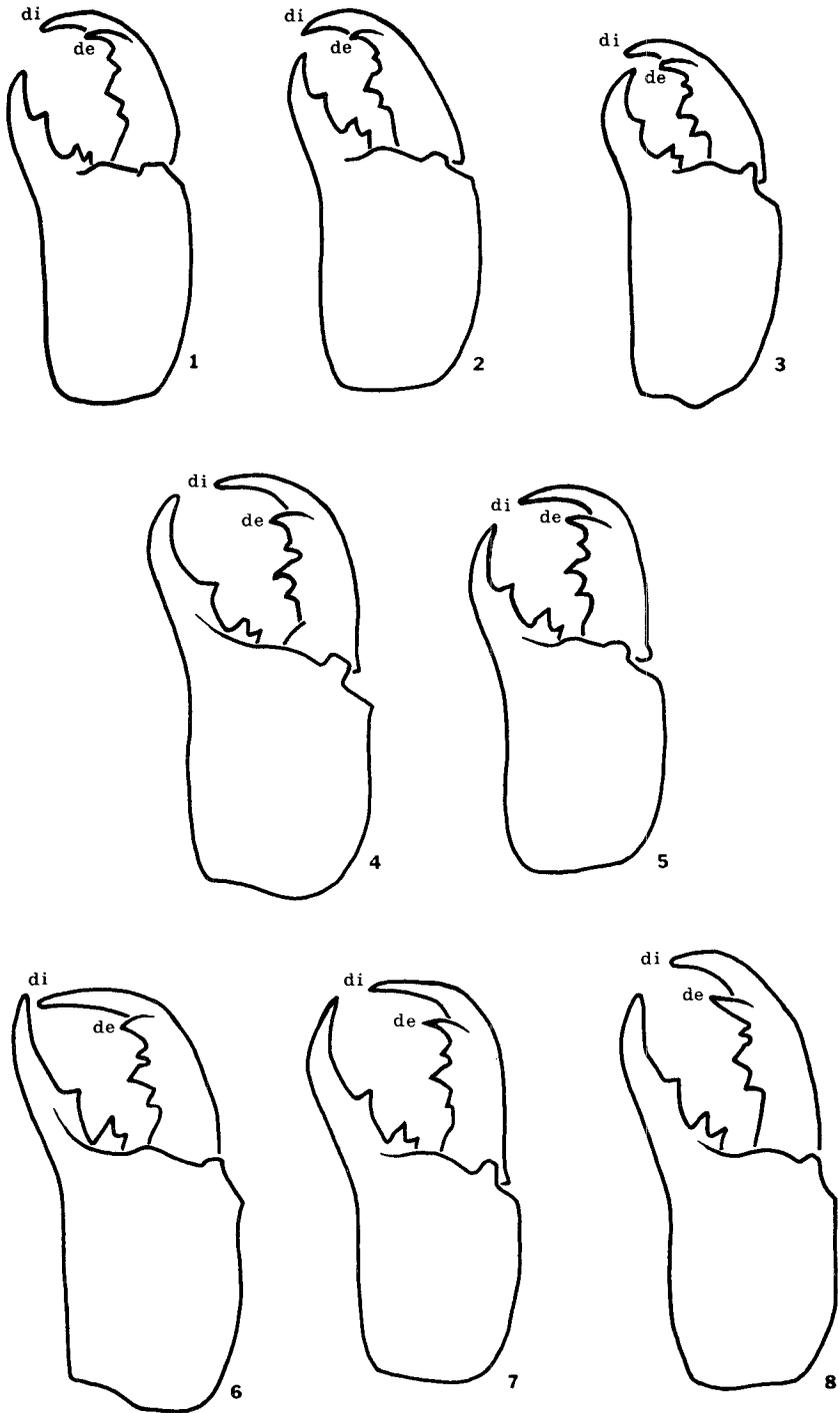
C. Characters reflecting sexual dimorphism and allometricity.

The morphology of the pedipalp chela is a character particularly valuable among adult males, where a marked degree of evolutionary divergence has taken place. In spite of the fact that the morphology of the chela can vary considerably between adults and immatures, as well as between adult males and adult females, the pattern assumed by the trichobothria on the chela remains fairly constant. Throughout the text I have adopted Vachon's terminology (1974) to designate the relative positions of these mechanoreceptor organs.

Using the characters mentioned above, the following key to the species of *Diplocentrus* occurring in the state of Oaxaca was developed.

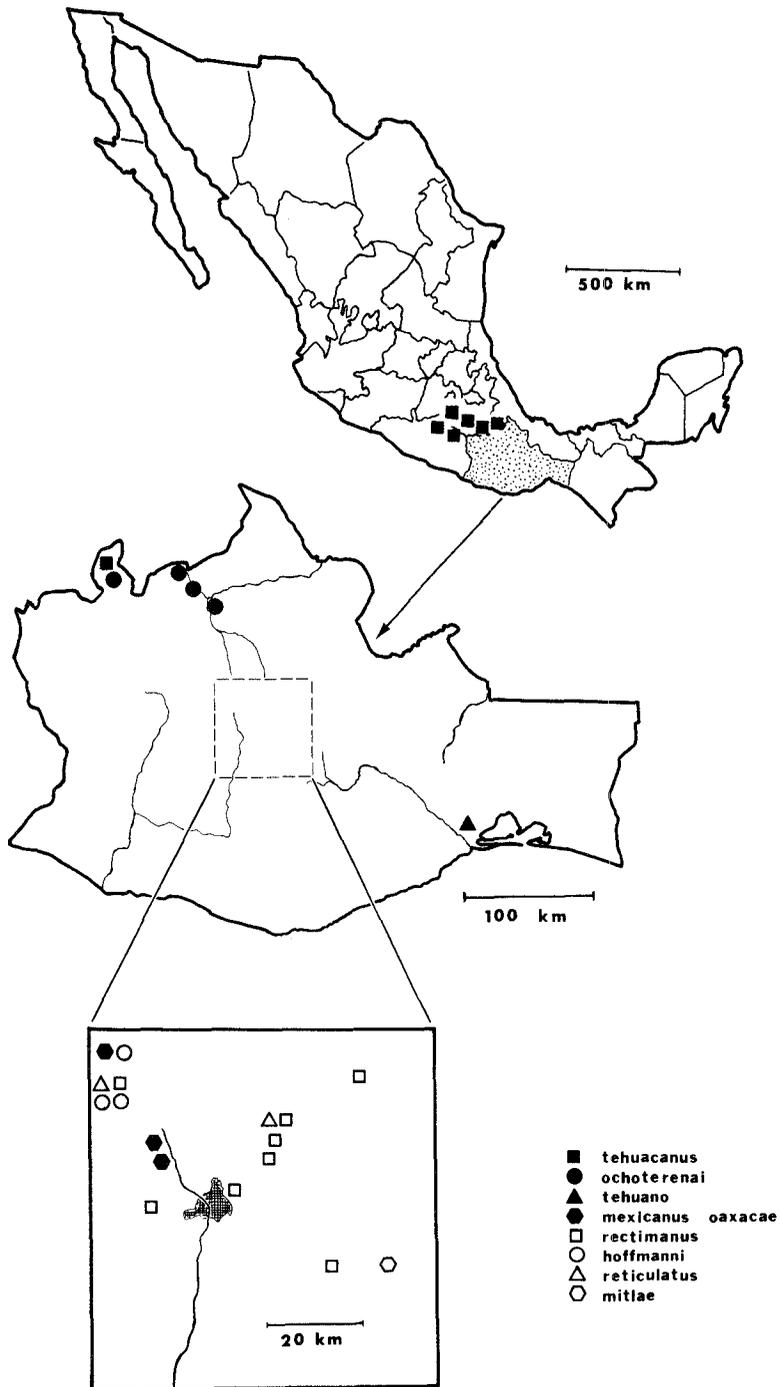
KEY TO THE OAXACA SPECIES OF *DIPLOCENTRUS*

- 1a. Pedipalp femur dorsally flat to slightly convex, wider than deep; cheliceral fixed finger shorter than chela width (Figs. 1-3, 5), cheliceral movable finger shorter than chela length . . . . .2
- 1b. Pedipalp femur dorsally moderately to strongly convex, deeper than wide; cheliceral fixed finger longer than chela width (Figs. 4, 6-8), cheliceral movable finger longer than chela length . . . . .6



Figs. 1-8.—Dorsal view of the right chelicera of the species of *Diplocentrus* from Oaxaca, México: 1, *D. mexicanus mexicanus* Peters, neotype male; 2, *D. ochoterenai* Hoffmann, adult male; 3, *D. tehuano*, n. sp., holotype male; 4, *D. mitlae*, n. sp., holotype male; 5, *D. tehuacanus* Hoffmann, holotype male; 6, *D. rectimanus* Pocock, holotype male; 7, *D. hoffmanni*, n. sp., holotype male; 8, *D. reticulatus*, n. sp., holotype male.

- 2a(1a). Pedipalp tibia dorsally with one smooth carina; tarsomere II spine formula on first two pairs of legs 4/5 4/5 : 5/5 5/5 ; metasomal segment IV ventral and lateral carinae vestigial to obsolete, smooth . . . . . 3
- 2b. Pedipalp tibia dorsally with two crenate carinae; tarsomere II spine formula on first two pairs of legs greater than 4/5 4/5 : 5/5 5/5 ; metasomal segment IV ventral and lateral carinae well developed, granulose . . . . . 4
- 3a(2a). Carapacial anterior margin and submargin granulose (Fig. 19); distal external tooth of cheliceral movable finger not closely opposed to distal internal tooth (Fig. 5); metasomal segment V dorsal lateral carinae weak to vestigial, smooth . . . . . *tehuacanus* Hoffmann
- 3b. Carapacial anterior margin and submargin smooth (Fig. 20); distal external tooth of cheliceral movable finger closely opposed to distal internal tooth (Fig. 3); metasomal segment V dorsal lateral carinae strong, crenate to granulose . . . . . *tehuano*, n. sp.
- 4a(2b). Tarsomere II spine formula on first two pairs of legs 6/7 6/7 : 7/7 7/7 ; legs pale yellow, contrasting sharply with fuscous opisthosoma; pectinal tooth count 17 or over in males, 15 or over in females . . . . . *ochoterenai* Hoffmann
- 4b. Tarsomere II spine formula on first two pairs of legs 5/6 5/6 : 6/6 6/7 ; legs fusco-ferrugineous with piceous variegations, not contrasting sharply with opisthosoma; pectinal tooth count 17 or less in males, 14 or less in females (*mexicanus*) . . . . . 5
- 5a(4b). Tarsomere II spine formula on last two pairs of legs 7/7 7/7 : 7/7 7/7 ; metasomal segment I slightly longer than wide; pectinal tooth count 12-13 in males, 10 in females . . . . . *mexicanus mexicanus* Peters
- 5b. Tarsomere II spine formula on last two pairs of legs 7/8 7/8 : 7/8 7/8 ; metasomal segment I slightly wider than long; pectinal tooth count 14-17 in males, 11-14 in females . . . . . *mexicanus oaxacae*, n. ssp.
- 6a(1b). Pedipalp chela fixed finger longer than carapace and metasomal segment V; carapacial interocular triangle sparsely granulose (Fig. 23); chelal carinae vestigial to obsolete (Figs. 59-62) . . . . . *mitlae*, n. sp.
- 6b. Pedipalp chela fixed finger shorter than carapace and metasomal segment V; carapacial interocular triangle moderately to densely granulose (Figs. 21, 22, 24); chelal carinae moderate to strong (Figs. 45-58) . . . . . 7
- 7a(6b). Tarsomere II spine formula on last two pairs of legs 5/5 5/5 : 5/6 5/6 ; dorsal and lateral metasomal intercarinae conspicuously reticulate; metasomal segment IV ventral submedian and lateral inframedian carinae moderately strong, granulose . . . . . *reticulatus*, n. sp.
- 7b. Tarsomere II spine formula on last two pairs of legs 6/6 6/6 : 6/6 6/7 ; dorsal and lateral metasomal intercarinae not reticulate; metasomal segment IV ventral submedian and lateral inframedian carinae vestigial to obsolete, smooth . . . . . 8
- 8a(7b). Movable finger of pedipalps shorter than carapace length; pedipalp chela less than twice longer than wide . . . . . *hoffmanni*, n. sp.
- 8b. Movable finger of pedipalps equal to or longer than carapace length; pedipalp chela over twice longer than wide . . . . . *rectimanus* Pocock



**MAP 1.**—Distribution of the species and subspecies of *Diplocentrus* known to occur in the state of Oaxaca, México: TOP, Mexico, showing the geographical location of the state of Oaxaca (stippled) and the distribution of *D. tehuacanus* Hoffmann outside this state; MIDDLE, the state of Oaxaca showing the locality records for *D. ochoterenai* Hoffmann, *D. tehuano*, n. sp., and *D. tehuacanus*; BOTTOM, central region of the state of Oaxaca, including the Valley of Oaxaca and the capital city of the same name (cross-hatching), showing the known distribution of the remaining species.

*Diplocentrus mexicanus mexicanus* Peters

Figs. 1, 9, 17, 27-32

*Diplocentrus mexicanus* Peters 1861, p. 512. Thorell 1876, p. 12. Karsch 1879b, pp. 98-99. Karsch 1880, pp. 407-408.

*Diplocentrus whitei* (part) Karsch 1879a, p. 19. Pocock 1893, p. 396. Kraepelin "1893" (1894), p. 11. Kraepelin 1899, pp. 101-102. Pocock 1902, p. 2. Hoffmann 1931, pp. 305-309.

**Diagnosis.**—Moderately large, adults exceeding 65 mm in total length. Fuscous to fusco-piceous throughout, legs not contrasting with opisthosoma in coloration; coarsely, densely granulose throughout. Carapacial anterior margin granulose, median notch rounded; anterior submargin coarsely granulose. Tergite VII disc weakly bilobed posteriorly, carinae vestigial to obsolete. Pectinal tooth count 12-13 in males, 10 in females. Metasomal segments I-IV with ten complete carinae each, intercarinal spaces minutely granulose; segment I slightly longer than wide, segment V longer than pedipalp femur. Chelicera: fixed finger shorter than chela width; movable finger shorter than chela length, distal external tooth closely opposed to distal internal tooth. Pedipalps: femur distinctly wider than deep, dorsally flat; tibial dorsal median and dorsal external carinae well developed; chelal fixed finger about as long as femur, movable finger longer than carapace. Tarsomere II spine formula  $5/6 \ 5/6 : 6/6 \ 6/7 : 7/7 \ 7/7 : 7/7 \ 7/7$ .

**Neotype.**—Male (measurements in Table 1).

**Prosoma.**—Carapace fuscous to fusco-piceous. Anterior margin densely granulose; median notch rounded, approximately three times wider than deep (Fig. 17). Three pairs of lateral eyes, posterior pair smallest. Anterior median furrow vestigial to obsolete. Ocular prominence distinctly convex between median eyes, located at anterior two-fifths of carapace length. Posterior median furrow moderate to deep. Posterior marginal furrow moderately deep and narrow. Posterior lateral furrows arcuate. Carapacial surface densely granulose. Venter fuscescent, sparsely setate. Sternum pentagonal, as long as wide; posterior one-half deeply furrowed medially.

**Mesosoma.**—Tergites fuscous, with moderately dense variegated fusco-piceous pattern. Tergites I-VI densely granulose, small and minute granules interspersed. Tergites III-VI with median carina weak, short. Tergite VII weakly bilobed postero-laterally, median emargination indistinct; submedian carinae poorly defined, short, represented by three to five large granules at posterior submargin; lateral carinae indistinct. Tergite VII with surface coarsely, densely granulose.

Genital operculi ochreous, subtriangular and weakly emarginate postero-medially; median longitudinal membranous connection absent ("not fused" auct.). Genital papillae present. Pectinal basal piece ochreous. Pectines appearing light green-brown due to improper preservation, sparsely setate; middle lamellae partly fused, three to four per comb. Fulcra subtriangular. Pectinal tooth count 13-13, one tooth in each comb almost completely overlapped by its neighbors with tooth count thus seemingly 12-12.

Sternites fusco-ferrugineous. Sternites III-IV smooth, V-VI shagreened postero-laterally; stigmata elongate. Sternite VII four-keeled: submedian carinae present on distal two-thirds, moderately strong, smooth; lateral carinae present on distal three-fourths, moderately strong, subcrenate. Sternite VII with median intercarinae smooth, laterals shagreened.

**Metasoma.**—Uniformly fuscous to fusco-piceous, sparsely setate. Vsm carinae: on I moderately strong, subgranose, subparallel; on II moderately strong, feebly crenate,

parallel; on III weak, crenate, slightly sinuous; on IV with proximal two-thirds weak, granulose, moderately convergent distally, and with distal one-third vestigial to obsolete. **VI** carinae: on I-II strong, subgranulose, weakly to moderately convergent distally; on III-IV moderately strong, subgranulose, weakly divergent distally. **Lim** carinae: on I moderately strong, complete, coarsely granulose; on II-IV weak, complete, moderately granulose. **Lsm** carinae: on I-II strong, coarsely granular; on III moderately strong, granulose; on IV weak to moderate, granulose. **DI** carinae: on I weak, short, granular; on II-III moderately strong, granulose; on IV weak, subgranulose. Intercarinal spaces: ventrals smooth, laterals and dorsals shagreened to moderately granulose.

Segment V distinctly longer than pedipalp femur. **Vm** and **VI** carinae strong, with large subconical granules irregularly spaced. **Vt** keel moderately emarginate, strong and with large subconical granules. **Lm** carinae vestigial to obsolete. **DI** carinae weak to moderate, granulose. Anal arc circular: **Ast** keel moderately strong, with 11-12 oblong, transverse granules; **At** keel weak to vestigial, minutely dentate. Intercarinae: ventrals smooth, laterals and dorsal shagreened. Telson fuscous to fusco-piceous, smooth except for clusters of 4:2:2 medium granules at ventral submargin. Subaculear tubercle strong, subconical. Aculeus short, moderately curved, tip broken off.

**Chelicera**.—Fulvous, chela with variegated fuscosity dorsally. Dentition in Fig. 1.

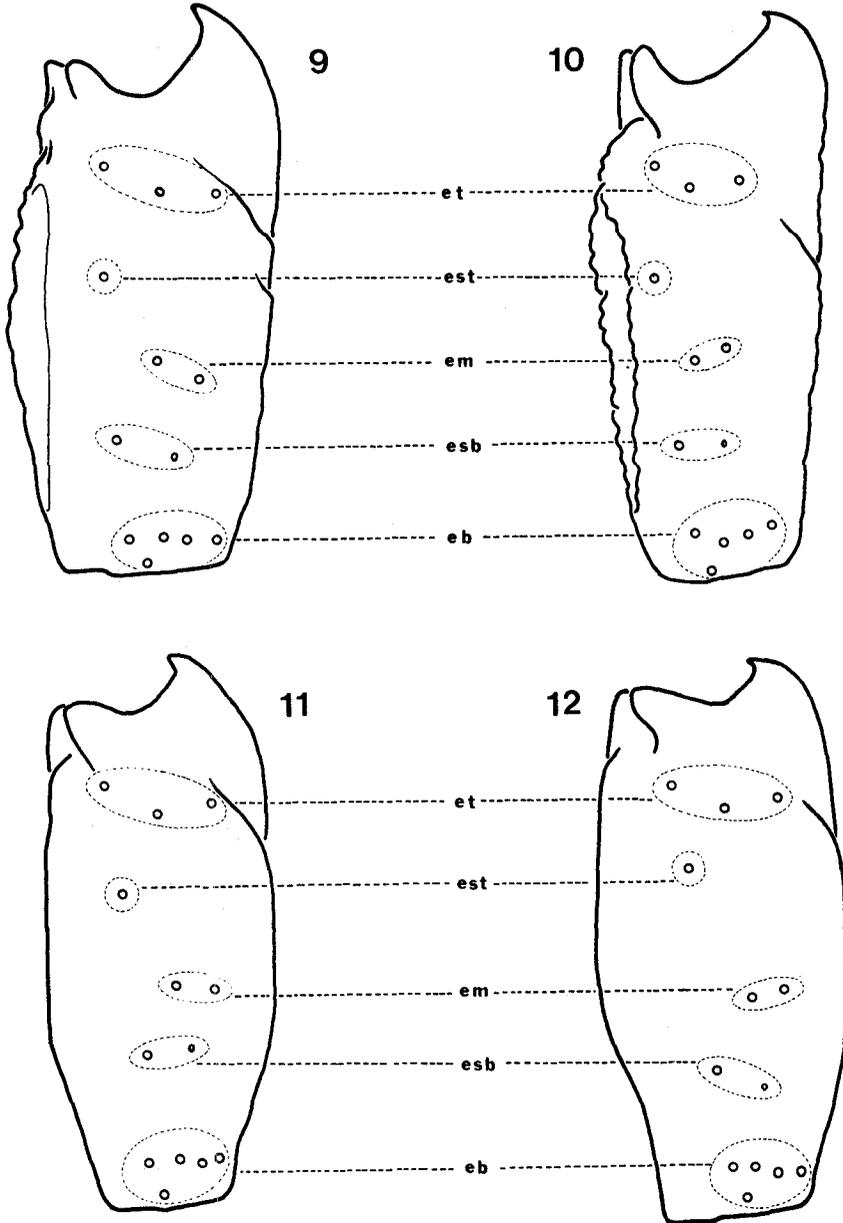
**Pedipalps**.—Trochanter fusco-piceous, coarsely granulose. Femur fusco-piceous, wider than deep. Dorsal internal keel strong, coarsely granulose. Dorsal external keel: proximal one-half strong, coarsely granular; distal one-half tapering gradually to weak, granular condition. Ventral internal keel strong, coarsely granulose. Ventral external keel obsolete. Dorsal face flat, shagreened with sparse to moderately dense small and medium granules. Internal face flat, densely granulose. External face sparsely granulose, external trichobothrium along dorsal margin at basal one-third of femoral length. Ventral face shagreened.

Tibia fusco-piceous, quadrilateral in cross-section. Orthobothriotaxia "C" (Fig. 9). Dorsal internal keel obsolete, basal tubercle strong. Dorsal median carina very strong, crenato-granulose. Dorsal external keel moderately strong, subcrenate. External keel weak to vestigial, subgranular. Ventral external keel strong; basal one-half smooth, distally subcrenate. Ventral median keel weak to vestigial, granulose. Ventral internal keel strong, coarsely granulose. Internal face densely granulose. Dorsal and external faces sparsely granulose. Ventral face smooth.

Chela fuscous, carinae and fingers fusco-piceous. Orthobothriotaxia "C" (Figs. 27-30). Dorsal margin of manus strongly carinate, coarsely granulose. Digital keel very strong, smooth. Dorsal secondary and external secondary carinae weak to moderate, subgranulose. Ventral external keel originating at external condyle of movable finger articulation, converging gradually towards ventral median carina and ending at approximately one-fourth of underhand length from chela base. Ventral median keel very strong, crenate, directed towards midpoint of movable finger articulation. Ventral internal keel strong, smooth to subcrenate, directed towards internal condyle of movable finger articulation. Three internal carinae: dorsal, median, and ventral; weak, granulose; shallow longitudinal depression where chela flexes against tibia appearing between internal median and internal ventral keels.

Chelal dorsal face: submarginal reticulation moderately deep, ridges granular; discal reticulation shallow, ridges smooth; cells outlined by reticulum shagreened. External face with moderately deep reticulation, ridges subcrenate, cells shagreened. Ventral face: externad to ventral median keel weakly reticulate with moderately dense granulation;

internad to ventral median keel with reticulation vestigial to obsolete. Internal face vestigially reticulate, sparsely setate. Fixed finger base: dorsally granulose, with moderately dense setation; externally flat, smooth, bare; internally feebly concave, smooth, moderately setate. Fixed finger internal margin evenly, shallowly arcuate. Fixed and movable finger internal margin evenly, shallowly arcuate. Fixed and movable fingers smooth, moderately setate.

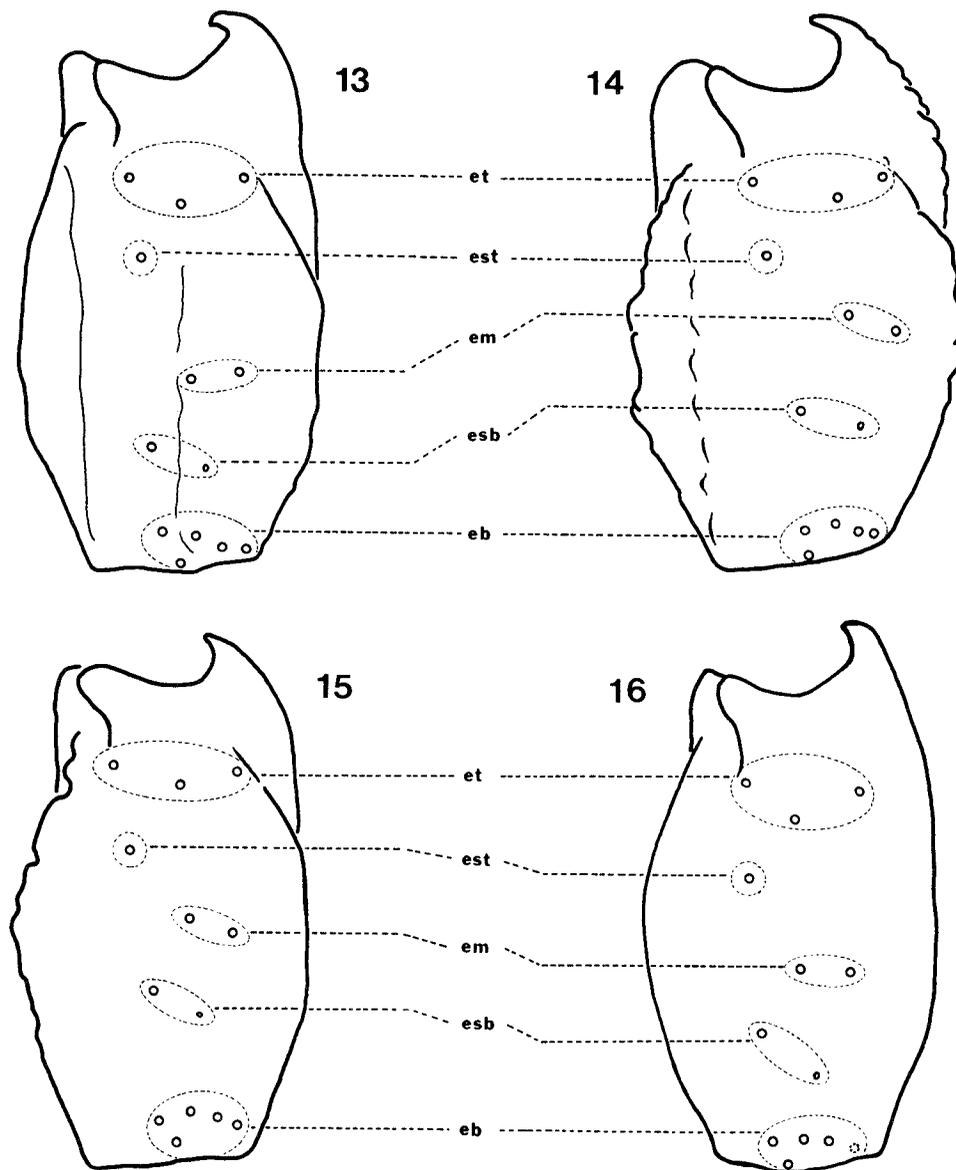


Figs. 9-12.—External view of the right pedipalp tibia of *Diplocentrus* spp. from Oaxaca, showing the trichobothrial patterns: 9, *D. mexicanus mexicanus* Peters, neotype male; 10, *D. ochoterenai* Hoffmann, adult male; 11, *D. tehuano*, n. sp., holotype male; 12, *D. tehuacanus* Hoffmann, holotype male.

**Legs.**—Fusco-piceous. Femora and tibiae shagreened; trochanters and protarsi on I-II smooth, on III-IV vestigially shagreened. Tarsomere II vestigially lobed distally, terminal spine directed ventro-apically rather than strictly apically; spine formula  $5/6$   $4/6$  :  $6/6$   $6/6$  :  $6/7$   $7/7$  :  $7/7$   $7/7$ .

**Female.**—Differs from male as indicated below (measurements in Table 1).

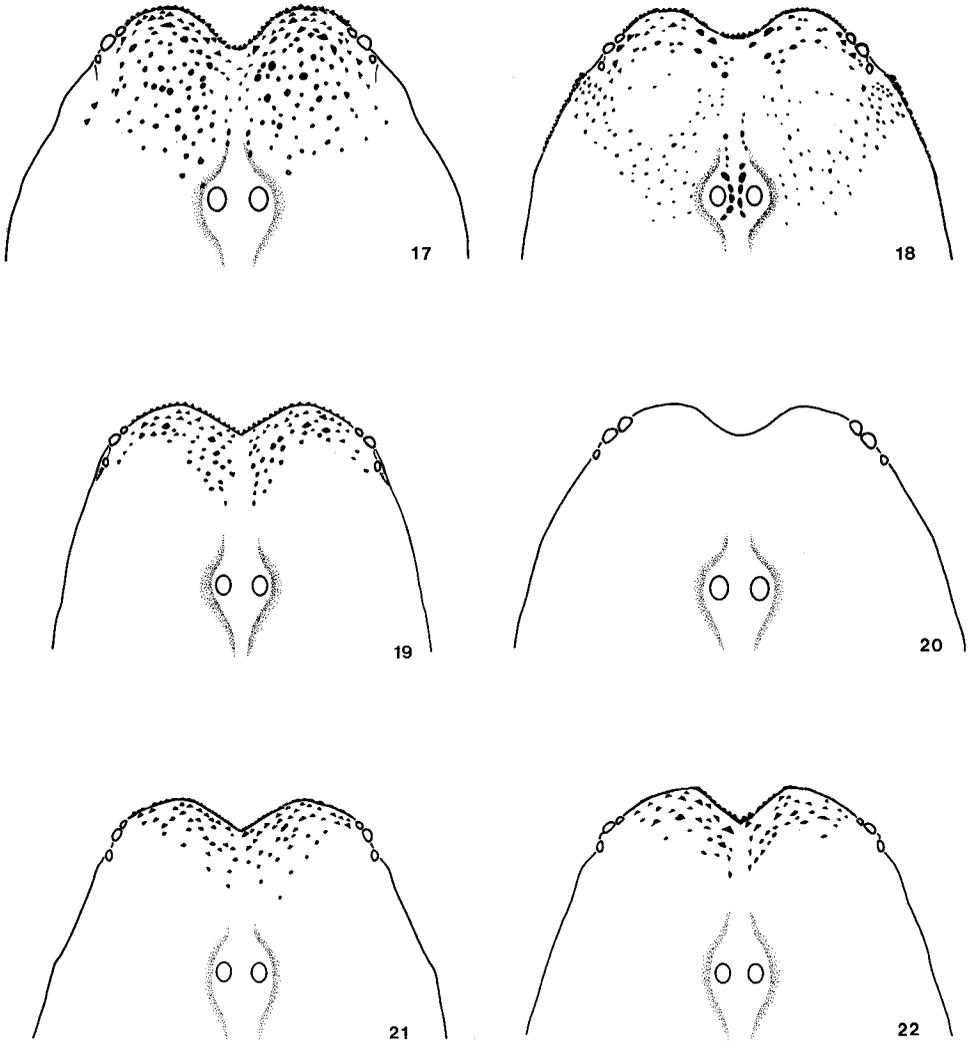
**Prosoma.**—Fusco-ferrugineous, with vestigial variegated fuscous pattern.



Figs. 13-16.—External view of the right pedipalp tibia of *Diplocentrus* spp. from Oaxaca, showing the trichobothrial patterns: 13, *D. reticulatus*, n. sp., holotype male; 14, *D. hoffmanni*, n. sp., holotype male; 15, *D. rectimanus* Pocock, holotype male; 16, *D. mitlae*, n. sp., holotype male; the trichobothrium in the eb group shown by a broken circle is absent on the right tibia, but present on the left tibia.

**Mesosoma.**—Tergites fusco-ferrugineous, variegated fuscosity vestigial, granulation moderately dense. Tergites III-VI with median keel vestigial to obsolete. Genital operculi elliptical, without postero-median emargination; median longitudinal membranous connection complete (“fused” auct.). Genital papillae absent. Pectines ochreous, tooth count 10-10. Sternites ochreous fuscous, smooth. Sternite VII with submedian carinae moderately strong, subrenate; lateral carinae moderate, crenate.

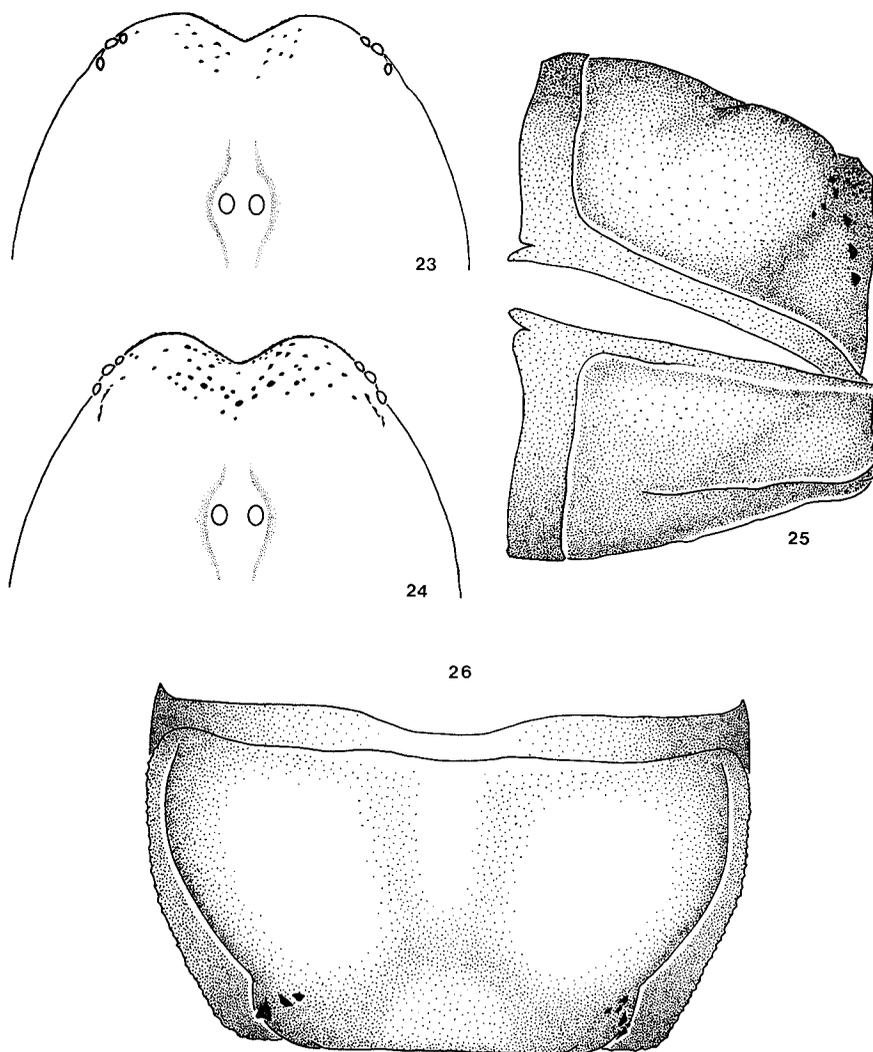
**Metasoma.**—Fusco-rufous. **Vsm** carinae: on I moderately strong, crenato-granulose, parallel; on IV apparently biconcave with rows of small granules fusing medially both basally and distally. **VI** carinae: on I-II strong, crenate, feebly convergent distally; on IV



Figs. 17-22.—Dorsal view of the anterior one-half (approximate) of the carapace of *Diplocentrus* spp. from Oaxaca, showing the shape of the anterior median notch, and the extent of granulation on the anterior submargin: 17, *D. mexicanus mexicanus* Peters, neotype male; 18, *D. ochoterenai* Hoffmann, adult male; 19, *D. tehuacanus* Hoffmann, holotype male; 20, *D. tehuano*, n. sp., holotype male; 21, *D. rectimanus* Pocock, holotype male; 22, *D. hoffmanni*, n. sp., holotype male.

moderate, subgranose, feebly divergent distally. **Lim** carinae: on I moderately strong, complete, crenato-granulose; on II weak to moderate, complete, granular. **Lsm** carinae: on IV moderate to strong, granose. Intercarinae on segments I-IV with granulation not as dense.

**Pedipalps.**—Trochanters vestigially granulose. Femur and tibia fusco-rufous. Femur with external face smooth. Tibia: dorsal external carina moderate to weak, subcrenate; ventral median keel vestigial. Chela fusco-ferrugineous, carinae and fingers fusco-rufous; morphometrically quite distinct from chela of male (male Figs. 27-30, female Figs. 31-32).



Figs. 23-24.—Dorsal views of the anterior one-half (approximate) of the carapace of *Diplocentrus* spp. from Oaxaca, showing the shape of the anterior median notch, and the extent of granulation on the anterior submargin: 23, *D. mitlae*, n. sp., holotype male; 24, *D. reticulatus*, n. sp., holotype male.

Figs. 25-26.—Mesosomal segment VII of *D. mitlae*, n. sp., showing the conspicuous postero-lateral bilobation of the tergal disc and the disappearance of the submedian and lateral carinae of the tergite: 25, lateral aspect of mesosomal segment VII; 26, dorsal aspect of mesosomal tergite VII.

**Legs.**—Segments considerably less granulose. Tarsomere II spine formula  $5/6$  X/X :  $5/7$   $6/7$  :  $7/7$   $7/7$  :  $7/7$   $7/7$  .

**Locality data.**—The neotype is accompanied by three labels, as follows: (1) Kraepelin's handwriting on heavy paper, *Diplocentrus whitei* (Gerv.), Mus. Brussels, 15.V.1899, México; (2) Kraepelin's handwriting on the characteristic rectangular white label with black margins used by him, same information as previous label; (3) typewritten label, Zool. Mus. Hamburg, *Diplocentrus whitei* (Gerv.), México. To these has been added a typewritten label with my designation as the neotype of *Diplocentrus mexicanus mexicanus* Peters. The neotype is deposited in the collection of the Zoologisches Institut und Zoologisches Museum der Hamburg Universität, Hamburg.

The female is accompanied by the following label: *Diplocentrus mexicanus* Peters, México, Koch collection. It is deposited at the British Museum (Natural History), London (BM 13.9.1.73-74).

Since these are the only two specimens known to me of the type species of the genus *Diplocentrus*, it is very unfortunate that more precise locality data, dates of capture, and collectors are not known.

**Intraspecific variability.**—Pectinal tooth counts observed are given in Table 5, and they range from 12-13 in males (12 is the number reported by Karsch, 1880), and 10 in the female. The tarsomere II spine counts observed are summarized in Table 6, and the formula for this species appears to be  $5/6$   $5/6$  :  $6/6$   $6/7$  :  $7/7$   $7/7$  :  $7/7$   $7/7$  .

**Comparative description.**—*Diplocentrus mexicanus* is indeed related to *D. whitei*, under which it had been synonymized. These two species differ in that *D. whitei* has considerably higher pectinal tooth counts, numbering 15-20 in males (predominantly 18-19), and 14-17 in females (predominantly 16); and a higher tarsomere II spine formula at  $6/7$   $6/7$  :  $6/7$   $6/8$  :  $7/8$   $7/8$  :  $7/8$   $7/8$  . In addition, in *D. whitei* the carapace and tergites are lustrous, the metasomal segments III-IV have only eight carinae because the **Lim** keels are obsolete, and the dorsal and lateral intercarinal spaces on metasomal segments I-IV are smooth.

#### *Diplocentrus mexicanus oaxacae*, new subspecies

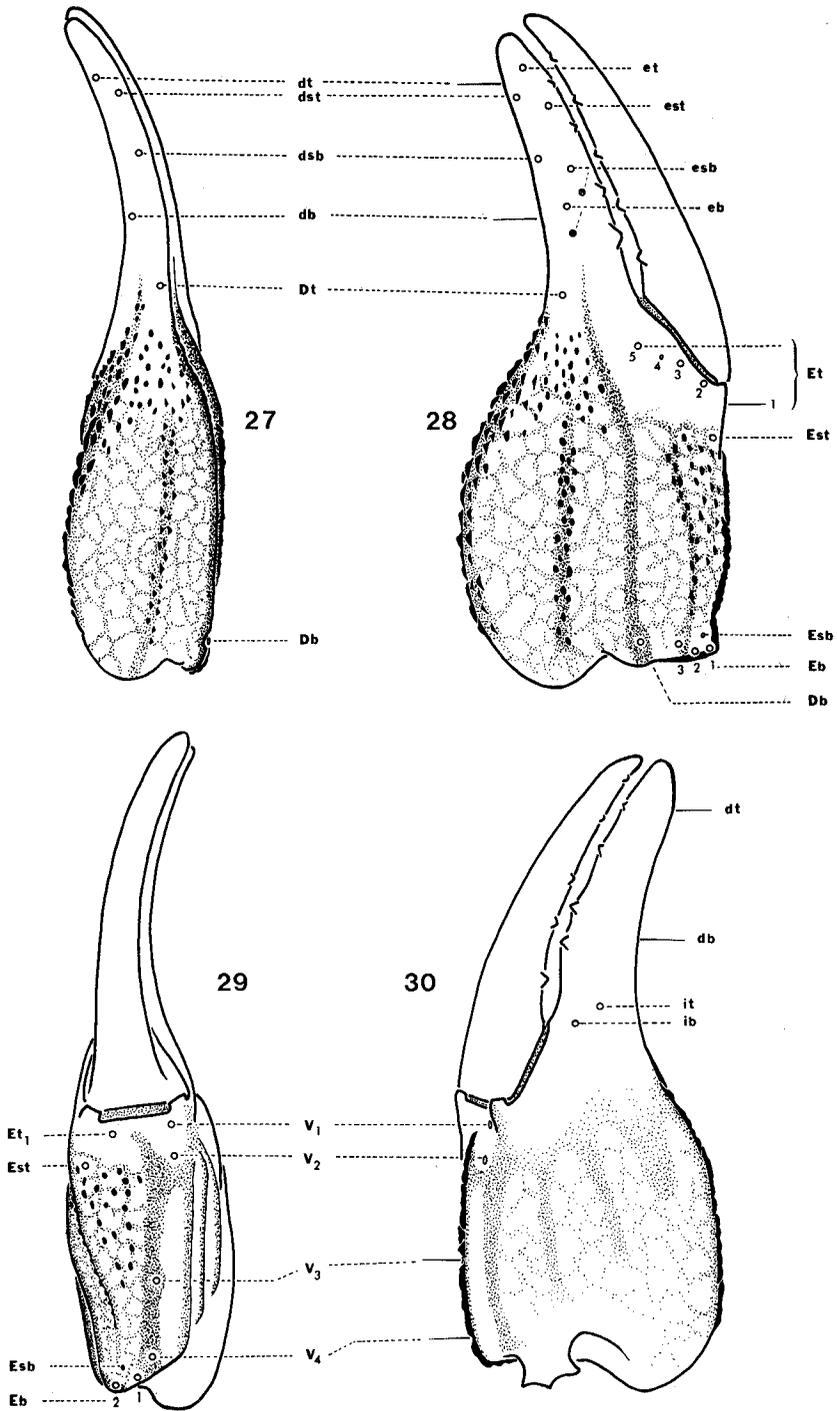
**Diagnosis.**—Moderately large, adults exceeding 65 mm in total length. Fusco-ferruginous, with distinct piceous variegations; legs not contrasting with opisthosoma in coloration; moderately dense granulation throughout. Carapacial anterior margin granulose, median notch rounded; anterior submargin moderately granulose. Tergite VII disc weakly bilobed posteriorly, carinae vestigial to obsolete. Pectinal tooth count 14-17 in males, 11-14 in females. Metasomal segments I-IV with ten complete carinae each, intercarinal spaces rugose to shagreened; segment I slightly wider than long, segment V longer than pedipalp femur. Chelicera: fixed finger shorter than chela width; movable finger shorter than chela length, distal external tooth closely opposed to distal internal tooth. Pedipalps: femur wider than deep, dorsally flat; tibia with dorsal median and dorsal external carinae well developed; chelal fixed finger slightly shorter than femur, movable finger as long or longer than carapace. Tarsomere II spine formula  $5/6$   $5/6$  :  $6/7$   $6/7$  :  $7/8$   $7/8$  :  $7/8$   $7/8$  .

**Holotype.**—Male (measurements in Table 1).

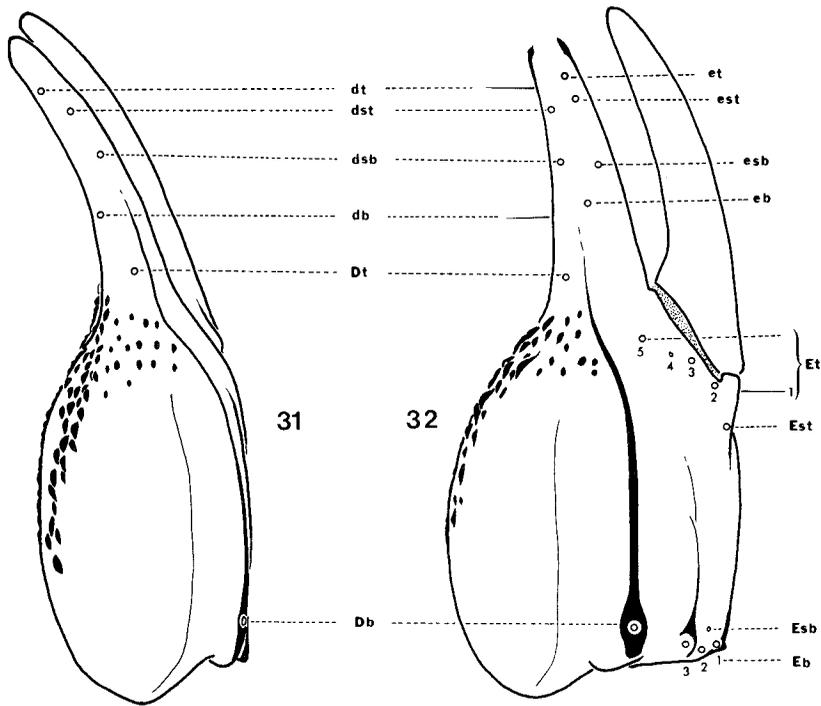
**Prosoma.**—Carapace fusco-ferruginous with dense, piceous variegations. Anterior margin densely granulose; median notch rounded, approximately three times wider than deep. Three pairs of subequal lateral eyes. Anterior median furrow vestigial to obsolete.

Table 1.—Measurements (mm) of *Diplocentrus mexicanus mexicanus* Peters, and *D. mexicanus oaxacae*, n. ssp.

	<i>mexicanus</i>		<i>oaxacae</i>	
	Neotype		Holotype	Allotype
	Male	Female	Male	Female
Total length	68.65	66.80	68.30	67.10
Carapace				
Length	8.30	8.70	8.30	9.10
Anterior width	4.10	4.30	4.10	4.30
Width at median eyes	7.05	7.40	7.50	8.00
Posterior width	8.30	8.90	9.00	9.75
Mesosoma length	18.95	21.90	20.50	21.30
Metasoma length	41.40	36.20	39.50	36.70
Segment I				
Length	5.10	4.50	4.80	4.50
Width	4.70	4.30	5.00	5.05
Segment II				
Length	5.70	4.90	5.50	5.00
Width	4.30	4.10	4.60	4.50
Segment III				
Length	6.00	5.30	5.80	5.30
Width	4.00	3.80	4.30	4.30
Segment IV				
Length	7.10	6.10	6.80	6.30
Width	3.80	3.50	4.00	3.95
Segment V				
Length	9.50	8.10	9.00	8.10
Width	3.30	3.10	3.20	3.40
Telson length	8.00	7.30	7.60	7.50
Vesicle				
Length	6.70	6.30	6.20	6.30
Width	3.10	3.50	3.10	3.50
Depth	2.90	2.90	2.50	3.10
Aculeus length	1.30	1.00	1.40	1.20
Pedipalp length	30.80	29.90	30.50	30.00
Femur				
Length	7.50	7.00	7.40	7.00
Width	2.90	3.10	3.20	3.20
Depth	2.10	2.50	2.30	2.80
Tibia				
Length	7.10	6.80	7.40	7.10
Width	3.00	3.00	3.10	3.20
Chela				
Length	16.20	16.10	15.70	15.90
Width	6.50	7.20	6.90	7.60
Depth	3.50	4.50	4.30	5.10
Movable finger length	9.90	9.50	9.50	9.10
Fixed finger length	7.60	7.00	7.00	6.60
Chelicera				
Chela length	2.60	2.75	2.60	2.80
Chela width	1.70	1.90	1.70	1.80
Fixed finger length	1.30	1.35	1.20	1.50
Movable finger length	2.35	2.40	2.10	2.45
Pectinal teeth	13/13	10/10	16/16	12/14



Figs. 27-30.—Right pedipalp chela of *Diplocentrus mexicanus mexicanus* Peters, neotype male, showing the trichobothrial pattern (open circles): 27, dorsal aspect; 28, external aspect, showing basal displacement of trichobothria esb and eb in *D. mexicanus oaxacae*, n. ssp. (crossed-circles); 29, ventral aspect; 30, internal aspect.



Figs. 31-32.—Right pedipalp chela of *Diplocentrus mexicanus mexicanus* Peters, adult female, showing the trichobothrial pattern and illustrating a considerable degree of sexual dimorphism often observed in *Diplocentrus* spp. regarding such taxonomic characters as: chela depth, relative length and curvature of the fixed finger, and reduced development of textural features (i.e., carinae, reticulation, granulation, etc.): 31, dorsal aspect; 32, external aspect.

Median ocular prominence flat to feebly convex between median eyes, located at anterior two-fifths of carapace length. Posterior median furrow moderate to deep. Posterior marginal furrow moderately deep, narrow. Posterior lateral furrows arcuate. Carapacial surface shagreened; interocular triangle with moderately dense, small granules. Venter ochreous fuscous with diffuse variegated fuscosity. Sternum pentagonal.

**Mesosoma.**—Tergites fusco-ferruginous with dense, variegated fusco-piceous pattern. Tergites I-VI shagreened, with small to medium granules at posterior submargins. Tergites V-VI with median carina vestigial, smooth. Tergite VII weakly bilobed postero-laterally, emargination indistinct and median area feebly depressed; submedian keels short, represented by two to three medium granules at posterior submargin; lateral carinae obsolete. Tergite VII shagreened, with medium and small granules postero-laterally.

Genital operculi ochreous, elliptical and moderately emarginate postero-medially; median longitudinal membranous connection absent. Genital papillae present. Pectines ochreous, sparsely setate; middle lamellae partly fused, three to four per comb. Fulcra subtriangular. Pectinal tooth count 16-16.

Sternites III-VI fulvous, sternite VII fusco-rufous. Sternites III-VI smooth, stigmata elongate. Sternite VII tetracarinate: submedian keels present on distal one-third, weak, smooth; lateral carinae present on distal four-fifths, moderately strong, smooth. Sternite VII with median intercarinae smooth, laterals shagreened.

**Metasoma.**—Fusco-ferrugineous, carinae piceous; sparsely setate. **Vsm** carinae weak to moderately strong: on I subrenate, parallel; on II crenate, subparallel; on III subrenate, sinuous; on IV granulose, poorly defined with granules invading median intercarinal space. **VI** carinae moderate to strong: on I-II crenate, feebly convergent distally; on III subrenate, weakly convergent distally; on IV granulose, weakly divergent distally. **Lim** carinae: on I moderately strong, crenato-granulose, complete; on II moderate, complete, crenate; on III weak, complete, subrenate; on IV weak to vestigial, complete, granose. **Lsm** carinae strong: on I granulose, on II crenate, on III subrenate, on IV granulose. **DI** carinae: on I weak, short, granulose; on II-IV moderate, granulose to subgranose. Intercarinal spaces: ventrals smooth, laterals and dorsals rugose to shagreened.

Segment V longer than pedipalp femur. **Vm** and **VI** carinae strong, with well spaced large subconical granules. **Vt** keel feebly emarginate, strong, with four large oblong granules. **Lm** carinae present on proximal one-half, weak to vestigial, granular. **DI** keels weak, granular. Anal arc circular: **Ast** keel strong, with 11 large oblong granules; **At** keel weak to vestigial, minutely granulose. Intercarinae: ventrals smooth, laterals and dorsal sparsely to moderately granulose. Telson fusco-rufous, smooth except for clusters of 2:3:2 medium sized granules at ventral submargin. Subaculear tubercle strong, subconical. Aculeus short, moderately curved.

**Chelicera.**—Ochreous fuscous; chela with variegated fuscosity dorsally, movable finger with base uniformly infuscate dorsally. Dentition similar to nominate subspecies (see Fig. 1).

**Pedipalps.**—Trochanter fusco-ferrugineous, coarsely granulose. Femur fusco-ferrugineous, wider than deep. Dorsal internal keel strong, coarsely granulose. Dorsal external keel: proximal one-half strong, coarsely granose; distally moderate to weak, subgranose. Ventral internal keel strong, coarsely granulose. Ventral external keel obsolete. Dorsal face flat; shagreened with moderately dense small granules throughout, and three to four medium sized granules medially. Internal face flat, shagreened with dense small granules. External face smooth, external trichobothrium along dorsal margin at basal one-third of femoral length. Ventral face shagreened, with moderately dense small granules basally and internally.

Tibia fusco-ferrugineous, quadrilateral in cross-section. Orthobothriotaxia "C", trichobothrial position not differing significantly from pattern on nominate subspecies (see Fig. 9). Dorsal internal keel obsolete, basal tubercle strong. Dorsal median carina very strong, smooth to subrenate. Dorsal external keel strong, subrenate. External keel weak, smooth. Ventral external keel strong, smooth. Ventral median keel vestigial, smooth. Ventral internal keel moderate, coarsely granulose. Internal face densely granulose. Dorsal, external, and ventral faces weakly to vestigially reticulate.

Chela fusco-ferrugineous, carinae fusco-piceous. Orthobothriotaxia "C", pattern as on nominate subspecies except for displacement of trichobothria **esb** and **eb** towards fixed finger base (see Fig. 28). Dorsal margin of manus strongly carinate; basal one-half smooth, distally coarsely granulose and extending through fixed finger base. Digital keel very strong, smooth. Dorsal secondary keel vestigial, minutely granulose. External secondary keel moderate to weak, smooth. Ventral external keel weak to vestigial, subgranose. Ventral median keel very strong, subrenate, directed towards midpoint of movable finger articulation. Ventral internal keel strong, smooth. Three internal carinae weak, smooth; shallow longitudinal depression where chela flexes against tibia as on nominate subspecies.

Dorsal face weakly to moderately reticulate, ridges subgranose to strongly granulose at dorsal submargin, cells shagreened. External face vestigially reticulate, ridges and cells smooth. Ventral face weakly to moderately reticulate, ridges subgranose to crenate. Internal face weakly to vestigially reticulate, ridges smooth. Fixed finger base: dorsally feebly granulose, bare; externally smooth, bare; internally densely granulose, moderately setate. Fixed finger inner margin evenly, shallowly arcuate. Fixed and movable fingers smooth, moderately setate.

**Legs.**—Ochreous with moderately dense variegated fuscidity. Trochanters vestigially granulose. Femora shagreened. Tibiae: on I smooth; on II vestigially granulose; on III-IV with moderately dense minute granules. Tarsomere II spine formula  $5/6 X/X : 6/7 6/7 : 7/8 7/8 : 8/8 8/8$ .

**Allotype.**—Female (measurements in Table 1), differs from male as indicated below.

**Prosoma.**—Carapace with median ocular prominence feebly concave between median eyes. Surface lustrous, with moderately dense small granules.

**Mesosoma.**—Tergites I-VI lustrous, with moderately dense small granules at posterior submargin. Tergite VII discal bilobation vestigial. Genital operculi with feeble postero-medial emargination; median longitudinal membranous connection complete. Genital papillae absent. Pectinal tooth count 12-14. Sternite VII carinae closely crenate, inter-carinal spaces smooth.

**Metasoma.**—**Vsm** carinae: on I moderately strong, granular; on II moderate, crenate. **VI** carinae: on I strong, granulose to serrate; on II strong, crenate; on IV weak to moderate, granose. **Lim** carinae: on II weak, complete, subgranose; on III weak to vestigial, subgranose. **Lsm** carinae on II-IV strong to moderate, subgranose. **DI** carinae on IV weak, granulose.

**Pedipalps.**—Tibia with ventral median keel obsolete, ventral face smooth. Chela more rounded, carinae not as pronounced. Dorsal margin: basal one-half rounded; distally weakly carinate, coarsely granulose. Dorsal secondary and external secondary carinae vestigial, smooth. Ventral external keel obsolete. Ventral median keel smooth. Ventral internal keel weak to vestigial, smooth. Internal carinae vestigial to obsolete. Dorsal face weakly reticulate, all others with reticulation vestigial to obsolete.

**Legs.**—Lustrous, spine formula  $6/6 6/6 : 6/7 6/7 : 7/8 7/8 : 8/8 8/8$ .

**Remarks.**—The allotype is accompanied by 16 second instar young that were presumably on her back at the time of capture.

**Type locality.**—Primary types collected 2 mi. N “El Moral” (7,000 ft., pine-oak community), Distrito de Etlá, Oaxaca, México, 10 September 1966 (C. M. Bogert). Permanently deposited at the American Museum of Natural History (AMNH), New York.

**Distribution.**—Map 1. In addition to the primary types, the following specimens from the state of Oaxaca were examined: two paratopotypes (adult male, juvenile female), same data as holotype (AMNH); four paratypes (three adult females, subadult male) from area of El Moral (7,200 ft., under rocks), 10 July 1966 (P. C. P., C. M. B., and M. R. B.; AMNH); one paratype (adult female) from 6 mi. N Telixtlahuaca (7,050 ft., under rocks in moderately dry area with juniper and oak), 26 July 1966 (C. M. Bogert, AMNH); one adult female from “México” (Koch collection, BM 13.9.1.73-74).

**Etymology.**—Subspecific name based on the name of the state where this taxon occurs.

**Intraspecific variability.**—Among the adult specimens examined the greatest source of variability is sexual dimorphism, as indicated in the allotype’s description. Variability is very low in other taxonomic characters, except pectinal tooth counts (Table 5) which

range from 14-17 in males, and 11-14 in females. The variability in tarsomere II spine counts is summarized in Table 6, and the typical formula for this subspecies appears to be 5/6 5/6 : 6/7 6/7 : 7/8 7/8 : 7/8 7/8 .

**Comparative description.**—*Diplocentrus mexicanus oaxacae* can be separated from the nominate subspecies by its higher pectinal tooth counts, predominantly 15 in males and 13 in females; and by its slightly higher tarsomere II spine formula, where the difference occurs on the posterior spine rows of legs III-IV which bear eight instead of seven spines. In addition, in *D. mexicanus oaxacae* the first metasomal segment is slightly wider than long, and the fixed finger of the pedipalp chela is shorter than the pedipalp femur.

*Diplocentrus ochoterenai* Hoffmann

Figs. 2, 10, 18, 33-34

*Diplocentrus ochoterenai* Hoffmann 1931, pp. 309-312, fig. 7. Hoffmann 1938, p. 317.  
Díaz Nájera 1964, p. 20. Stahnke 1967, pp. 173-174.

**Diagnosis.**—Large, adults occasionally exceeding 85 mm in total length. Ochreous to brunneous with distinct variegated fuscidity on opisthosoma, metasoma, and pedipalps; legs flavus to ochroleucus, contrasting sharply with opisthosoma in coloration. Carapacial anterior margin granulose, median notch rounded; anterior submargin moderately granulose. Tergite VII disc not lobed postero-laterally, carinae vestigial to obsolete. Pectinal tooth count 17-19 in males, 16 in females. Metasomal segments I-IV with ten complete carinae each, intercarinal spaces rugose to moderately granulose; segment I longer than wide in males, about as long as wide in females; segment V as long or longer than pedipalp femur. Chelicera: fixed finger shorter than chela width; movable finger shorter than chela length, distal external tooth closely opposed to distal internal tooth. Pedipalps: femur wider than deep, dorsally flat; tibia with dorsal median keel strong, dorsal external keel moderate to weak; chelal fixed finger about as long as femur, movable finger longer than carapace. Tarsomere II spine formula 6/7 6/7 : 7/7 7/7 : 7/8 7/8 : 7/8 8/8 .

**Holotype.**—Adult female (measurements in Table 2), not male as indicated by Hoffmann in the original description (1931).

**Prosoma.**—Carapace ochreous with moderately dense fuscous variegations. Anterior margin densely granulose, emarginate; median notch approximately three times wider than deep. Three pairs of lateral eyes, posterior pair smallest. Anterior median furrow shallow to vestigial. Ocular prominence feebly convex between median eyes, located at anterior two-fifths of carapace length. Posterior median furrow moderate to deep. Posterior marginal furrow deep, moderately wide. Posterior lateral furrows arcuate, shallow and broad. Surface with sparse to moderately dense small granules. Venter ochreous to ochreous-fuscous, sparsely setate. Sternum pentagonal.

**Mesosoma.**—Tergites ochreous with moderately dense fuscous variegation; sparsely variegated on I-VI, conspicuously variegated on VII. Tergites I-VI with sparse to moderately dense small granules. Tergites III-VI with median longitudinal keel vestigial, smooth. Tergite VII disc not lobed postero-laterally; submedian carinae obsolete; lateral carinae present at distal submargin, vestigial. Tergite VII medially with sparse to moderately dense small granules, laterally dense granulose.

Genital operculi ochroleucus, trapezoidal; median longitudinal membranous connection complete. Genital papillae absent. Pectines ochroleucus, lamellar setation sparse; middle lamellae partly fused, four per comb. Pectinal tooth count 16-16.

Table 2.—Measurements (mm) of *Diplocentrus ochoterenai* Hoffmann and *Diplocentrus tehuano*, n. sp.

	<i>ochoterenai</i>		<i>tehuano</i>	
	Holotype Female	Male	Holotype Male	Allotype Female
Total length	70.90	86.00	50.45	51.35
Carapace				
Length	9.50	10.70	6.80	7.20
Anterior width	5.20	5.40	3.30	3.35
Width at median eyes	8.40	9.30	5.50	5.50
Posterior width	10.20	11.40	6.30	6.70
Mesosoma length	24.70	27.70	15.85	18.40
Metasoma length	36.70	47.60	27.80	25.75
Segment I				
Length	4.90	6.00	3.45	3.10
Width	4.80	5.60	3.40	3.50
Segment II				
Length	5.10	6.65	3.90	3.70
Width	4.20	5.25	3.15	3.20
Segment III				
Length	5.60	7.25	4.25	4.00
Width	3.90	4.80	2.90	3.05
Segment IV				
Length	6.30	8.40	4.80	4.30
Width	3.50	4.30	2.60	2.80
Segment V				
Length	7.50	10.90	6.20	5.50
Width	3.20	3.45	2.40	2.60
Telson length	7.30	8.40	5.20	5.15
Vesicle				
Length	5.90	6.80	4.30	4.20
Width	3.60	3.80	2.70	3.00
Depth	2.90	3.10	2.20	2.30
Aculeus length	1.40	1.60	0.90	0.95
Pedipalp length	31.60	38.50	24.20	21.30
Femur				
Length	7.50	9.30	5.70	5.10
Width	3.50	3.50	2.40	2.30
Depth	2.75	2.65	1.75	1.90
Tibia				
Length	7.50	9.00	5.50	5.20
Width	3.30	3.80	2.40	2.40
Chela				
Length	16.60	20.20	13.00	11.00
Width	8.10	9.60	5.40	5.90
Depth	5.30	5.25	2.70	3.30
Movable finger length	10.30	12.60	8.40	6.30
Fixed finger length	7.30	9.40	6.50	4.30
Chelicera				
Chela length	3.15	3.30	1.95	2.20
Chela width	2.25	2.20	1.25	1.45
Fixed finger length	1.75	1.65	0.95	1.10
Movable finger length	2.85	2.90	1.70	1.75
Pectinal teeth	16/16	19/18	13/12	10/11

Sternites ochreous to ochreous fuscous. Sternites III-VI smooth to vestigially punctate, stigmata about four times longer than wide. Sternite VII tetracarinate: submedian keels present on distal two-thirds, weak, smooth; lateral keels present on distal two-thirds, moderate to weak, smooth. Sternite VII intercarinae smooth.

**Metasoma.**—Ochreous, with fulvous variegations increasing in density distally within and between segments. **Vsm** carinae: on I-II strong, finely crenate, subparallel; on III moderately strong, subcrenate, parallel; on IV weak, subgranose, subparallel. **VI** carinae: on I-II strong, finely crenate, slightly convergent distally; on III-IV moderate, subcrenate, subparallel. **Lim** carinae: on I-II moderately strong, complete, crenate; on III weak, complete, crenate; on IV weak, complete, granulose. **Lsm** carinae: on I-III strong, crenate; on IV moderate to weak, subgranose. **DI** carinae: on I-II weak, granulose; on III-IV weak to moderate, subgranose. Intercarinal spaces: ventrals smooth to sparsely granulose, laterals and dorsals sparsely to moderately granulose.

Segment V as long as pedipalp femur. **Vm** carina strong, with large subconical granules irregularly spaced and continuing through distal disc. **VI** carina strong, granulose. **Vt** keel not emarginate, strong, with two large subconical to slightly oblong granules on each side of **Vm** keel. **Lm** carinae present on proximal one-half, vestigial, subgranose. Anal arc circular: **Ast** keel moderate, with eight medium and large oblong granules; **At** keel vestigial, minutely granulose. Intercarinae rugose to vestigially granulose. Telson ochreous with moderately dense fulvous pigment: dorsally feebly convex, smooth, bare; laterally and ventrally moderately setate, smooth except for clusters of 3:3:3 medium granules at ventral submargin. Subaculear tubercle strong, subconical; aculeus short, strongly curved with tip broken off.

**Chelicera.**—Ochreous, chela with fulvous variegations dorsally. Dentition in Fig. 2.

**Pedipalps.**—Trochanter fulvous, moderately granulose. Femur ochreous with moderately dense, feebly variegated fulvous pattern; wider than deep. Dorsal internal keel moderately strong, granulose. Dorsal external keel: proximal two-thirds strong, granulose; distally weak to vestigial, subgranose. Ventral internal keel strong, coarsely granulose. Ventral external keel present on basal one-half, weak to vestigial, granulose. Dorsal face flat, with moderately dense small granulation. Internal face with moderate to dense granules. External face smooth, external trichobothrium at dorsal margin on basal one-third of femoral length. Ventral face sparsely to moderately granulose.

Tibia ochreous fuscous with moderately dense variegated fuscosity, quadrangular in cross-section. Orthobothriotaxia "C", pattern as on male (Fig. 10). Dorsal internal keel obsolete, basal tubercle strongly developed. Dorsal median keel strong, subcrenate to smooth. Dorsal external keel weak, subcrenate to smooth. External keel vestigial to obsolete. Ventral external keel weak to moderate, smooth. Ventral median keel obsolete. Ventral internal keel strong, coarsely granulose. Internal face shagreened. Dorsal and external faces smooth to vestigially reticulate. Ventral face vestigially granulose distally.

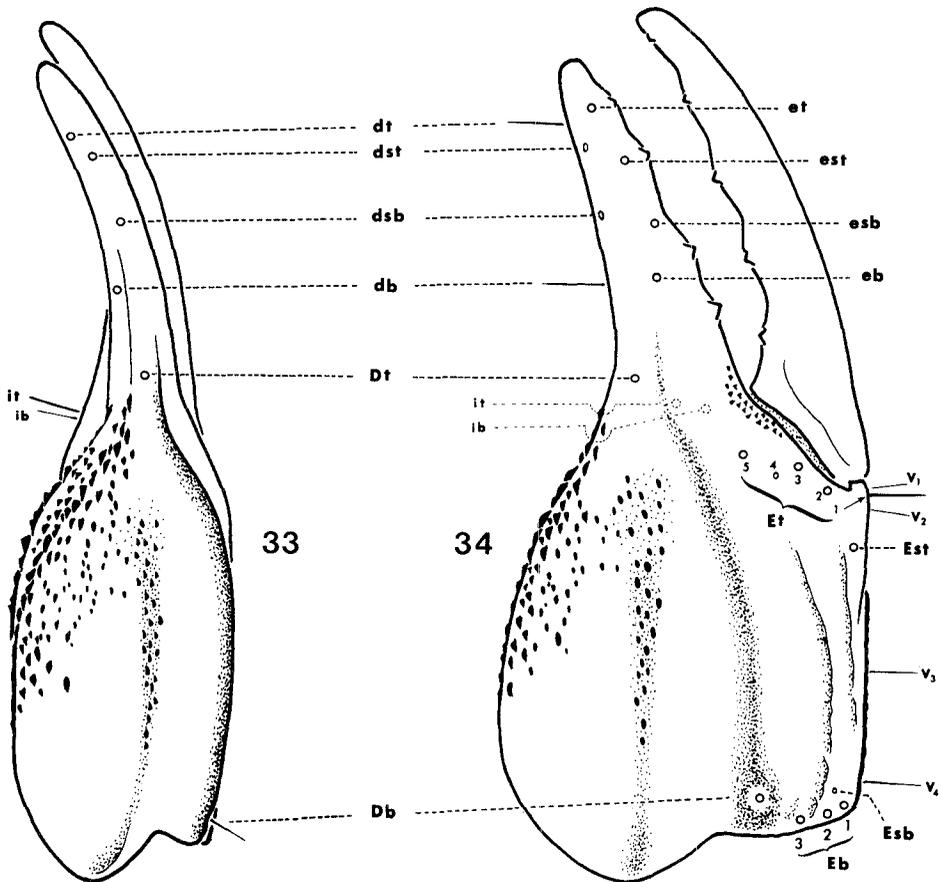
Chela ochreous fuscous, with fine variegations of moderately dense fuscosity; carinae and fingers fusco-ferruginous. Orthobothriotaxia "C". Dorsal margin of manus subcarinate: basal one-half smooth; distally granulose, extending through fixed finger base. Digital keel strong, smooth. Dorsal secondary and external secondary carinae vestigial to obsolete, smooth. Ventral external keel vestigial to obsolete, smooth. Ventral median keel strong, smooth, directed towards midpoint of movable finger articulation. Ventral internal keel weak to vestigial, smooth. Three internal carinae vestigial, smooth; without longitudinal depression where chela flexes against tibia.

Chelal dorsal face weakly to vestigially reticulate. External face reticulation vestigial. Ventral face with reticulation vestigial to obsolete. Internal face with disc smooth, ventral submargin vestigially reticulate, dorsal and distal margins moderately granulose. Fixed finger base smooth, except for submargins of movable finger articulation with dense, minute granules. Fixed finger internal margin evenly, moderately arcuate. Fingers smooth, moderately setate.

**Legs.**—Flavus to ochroleucus. Trochanters sparsely granulose. Femora shagreened. Tibiae: I-II smooth, III sparsely granulose, IV moderately granulose. Tarsomere II feebly lobed distally, spine formula (partly from Hoffman 1931): 6/6 6/6 : 7/7 6/7 : 7/8 7/7 : 7/8 7/8.

**Condition.**—Slight coloration bleaching due to preservative. Left pedipalp broken off at coxa-trochanter articulation, and the chelal finger tips are also broken off (see Hoffmann 1931, p. 310, Fig. 7). Only the second leg on the left side is still attached to the prosoma, the others having been broken off at different joints; in a separate vial there are five legs, four of which still bear tarsomere II, enabling me to confirm the spine formula.

**Male.**—Differs from female as indicated below (measurements in Table 2).



Figs. 33-34.—Right pedipalp chela of *Diplocentrus ochoterenai* Hoffmann, adult male, illustrating trichobothrial positions: 33, dorsal aspect; 34, external aspect.

**Prosoma.**—Carapace shagreened throughout; in addition with moderately dense, small and medium granulation. Interocular triangle with dense, coarse granulation (Fig. 18); superciliary ridges granose.

**Mesosoma.**—Tergites shagreened, with small and medium granules postero-laterally. Genital operculi without median longitudinal membranous connection. Genital papillae present. Pectinal tooth count 17-19.

**Metasoma.**—Segment II with Vsm and VI carinae smooth to subcrenate. Segment IV with DI keels smooth to subcrenate. Segment V longer than pedipalp femur; Lm carinae vestigial, smooth to subgranose.

**Pedipalps.**—Tibia: dorsal external keel strong, subcrenate; dorsal and external faces weakly to vestigially reticulate. Chela (Figs. 33-34) morphometrically longer than chela of female, with fingers contributing proportionately more to this increase in length. Digital keel very strong, smooth. Dorsal secondary keel weak, basally smooth, distally granulose. External secondary keel vestigial, smooth. Dorsal and external faces moderately to weakly reticulate.

**Type locality.**—Holotype from Cuicatlán (near Cañon de Tomellín, 700 m.), Oaxaca, México, September 1931 (C. C. Hoffmann). Colección de Alacranes mexicanos de Carlos C. Hoffmann, AMNH.

**Distribution.**—Map 1. The following specimens have been examined in addition to the holotype, all from the state of Oaxaca: one adult male from Chasumba, no date, no collector (Colección de Alacranes mexicanos, AMNH); one adult male, and one immature male from 10 mi. S Tomellín, 14 August 1967 (J. Reddell, J. Fish, and T. Evans, AMNH); one adult female, two adult males, one subadult male, and one juvenile male from 5.8 mi. N Teotitlán, 31 July 1973 (L. R. Erickson and M. E. Sologlad; Sologlad collection).

**Intraspecific variability.**—Sexual dimorphism and allometric growth are the largest sources of variation, as in other species of the genus. The variability observed in pectinal tooth counts (Table 5) ranges from 17-19 in males, 16 in females. The variation observed in tarsomere II spine counts (Table 6) gives the following typical formula for this species 6/7 6/7 : 7/7 7/7 : 7/8 7/8 : 7/8 8/8 .

The juvenile male from 5.8 mi. N Teotitlán has three lateral eyes on the left side, and only one lateral eye on the right side.

**Comparative description.**—*Diplocentrus ochoterenai* appears to be related to *Diplocentrus taibeli* (Caporiacco) NEW COMBINATION (= *Didymocentrus taibeli*, redescription in preparation) from the lowlands of the Yucatán peninsula. *D. taibeli* can be easily recognized by having a lower pectinal tooth count of 15 in males, and a lower tarsomere II spine formula at 5/5 5/5 : 5/5 5/5 : 6/6 6/6 : 6/6 6/6 .

*Diplocentrus tehuano*, new species

Figs. 3, 11, 20, 35-40

**Diagnosis.**—Medium sized, adults seldom exceeding 55 mm in total length. Ochreous to testaceous with distinct variegated fuscosity on opisthosoma, metasoma, and pedipalps; legs flavus to ochroleucus, contrasting sharply with opisthosoma in coloration. Carapacial anterior margin smooth, median notch rounded; anterior submargin smooth to sparsely granulose. Tergite VII disc vestigially bilobed postero-laterally, carinae obsolete. Pectinal tooth count 11-14 in males, 10-12 in females. Metasomal segments I-II with ten complete carinae each, III with eight complete keels, IV with four to six vestigial keels; segment I as long as wide, segment V longer than pedipalp femur. Chelicera: fixed finger shorter

than chela width; movable finger shorter than chela length, distal external tooth closely opposed to distal internal tooth. Pedipalps: femur wider than deep, dorsally flat; tibia with dorsal median keel well developed, dorsal external keel vestigial to obsolete; chela with fixed finger base internally coarsely granulose along articulation socket. Chelal fixed finger longer than pedipalp femur in males, shorter in females; movable finger longer than carapace in males, shorter in females. Tarsomere II spine formula 4/5 4/5 : 5/5 5/5 : 5/6 6/6 : 6/6 6/6 .

**Holotype.**—Male (measurements in Table 2).

**Prosoma.**—Carapace ochreous, with dense fuscous pattern. Anterior margin smooth to vestigially granulose, emarginate; median notch rounded, slightly less than four times wider than deep (Fig. 20). Three pairs of lateral eyes, posterior pair smallest. Anterior median furrow shallow, wide. Ocular prominence feebly concave between median eyes, located at anterior one-third of carapace length. Posterior median furrow moderate to deep. Posterior marginal furrow deep, moderately wide. Posterior lateral furrows arcuate to subangulose, moderately deep. Surface shagreened, with anterior submargin smooth. Venter flavus to ochroleucus, minutely punctate, sparsely setate. Sternum pentagonal.

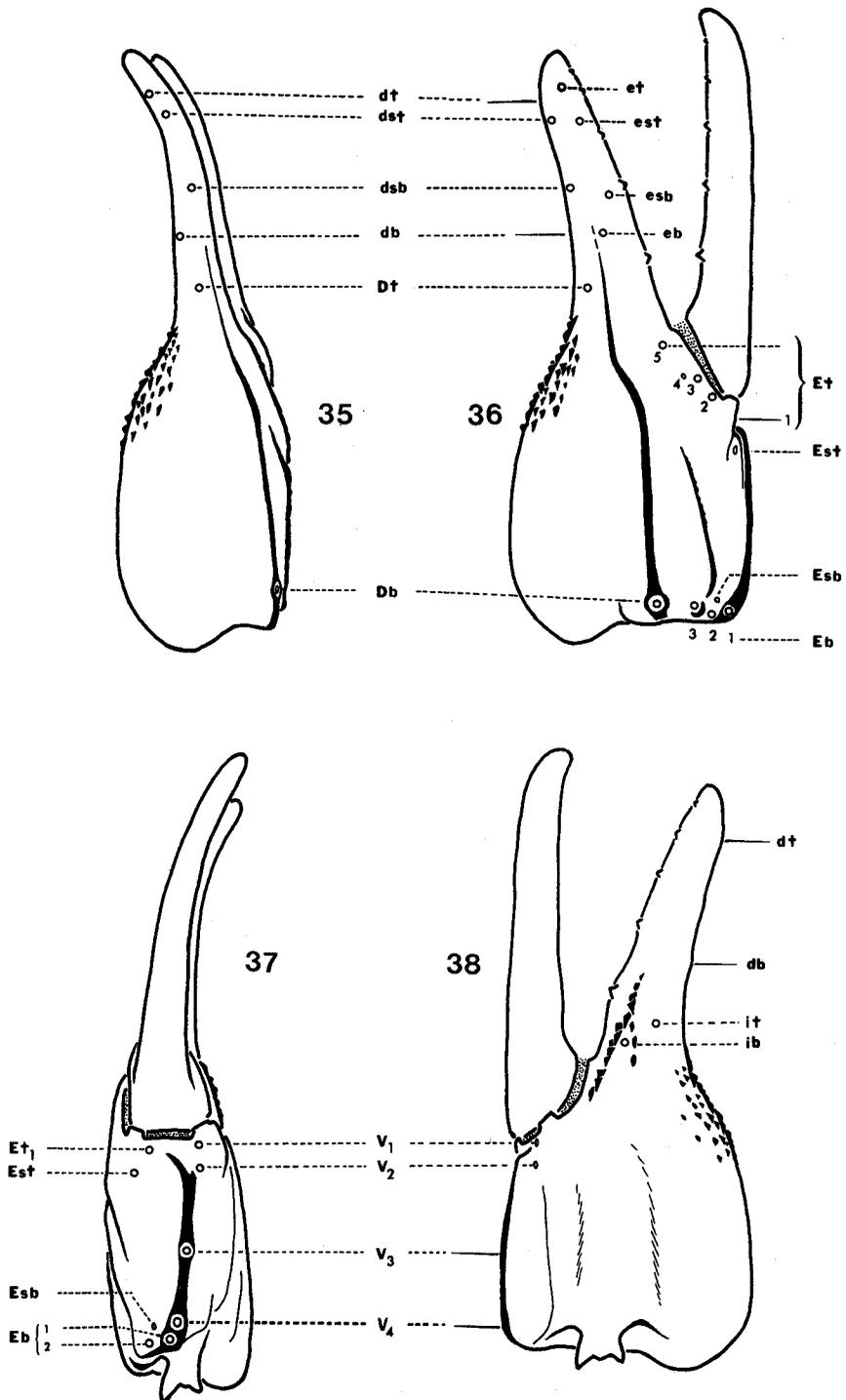
**Mesosoma.**—Tergites ochreous fuscous to testaceous, densely infuscate throughout. Tergites I-IV smooth, V-VI vestigially granulose laterally. Tergite VII disc vestigially bilobed postero-laterally, median area slightly depressed; submedian and lateral carinae obsolete. Tergite VII shagreened, with sparse to moderately dense small granules laterally.

Genital operculi ochroleucus; ellipsoidal, weakly emarginate postero-medially; median longitudinal membranous connection absent. Genital papillae present. Pectines flavus, lamellar setation sparse; middle lamellae indistinct, five to six per comb. Fulcra subtriangular. Pectinal tooth count 12-13.

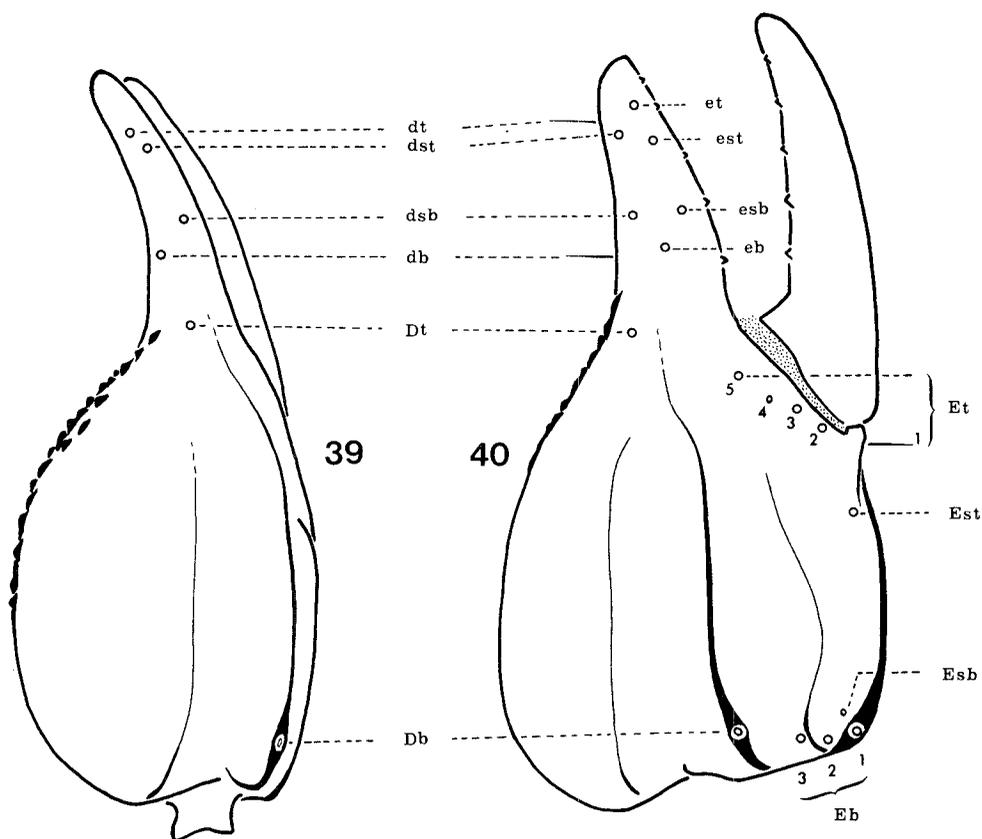
Sternites ochreous fuscous. Sternites III-VI smooth, stigmata three times longer than wide. Sternite VII two-keeled: submedian carinae obsolete; lateral keels present on distal one-third to one-half, weak, subcrenate. Sternite VII with median intercarinae smooth, submedian and lateral intercarinae shagreened.

**Metasoma.**—Ochreous fuscous, carinae vestigially infuscate; sparsely setate. **Vsm** carinae: on I moderately strong, smooth, parallel; on II weak, smooth, parallel; on III vestigial, smooth; on IV obsolete. **VI** carinae: on I strong, smooth, subparallel; on II moderately strong, smooth, subparallel; on III weak to vestigial, smooth, parallel; on IV vestigial, smooth, slightly divergent distally. **Lim** carinae: on I moderately strong, complete, subcrenate; on II weak, complete, subcrenate; on III weak to vestigial, complete, smooth; on IV obsolete. **Lsm** carinae: on I strong, crenato-granulose; on II moderately strong, crenulate; on III-IV weak to moderate, feebly crenate. **DI** carinae: on I-II weak to vestigial, sparsely granulose; on III weak to moderate, granulose; on IV moderately strong, granulose, distally becoming abruptly divergent and merging with **Lsm** keels on respective sides. Intercarinal spaces smooth to feebly rugose.

Segment V longer than pedipalp femur. **Vm** and **VI** carinae: proximal one-third weak, granulose; distally moderately strong, with large subconical granules well spaced. **Vt** keel emarginate, with two large subconical granules per side. **Lm** carinae present on proximal one-third, vestigial, smooth to subgranose. **DI** carinae strong, subcrenate. Anal arc circular: **Ast** keel moderately strong, with 12 medium sized oblong granules; **At** keel vestigial, smooth. Intercarinal spaces smooth to sparsely punctate. Telson ochreous: dorsally flat, smooth, bare; lateral and ventral surfaces moderately setate, smooth except for clusters of 3:5:3 small granules at ventral submargin. Subaculear tubercle strong, subconical. Aculeus short, strongly curved.



Figs. 35-38.—Right pedipalp chela of *Diplocentrus tehuano*, n. sp., holotype male, showing trichobothrial pattern: 35, dorsal aspect; 36, external aspect; 37, ventral aspect; 38, internal aspect.



Figs. 39-40.—Right pedipalp chela of *Diplocentrus tehuano*, n. sp., allotype female, showing trichobothrial positions and illustrating one of the most extreme cases of chelal sexual dimorphism I have encountered in the genus: 39, dorsal aspect; 40, external aspect.

**Chelicera.**—Chela and fingers ochreous, teeth fulvous. Dentition in Fig. 3.

**Pedipalps.**—Femur ochreous testaceous, wider than deep. Dorsal internal carina strong, granulose. Dorsal external keel: basal one-fourth moderately strong, granular; subbasal one-fourth weak to vestigial, subgranulose; distally obsolete. Ventral internal keel strong, granulose, distally curving dorsad and merging with dorsal internal keel. Ventral external carina obsolete. Dorsal face flat, with moderately dense small and minute granulation. Internal face coarsely granulose dorsally, shagreened medially and ventrally. External face smooth, external trichobothrium along dorsal margin at basal three-tenths of femoral length. Ventral face shagreened.

Tibia brunneous to testaceous, carinae vestigially infusate. Orthobothriotaxia "C" (Fig. 11). Dorsal internal keel obsolete; basal tubercle feebly developed, with four to six small granules. Dorsal median keel strong, smooth. Dorsal external keel vestigial to obsolete. External keel weak to vestigial, smooth. Ventral external keel strong, smooth to feebly crenate. Ventral median keel obsolete. Ventral internal keel weak to moderate, subgranulose. Internal face shagreened. Dorsal and external faces vestigially reticulate. Ventral face densely punctate.

Chela ochreous with variegated fuscidity on manus, fingers fusco-rufous. Orthobothriotaxia "C" (Figs. 35-38). Dorsal margin of manus acutely angulose, carinate: basal

two-thirds smooth; distally coarsely granulose, extending through fixed finger base. Digital keel strong, smooth. Dorsal secondary keel vestigial to obsolete. External secondary keel moderately strong, smooth. Ventral external keel obsolete. Ventral median carina very strong, smooth to subcrenate; slightly oblique, directed towards midpoint of movable finger articulation. Ventral internal keel vestigial, smooth. Two internal carinae outlining depression where chela flexes against tibia; weak to vestigial, minutely granulose to smooth.

Chelal dorsal face strongly reticulate, ridges crenate to granulose. External face bare, moderately reticulate with faintly crenate ridges. Ventral face vestigially reticulate. Internal face: disc bare, smooth; ventral submargin feebly reticulate, bare; distal region extending to fixed finger base sparsely setate, smooth. Fixed finger base: internally moderately granulose, bare; externally smooth, bare; dorsally vestigially reticulate, granulose. Fixed finger internal margin: basal two-thirds almost straight, distally moderately arcuate. Fingers smooth, moderately setate.

**Legs.**—Flavus to ochroleucus, sparsely setate. Femora and tibiae with external faces and ventral margins vestigially granulose. Tarsomere II spine formula 4/4 4/4 : 5/5 5/5 : 5/6 6/6 : 6/6 6/6 .

**Allotype.**—Female (measurements in Table 2), differs from holotype as indicated below.

**Prosoma.**—Carapace densely infusate. Anterior median furrow vestigial. Posterior lateral furrows obtusely angulose.

**Mesosoma.**—Tergites I-VI lustrous, smooth. Tergite VII lustrous, sparsely granulose. Genital operculi ellipsoidal, vestigially emarginate postero-medially; median longitudinal membranous connection complete. Genital papillae absent. Pectinal tooth count 10-11. Sternites III-VI with discs minutely punctate. Sternite VII tetracarinate: submedian keels present on distal one-third, moderately strong, smooth; lateral keels present on distal two-thirds, moderately strong, smooth; intercarinal spaces punctate.

**Metasoma.**—Testaceous; carinae moderately infusate, intercarinae with sparse variegated fuscosity. **Vsm** carinae: on I strong, feebly crenate; on II weak to moderate, feebly crenate. **Lim** carinae on I moderately strong, crenate. Segment V with **Vt** keel moderately strong, three large conical granules per side; **Lm** keels obsolete, **DI** keels strong, granulose. Anal arc circular: **Ast** keel with 14-15 small, oblong granules. Telson with ventral marginal clusters of 3:3:4 small to medium sized granules.

**Pedipalps.**—Femur fuscous, vestigially infusate. Tibia testaceous, carinae with moderately dense fuscosity. Chela testaceous, fingers fusco-ferruginous; morphometrically very distinct from chela of male (Figs. 39-40). Dorsal margin of manus rounded to subcarinate, distally granulose through fixed finger base. Digital keel moderately strong, ending gradually at fixed finger base. Dorsal secondary and external secondary carinae vestigial, smooth. Ventral external keel obsolete. Ventral median carina moderately strong, smooth. Ventral internal keel vestigial to obsolete. Two internal carinae obsolete. Dorsal face of manus moderately to weakly reticulate, ridges smooth. External face vestigially reticulate. Ventral face rugose. Internal face: disc smooth, dorsal and ventral submargins vestigially reticulate. Fixed finger base: dorsally and externally smooth, bare; internally moderately granulose, sparsely setate. Fixed finger inner margin evenly, moderately arcuate. Movable finger shorter than carapace.

**Legs.**—Tarsomere II spine formula 4/5 4/5 : 5/5 5/6 : 5/6 6/6 : 6/6 6/6 .

**Type locality.**—Primary types collected 4 mi. E Tehuantepec, Oaxaca, México, 21 June 1964 (R. D. Sage). Deposited at the California Academy of Sciences (CAS), San Francisco.

**Distribution.**—Map 1. In addition to the primary types, the following specimens from Oaxaca have been examined: one immature paratype male, San Geronimo, July 1909 (no collector, AMNH); 28 paratopotypes (13 males, 15 females), same data as holotype. One subadult male, and one subadult female paratopotypes respectively deposited at the AMNH, courtesy of the University of California at Berkeley, where the remaining paratopotypes are deposited.

**Etymology.**—This species is named after the ethnic group, the “tehuanos,” which inhabit the southern region of the Isthmus of Tehuantepec, whose cultural center is the city known by the same name and corresponding to the type locality.

**Intraspecific variability.**—*Diplocentrus tehuano* shows marked sexual dimorphism, allometric growth, and ontogenic changes in coloration. The specimens studied represent at least seven instars, not including first instars, recognizable as discrete size classes, and a detailed analysis of the overall variability observed is not considered necessary. Therefore, only those characters known (or considered) to be species specific, and thus taxonomically useful, will be mentioned.

**Coloration:** Base color ochreous to testaceous, tending to become darker in older instars. Density, extent, and pattern of fuscosity on carapace and tergites showing reduced variability. Variegated fuscosity on pedipalp chela ranging from vestigial to moderately dense in immatures, becoming less variable in older instars which have moderately dense fuscosity.

**Carapace:** Anterior median notch shallow and broad in immatures, moderately deeper in adults. One immature paratopotype male with only two lateral eyes on the right side.

**Pectinal tooth count variability** summarized in Table 5, ranging from 11 to 14 in males, 10 to 12 in females.

**Metasoma:** Segment V anal arc with Ast keel bearing predominantly 13-14 small, oblong granules (range 11 to 15). Telson with ventral submarginal clusters of granules numbering predominantly 3:3:3 (ranges 2-3:3-5:2-3).

**Tarsomere II spine count variability** summarized in Table 6. The typical formula appears to be 4/5 4/5 : 5/5 5/5 : 5/6 6/6 : 6/6 6/6 , with high variability occurring especially on the anterior margin of the third pair of legs, where either five or six spines occur with equal frequency.

**Comparative description.**—*Diplocentrus tehuano* seems to be distantly related to *D. ochoterenai* on account of cheliceral, femoral, and chelal morphological similarities. *D. ochoterenai* can be easily separated on the basis of its larger size, higher pectinal tooth counts, higher tarsomere II spine formula, and increased extent of carinal development on metasomal segment IV and on the pedipalp tibia. Although *D. tehuano* resembles *D. tehuacanus* Hoffmann in the above mentioned characters, these two species do not appear to be closely related at all, and can be easily separated in terms of coloration, extent of granulation on the anterior margin and submargin of the carapace, the shape of the carapacial median notch, the relative positions of the distal external and distal internal teeth of the cheliceral movable finger, the morphology of the pedipalp chela, and the position of chelal trichobothrium  $Eb_1$  with respect to the ventral median keel of the manus.

*Diplocentrus tehuacanus* Hoffmann, new combination

Figs. 5, 12, 19, 41-44

*Diplocentrus keyserlingi tehuacanus* Hoffmann 1931, pp. 312-323, Figs. 11-12. Hoffmann 1938, p. 317. Díaz Nájera 1964, p. 20.

**Diagnosis.**—Medium sized, adults seldom exceeding 55 mm in total length. Ochreous to ochreous fuscous, with distinct variegated fuscous; legs not contrasting with opisthosoma in coloration. Carapacial anterior margin granulose, median notch obtusely angulose; anterior submargin moderately granulose. Tergite VII disc moderately bilobed postero-laterally, carinae obsolete. Pectinal tooth count 11-14 in males, 11-13 in females. Metasomal segments I-II with ten complete carinae each, III with eight keels, IV with four to six vestigial carinae; intercarinal spaces minutely granulose to punctate; segment I as wide as long in males, wider than long in females; segment V longer than pedipalp femur. Chelicera: fixed finger shorter than chela width; movable finger shorter than chela length, distal external tooth not closely opposed to distal internal tooth. Pedipalps: femur slightly wider than deep, dorsally flat to feebly convex; tibia with dorsal median keel moderately strong, dorsal external keel obsolete; fixed finger base internally smooth along articulation socket; fixed finger shorter than pedipalp femur; movable finger longer than carapace in males, shorter in females. Tarsomere II spine formula 4/5 4/5 : 5/5 5/5 : 6/6 6/6 : 6/6 6/6.

**Holotype.**—Male (measurements in Table 3).

**Prosoma.**—Carapace ochreous with distinct fuscous pattern. Anterior margin granulose, emarginate; median notch obtusely angulose, approximately three and one-half times wider than deep (Fig. 19). Three pairs of lateral eyes, posterior pair smallest. Anterior median furrow: submarginally shallow, moderately wide; medially expanding into slightly depressed, circular, smooth area (*area frontalis* of Birula, 1917); distally to base of ocular prominence obsolete. Median ocular prominence vestigially concave between median eyes, located at anterior two-fifths of carapace length. Posterior median furrow moderately deep. Posterior marginal furrow moderately deep, narrow. Posterior lateral furrows subangulose. Surface shagreened, anterior submargin moderately granulose. Venter ochreous, sparsely setate. Sternum pentagonal.

**Mesosoma.**—Tergites ochreous with distinct fuscous pattern: discs with moderately dense, variegated fuscous; posterior submargins uniformly infuscate; overall density of fuscous decreases distally between segments. Tergites I-VI shagreened, posterior submargins with sparse small and medium granules. Tergite VII moderately bilobed postero-laterally, median emargination indistinct and middle area subtly depressed; submedian and lateral carinae obsolete. Tergite VII shagreened, laterally coarsely granulose, and postero-lateral submargins with transverse keel-like row of medium sized granules.

Genital operculi ochreous, ellipsoidal, without postero-median emarginations; median longitudinal membranous connection absent. Genital papillae present. Pectines ochreous to ochroleucus, lamellar setation sparse; middle lamellae partly fused, two to three per comb. Fulcra subtriangular. Pectinal tooth count 12-13.

Sternites ochreous. Sternites III-VI smooth, stigmata about three times longer than wide. Sternite VII tetracarinate: submedian keels present on distal one-third, vestigial, smooth; lateral keels present on distal two-thirds, weak, smooth; intercarinae smooth.

**Metasoma.**—Ochreous fuscous, sparsely to moderately setate. **Vsm** carinae: on I-II weak, crenate, subparallel; on III with proximal two-thirds vestigial and smooth, distally obsolete; on IV obsolete. **VI** carinae: on I strong, crenate, moderately convergent distally;

Table 3.—Measurements (mm) of *Diplocentrus tehuacanus* Hoffmann and *Diplocentrus rectimanus* Pocock.

	<i>tehuacanus</i>		<i>rectimanus</i>	
	Holotype	Topotype	Holotype	
	Male	Female	Male	Female
Total length	54.95	45.10	49.70	53.95
Carapace				
Length	6.80	6.05	6.40	7.55
Anterior width	3.50	3.30	3.65	4.10
Width at median eyes	5.50	4.95	4.40	5.70
Posterior width	6.85	6.05	6.55	7.40
Mesosoma length	18.10	16.25	15.80	18.70
Metasoma length	30.05	22.80	27.50	27.70
Segment I				
Length	3.95	2.80	3.30	3.40
Width	4.00	3.30	3.90	4.30
Segment II				
Length	4.35	3.25	3.85	3.90
Width	3.70	3.10	3.60	3.95
Segment III				
Length	4.60	3.40	4.30	4.15
Width	3.50	2.95	3.45	3.85
Segment IV				
Length	5.30	3.95	4.95	4.75
Width	3.10	2.85	3.40	3.70
Segment V				
Length	6.25	4.70	6.00	5.80
Width	2.70	2.45	2.70	3.10
Telson length	5.60	4.70	5.10	5.70
Vesicle				
Length	4.65	3.80	4.00	4.50
Width	2.90	2.80	2.60	3.35
Depth	2.20	2.10	2.10	2.50
Aculeus length	0.95	0.90	1.10	1.20
Pedipalp length	24.90	18.45	20.65	22.50
Femur				
Length	6.10	4.30	4.75	5.10
Width	2.10	2.15	1.85	2.00
Depth	1.85	2.05	2.65	2.60
Tibia				
Length	6.10	4.35	4.70	5.10
Width	2.20	2.10	2.05	2.30
Chela				
Length	12.70	9.80	11.20	12.30
Width	5.00	5.10	5.50	6.00
Depth	3.10	3.10	3.10	3.80
Movable finger length	6.90	5.50	7.15	7.60
Fixed finger length	5.00	3.95	5.10	5.50
Chelicera				
Chela length	2.15	2.00	2.25	2.75
Chela width	1.50	1.55	1.60	2.05
Fixed finger length	1.20	1.20	1.70	2.10
Movable finger length	1.85	1.90	2.30	2.95
Pectinal teeth	13/12	11/11	10/10	8/8

on II moderately strong, crenate, slightly convergent distally; on III with proximal three-fourths weak to vestigial, subcrenate to smooth, distally obsolete; on IV vestigial to obsolete. **Lim** carinae: on I strong, complete, crenate; on II with proximal one-third vestigial and smooth, distally weak and crenate; on III vestigial to obsolete, smooth; on IV obsolete. **Lsm** carinae: on I strong, crenate; on II strong, smooth to subcrenate; on III-IV weak, smooth. **DI** carinae on I-IV weak to vestigial, smooth to subgranose. Inter-carinal spaces: ventrals vestigially punctate, laterals and dorsals shagreened to vestigially granulose.

Segment V slightly longer than pedipalp femur. **Vm** and **VI** carinae weak to moderate; distal two-thirds with sparse, medium sized granules. **Vt** keel moderately emarginate, moderately strong and with five medium sized oblong granules. **Lm** carinae obsolete. **DI** keels vestigial, smooth. Anal arc circular: **Ast** keel moderately strong, with 14 medium and small oblong granules; **At** keel weak, minutely granulose. Telson ochreous fuscous with faint, uniform fuscous ventrally and laterally; dorsally flat, smooth, bare; laterally and ventrally moderately setate, smooth except for ventral submarginal clusters of 3:4:3 medium sized granules. Subaculear tubercle strong; aculeus short, moderately to strongly curved.

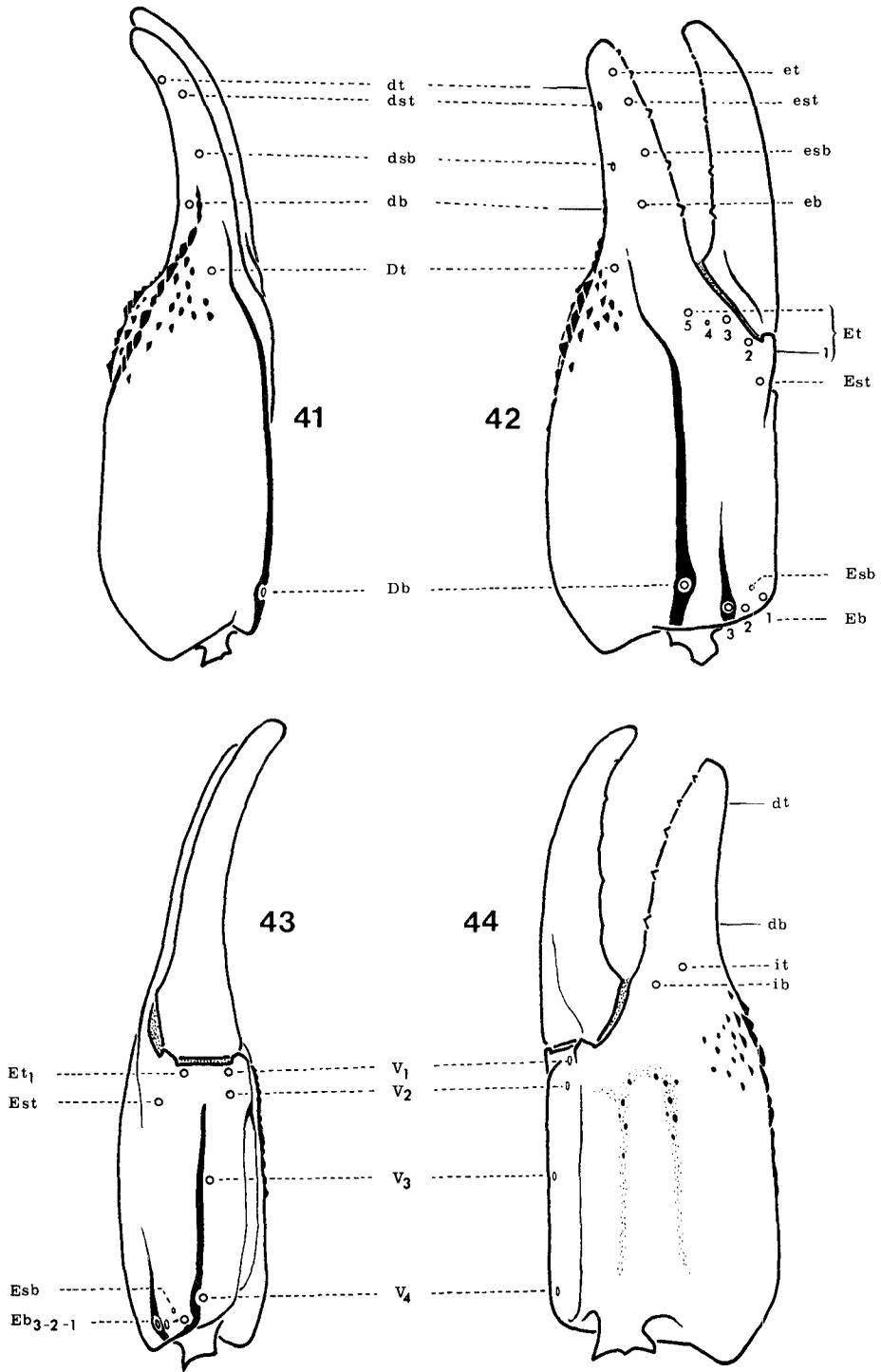
**Chelicera**.—Ochreous, chela dorsally with vestigial variegated fuscous. Dentition in Fig. 5.

**Pedipalps**.—Femur ochreous fuscous, wider than deep. Dorsal internal keel strong, coarsely granulose. Dorsal external keel: basal one-half moderately strong, granulose; distally weak to vestigial, subgranose. Ventral internal keel moderately strong, granulose. Ventral external keel obsolete. Dorsal face flat to feebly convex, sparsely to moderately granulose medially. Internal face flat, moderately granulose. External face smooth, external trichobothrium along dorsal margin at basal two-fifths of femoral length. Ventral face smooth.

Tibia ochreous, dorsal median keel vestigially infuscate, external face with vestigial variegated fuscous. Orthobothriotaxia "C" (Fig. 12). Dorsal internal keel obsolete; basal tubercle moderate, with three or four medium sized granules. Dorsal median keel moderately strong, smooth. Dorsal external keel obsolete. External keel vestigial to obsolete. Ventral external keel moderately strong, smooth. Ventral median keel obsolete. Ventral internal keel moderately strong, subgranose. Internal face shagreened, with sparse small granules. Dorsal, external, and ventral faces smooth to vestigially punctate.

Chela ochreous fuscous, fingers ferruginous; dorsal and external faces of manus with vestigial reticulated fuscous. Orthobothriotaxia "C" (Figs. 41-44). Dorsal margin of manus carinate, smooth to subgranose, continuing through fixed finger base with coarse granulations. Digital keel moderate to strong, smooth. Dorsal secondary, external secondary, and ventral external carinae vestigial to obsolete, smooth. Ventral median keel strong, smooth to subcrenate, directed towards midpoint of movable finger articulation. Ventral internal keel weak to moderate, smooth. Two internal keels weak to vestigial, feebly granular, outlining depression where chela flexes against tibia.

Dorsal face of manus: disc vestigially reticulate, ridges sparsely punctate; sparsely granulose towards fixed finger base. External and ventral faces smooth, bare. Internal face moderately granulose at dorsal submargin and towards fixed finger base; disc smooth, bare. Fixed finger base: dorsal submargin granulose, bare; external face smooth, sparsely setate; internally smooth, sparsely setate. Fixed finger internal margin moderately arcuate. Fixed and movable fingers smooth, moderately setate. Movable finger about as long as carapace.



Figs. 41-44.—Right pedipalp chela of *Diplocentrus tehuacanus* Hoffmann, holotype male, showing the trichobothrial arrangement: 41, dorsal aspect; 42, external aspect; 43, ventral aspect; 44, internal aspect.

**Legs.**—Ochreous with vestigial variegated fuscosity. Femora III-IV shagreened. Tarsomere II feebly lobed distally, spine formula 4/5 4/5 : 5/6 5/5 : X/X X/X : X/X 6/7 .

**Condition.**—Holotype in good condition except for lacking the third and fourth legs on the right side and the third leg on the left side.

**Female.**—Differs from holotype as indicated below (measurements in Table 3).

**Prosoma.**—Carapace with anterior margin subgranose, interocular triangle sparsely to moderately granulose; surface lustrous and vestigially punctate.

**Mesosoma.**—Tergites I-VI lustrous with postero-lateral submargins sparsely, vestigially granulose. Tergite VII feebly to vestigially bilobed postero-laterally; disc lustrous, posterior margin granulose. Genital operculi elliptical, with complete median longitudinal membranous connection. Genital papillae absent. Pectinal tooth count 11-13. Sternite VII with carinae smooth to crenate.

**Metasoma.**—Vsm carinae on I-II weak to moderate, crenato-granulose. VI carinae on III weak, complete, subcrenate. Lim carinae on II weak, complete, crenate. Dorsal and lateral intercarinae on segment I vestigially granulose to rugose, all others vestigially punctate.

**Pedipalps.**—Femur ochreous fuscous, slightly wider than deep. Dorsal internal keel moderately strong, granulose. Dorsal external keel: basal one-half weak to moderate, granulose; distally vestigial to obsolete, subgranose to smooth. External face sparsely punctate. Tibia with external keel obsolete, ventral external keel weak to vestigial, smooth. Chela morphometrically differing from male chela, appearing more rounded as faces of manus are not obtusely angulose with each other. Dorsal margin of manus: basal one-half rounded, smooth; distal one-half and fixed finger base subcarinate, granulose. Digital keel weak, smooth, tapering along fixed finger base. Dorsal secondary, external secondary, ventral external, and ventral internal carinae vestigial to obsolete. Ventral median keel moderately strong, smooth. Two internal carinae vestigial, smooth. Dorsal face of manus with reticulation vestigial to obsolete; surface densely, minutely punctate. External and ventral faces vestigially rugose to smooth, bare. Movable finger shorter than carapace.

**Type locality.**—Holotype male from Mesa del Riego, Tehuacán, Estado de Puebla, México, no date (C. C. Hoffmann). Colección de Alacranes mexicanos de Carlos C. Hoffmann, AMNH.

**Distribution.**—*Diplocentrus tehuacanus* is the only species included in this contribution that is known outside the state of Oaxaca, and is distributed along the southern slopes of the Sierra Transversal of Mexico (Map 1). In addition to the holotype, the following specimens were examined. OAXACA: one adult male, near Chasumba, 28 July \*\*\*\* (C. C. Hoffmann; AMNH). PUEBLA: one adult female, Tehuacán, 8 November 1939 (H. E. Vokes and C. M. Bogert; AMNH); one adult male, Tehuacán, 24 July 1956 (W. J. Gertsch and V. Roth; AMNH); one subadult male, 28.6 mi. NW Acatlán, 25 July 1973 (L. R. Erickson and M. E. Sologlad; Sologlad collection). GUERRERO: one adult female, 3 mi. N Taxco, 19 November 1946 (E. R. Ross, CAS); one adult female with six second instars, and one juvenile male, 5.3 mi. N Iguala, 24 July 1973 (L. R. Erickson and M. E. Sologlad; Sologlad coll.). MORELOS: one adult female, W of Huajintlán, 3 May 1963 (W. J. Gertsch and W. Ivie; AMNH).

**Intraspecific variability.**—Sexual dimorphism and ontogenetic changes are the largest sources of variation observed. The variability in pectinal tooth counts is given in Table 5, and it ranges from 11-14 in males (predominantly 13), and 11-13 in females (predominantly 11). The tarsomere II spine count variability appears in Table 6, and the typical formula appears to be 4/5 4/5 : 5/5 5/5 : 6/6 6/6 : 6/6 6/6 .

**Comparative description.**—The closest relative of *D. tehuacanus* apparently is *D. keyserlingi* Karsch, and it was originally considered to be only a subspecies of this older taxon. However, in making this decision Hoffmann (1931) weighted more heavily the similarity in the shape of the pedipalp chela in females, than the differences in the morphology of this structure in males. After examining several instances where closely related species occur sympatrically, I have noticed that adult males can be easily separated by their chelal morphology, whereas females are extremely difficult, if not impossible, to separate on the basis of this character alone. For this reason I attach considerably greater taxonomic weight to divergences in the chelal morphology of males, than I do to similarities between females. Therefore, even though I do not fully understand the evolutionary significance of these divergences among males, on the basis of chelal morphology and other characters I am recognizing *D. tehuacanus* as a valid species.

*Diplocentrus keyserlingi* is found north of the Sierra Transversal of Mexico, and can be separated from *D. tehuacanus* on the basis of its higher tarsomere II spine counts on the last two pairs of legs at 7/7 7/7 : 7/7 7/7 . In addition, in *D. keyserlingi* morphological and morphometric sexual dimorphism of the pedipalp chela is considerably reduced in comparison to *D. tehuacanus*; the dorsal margin of the manus is evenly rounded in both sexes, and not nearly as straight as in males of *D. tehuacanus*; the chela is relatively wider and deeper, and the movable finger of the pedipalps is as long as the carapace in both sexes.

*Diplocentrus rectimanus* Pocock

Figs. 6, 15, 21, 45-50

*Diplocentrus rectimanus* Pocock 1898, pp. 390-391.

*Diplocentrus keyserlingi* Kraepelin 1899, p. 102 (part). Pocock 1902, p. 4, Tab. 1, figs. 4a-c (nec *keyserlingi* Karsch). Hoffmann 1931, pp. 312-323 (part). Pelaez 1962, p. 72 (part ?).

**Diagnosis.**—Medium sized, adults seldom exceeding 55 mm in total length. Ochreous fuscous, opisthosoma with distinct variegated fuscous; legs ochreous, weakly contrasting with opisthosoma in coloration. Carapacial anterior margin minutely granulate, median notch obtusely angulate; anterior submargin moderately granulate. Tergite VII disc weakly bilobed postero-laterally, carinae obsolete. Pectinal tooth count 9-11 in males, eight in females. Metasomal segments I-III with ten complete carinae each, segment IV with six to eight carinae; intercarinal spaces smooth to shagreened; segment I wider than long, segment V longer than pedipalp femur. Chelicera: fixed finger longer than chela width; movable finger longer than chela length, distal external tooth moderately opposed to distal internal tooth. Pedipalps: femur deeper than wide, dorsally moderately to strongly convex; tibia with dorsal median keel strong, dorsal external keel vestigial to obsolete; chelal fixed finger with inner margin straight to feebly arcuate. Fixed finger longer than pedipalp femur, shorter than metasomal segment V; movable finger longer than carapace in males, about equal in length in females. Tarsomere II spine formula 4/5 5/5 : 5/5 5/5 : 6/6 6/6 : 6/6 6/6 .

**Holotype.**—Male (measurements in Table 3).

**Prosoma.**—Carapace ochreous fuscous with vestigial variegated fuscous. Anterior margin minutely granulate, emarginate; median notch obtusely angulate, slightly less than four times wider than deep (Fig. 21). Three pairs of lateral eyes, anterior pair smallest. Anterior median furrow obsolete. Ocular prominence flat between median eyes, located

at anterior three-eighths of carapace length. Posterior median furrow shallow to moderately deep. Posterior marginal furrow moderately deep and wide. Posterior lateral furrows arcuate, moderately deep. Anterior submargin densely, coarsely granulose; other surfaces shagreened. Venter ochreous, sparsely setate. Sternum pentagonal.

**Mesosoma.**—Tergites testaceous, vestigially infusate. Tergites I-VI shagreened throughout; posterior submargins with sparse to moderately dense, small granules. Tergite VII weakly bilobed postero-laterally, median emargination indistinct and middle area feebly depressed; submedian and lateral carinae obsolete. Tergite VII disc shagreened, postero-laterally coarsely granulose.

Genital operculi ochreous, ellipsoidal, without postero-median emarginations; median longitudinal membranous connection absent. Genital papillae present. Pectines ochroleucus, lamellar setation sparse; middle lamellae partly fused, three to four per comb. Fulcra subtriangular. Pectinal tooth count 10-10.

Sternites ochreous; III-IV smooth, stigmata four times longer than wide. Sternite VII tetracarinate: submedian keels present on distal two-thirds, weak, smooth; lateral carinae present on distal three-fourths, moderately strong, smooth. Sternite VII with median and submedian intercarinae smooth, laterals vestigially granulose.

**Metasoma.**—Basal segments ochreous fuscous, darkening gradually to testaceous on distal segments; dorsally bare, ventrally and laterally sparsely to moderately setate with marked density increase on segment V. **Vsm** carinae: on I-II moderately strong, coarsely crenate, slightly convergent distally; on III present on basal two-thirds, weak, feebly crenate, subparallel; on IV present on basal two-thirds, vestigial, smooth. **VI** carinae: on I-II strong, irregularly crenate, slightly convergent distally; on III-IV moderate, smooth, feebly divergent on distal one-fifth. **Lim** carinae: on I strong, complete, crenate; on II moderately strong, complete, feebly crenate; on III weak, complete, feebly crenate; on IV vestigial to obsolete. **Lsm** carinae: on I-II strong, coarsely crenate; on III-IV moderately strong, crenate. **DI** carinae: on I-II weak, finely crenate; on III-IV moderately strong, crenate. Intercarinal spaces smooth to shagreened.

Segment V longer than pedipalp femur. **Vm** and **VI** carinae: basal one-third weak, subgranose; distally strong, with large subconical granules well spaced. **Vt** keel moderately strong, emarginate and notched medially; with three large subconical granules per side. **Lm** carinae present on basal one-third to one-half, vestigial, smooth. Anal arc circular: **Ast** keel strong, with 14 medium sized subconical granules; **At** keel weak to vestigial, minutely dentate. Telson testaceous: dorsally feebly convex, smooth, bare; ventrally and laterally moderately setate, proximal one-half vestigially granulose and with ventral submarginal clusters of 2:2:2 medium sized granules. Subaculear tubercle strong, rounded; aculeus short, strongly curved.

**Chelicera.**—Chela and fingers ochreous, teeth fuscous. Dentition in Fig. 6.

**Pedipalps.**—Femur testaceous, considerably narrower than deep. Dorsal internal keel weak, granulose. Dorsal external keel: basal two-thirds strong, granulose; distally weak to vestigial, subgranose. Ventral internal keel strong, coarsely granulose; distally curving dorsad and merging with dorsal internal keel. Ventral external keel obsolete. Dorsal face moderately convex: basal two-thirds with moderately dense, small and medium granules; medially with longitudinal, keel-like row of four to six large granules. Internal face flat; shagreened with moderately dense small and medium granules. External face smooth, external trichobothrium along dorsal margin near middle of femoral length. Ventral face smooth.

Tibia ochreous to testaceous. Orthobothriotaxia "C" (Fig. 15). Dorsal internal carina obsolete; basal tubercle strong, with two large granules. Dorsal median keel moderately

strong, coarsely crenate. Dorsal external keel vestigial to obsolete, smooth. External keel weak to vestigial, smooth. Ventral external keel weak to vestigial, smooth. Ventral median keel obsolete. Ventral internal keel vestigial, subgranose. Internal face smooth to vestigially shagreened. Dorsal, external, and ventral faces smooth.

Chela ochreous fuscous to testaceous. Orthobothriotaxia "C" (Figs. 45-48). Dorsal margin of manus acutely angulose, strongly carinate: basal one-half crenulate; distally granulose, continuing through fixed finger base and into fixed finger. Digital keel strong, feebly crenate. Dorsal secondary keel on basal one-third moderately strong, crenate; distally weak, granulose. External secondary keel moderate to weak, subgranose. Ventral external keel present on distal one-half of underhand length; weak, granulose. Ventral median keel strong, crenate, directed towards midpoint of movable finger articulation. Ventral internal keel weak to vestigial, granulose. Two internal carinae vestigial, smooth, outlining depression where chela flexes against tibia.

Dorsal face with moderately strong reticulation; basally and medially with smooth ridges, subgranose ridges distally. External face with moderately strong reticulation, ridges smooth to subgranose; sparsely setate. Ventral face: externad to ventral median keel moderately granulose; internad to ventral median keel weakly reticulate, sparsely setate. Internal face: disc smooth, bare; ventral submargin vestigially reticulate, sparsely setate; dorsal submargin weakly to vestigially reticulate, moderately granulose, sparsely setate. Fixed finger base: internally smooth, moderately setate; externally and dorsally vestigially granulose, sparsely setate. Fixed finger inner margin very shallowly curved, almost straight; dorsal margin weakly to vestigially granulose; external face with two subparallel rows of small granules. Movable finger with external face vestigially granulose basally. Fingers densely setate.

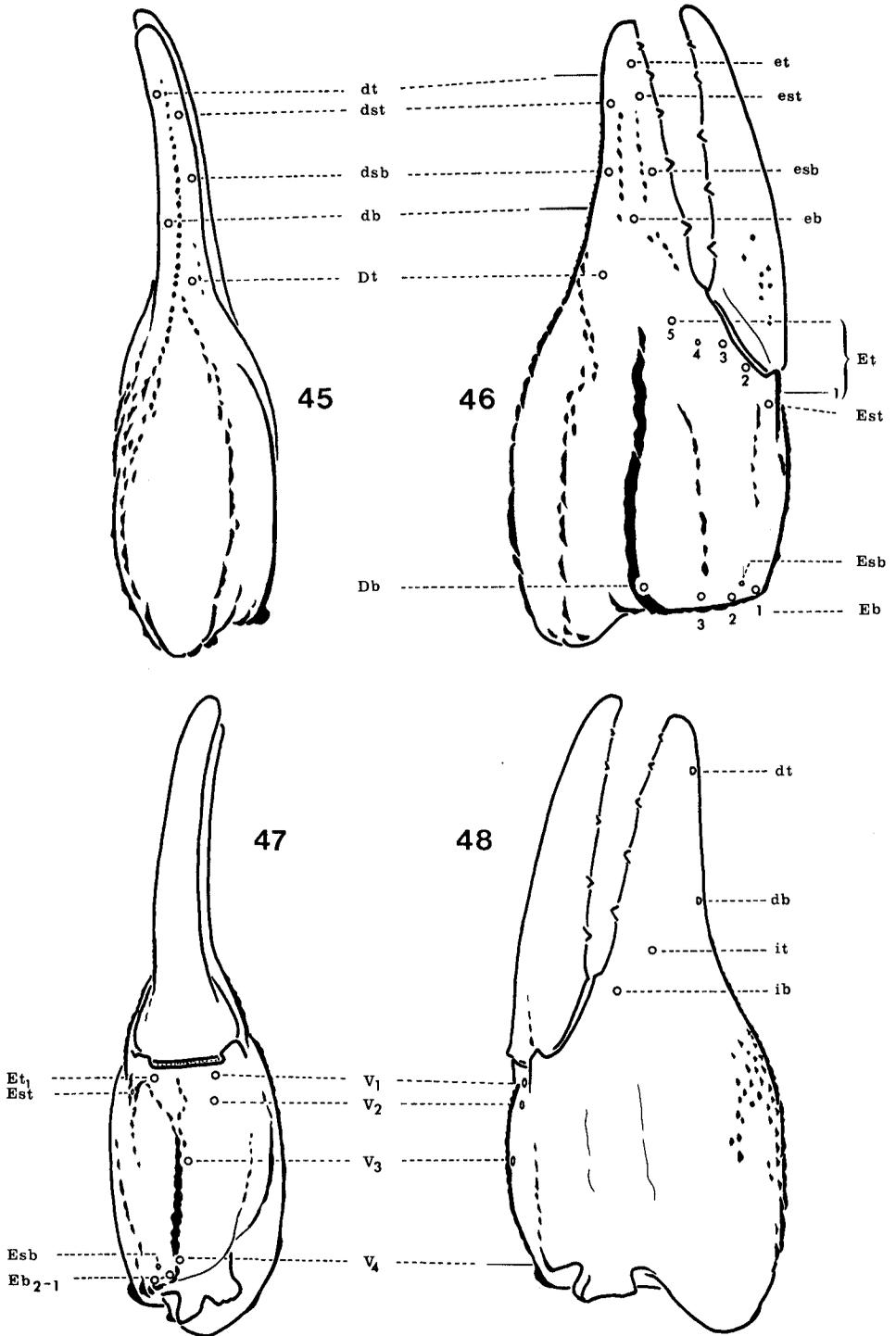
**Legs.**—Ochreous, sparsely to moderately setate. Femora II-IV with ventral margins vestigially granulose. Tarsomere II spine count 5/5 5/5 : 4/4 5/5 : 6/6 6/6 : 6/6 6/6, leg II on right side showing signs of regeneration which might account for reduced spine count.

**Condition.**—Holotype poorly preserved. The integument has been bleached by prolonged immersion in alcohol, and possibly dehydration has occurred in the carapace and mesosoma where the underlying tissues have separated from the exoskeleton, making it almost impossible to determine coloration patterns on these regions. The left pedipalp chela, left legs I and III are detached from the specimen. The right pedipalp chela, right leg IV, and left legs II and IV are essentially separated from the specimen. The extreme tip of the aculeus is broken off.

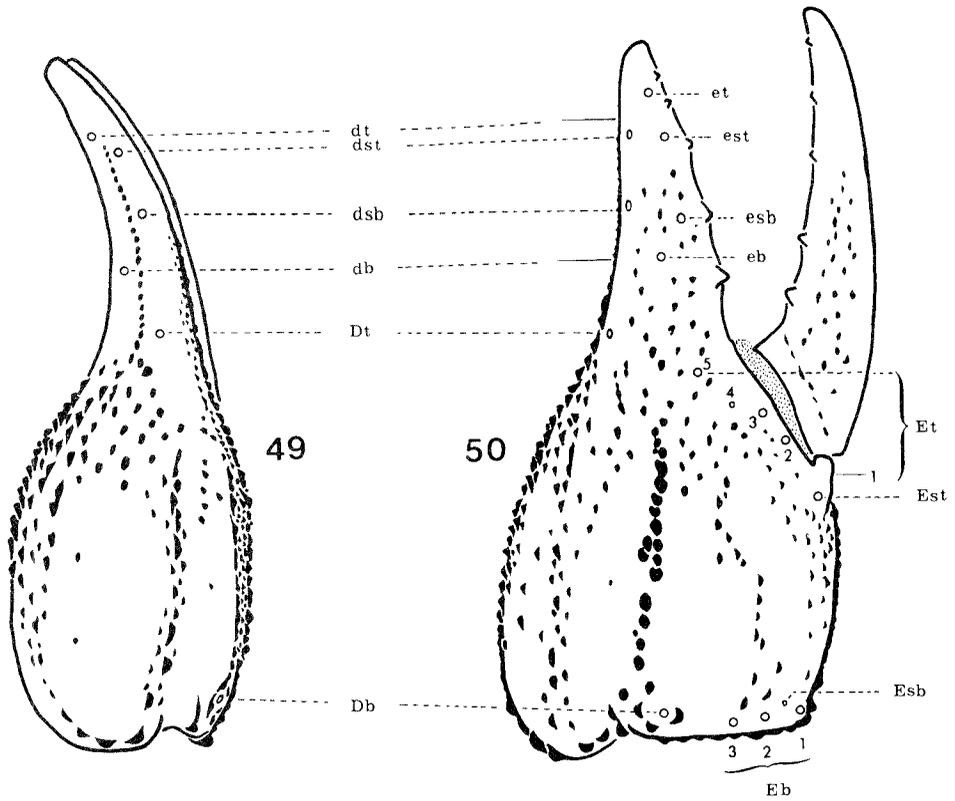
**Female.**—Differs from male as indicated below (measurements in Table 3).

**Prosoma.**—Carapace testaceous with moderately dense, variegated fuscous pattern. Anterolateral margins moderately setate. Anterior submargin with moderately dense, small granules. Surface lustrous with sparse minute granulation.

**Mesosoma.**—Tergites testaceous, with dense variegated fuscous; posterior and lateral margins sparsely setate. Tergites I-VI lustrous; with moderately dense, medium and small granules. Tergite VII vestigially bilobed postero-laterally, carinae obsolete. Genital operculi ochreous, ellipsoidal; opercular halves with median longitudinal membranous connection on basal five-sixths. Pectinal tooth count 8-8. Sternite VII tetracarinate: submedian keels present on distal one-half, moderately strong, crenate; lateral keels present on distal two-thirds, strong, crenate. Sternite VII with median and submedian intercarinae smooth, laterals vestigially granulose.



Figs. 45-48.—Right pedipalp chela of *Diplocentrus rectimanus* Pocock, holotype male, showing the trichobothrial pattern: 45, dorsal aspect; 46, external aspect; 47, ventral aspect; 48, internal aspect.



Figs. 49-50.—Right pedipalp chela of *Diplocentrus rectimanus* Pocock, adult female, showing the trichobothrial pattern and illustrating an exceptional example of sexual dimorphism where the development of granulation is more extensive on females than on males: 49, dorsal aspect; 50, external aspect.

**Metasoma.**—Ferruginous, carinae sparsely to moderately infuscate. **VI** carinae: on I-II strong, finely crenate; on III weak to moderate, crenate; on IV present on proximal three-fourths, weak to vestigial, smooth. **DI** carinae on I-IV weak, feebly crenate. Segment V with **Lm** carinae obsolete; **DI** carinae weak, vestigially crenate; **Vt** moderately strong, with four large granules. Dorsal and lateral intercarinae on I-II sparsely granulate, all others smooth.

**Pedipalps.**—Femur ferruginous, dorsal face moderately granulate. Tibia ferruginous: dorsal median keel moderately strong, subgranulate; dorsal external keel vestigial to obsolete; external keel obsolete; dorsal and external faces vestigially granulate. Chela ferruginous with vestigially infuscate carinae. Morphometrically very distinct from chela of male (Figs. 49-50). Dorsal margin subcarinate, coarsely granulate. Digital keel strong, granulate. Dorsal secondary and external secondary carinae weak to moderate, subgranulate. Ventral external, ventral internal, and two internal carinae vestigial to obsolete. Ventral median keel strong, subgranulate. Dorsal face vestigially reticulate, bare; basal two-thirds with sparse, small granulation; distal one-third with moderately dense, small and medium granulation. External face weakly reticulate, bare; basal one-half with moderately dense, small granulation; distal one-half densely granulate, extending through fixed finger base.

Ventral face moderately to densely granulose. Internal face: disc bare, smooth; ventral submargin smooth, sparsely setate; dorsal submargin weakly to vestigially reticulate with moderately dense granulation distally, sparsely to moderately setate. Fixed finger base: dorsally and externally densely granulose, sparsely setate; internally sparsely granulose, moderately setate. Fixed finger internal margin moderately arcuate; internal face smooth, dorsal and external faces densely granulose; densely setate throughout. Movable finger moderately setate, external face weakly to moderately granulose.

**Type locality.**—Holotype male is accompanied by two handwritten labels; one is Pocock's type designation label, and the other simply gives the locality as "Jalapa".

Hoffmann (1931) raised some questions about the accuracy of the type locality of *D. rectimanus*, and I consider it necessary to explore the problem in greater depth. Although in the original description the type locality appears as "Jalapa", Pocock (1902) expanded on this by giving it as "Jalapa, Oaxaca". Consulting the Gazetteer of Official Names approved by the U. S. Board on Geographic Names (México, no. 15, 1956), I found 12 locations with the name of Jalapa; three are in the state of Oaxaca, and Jalapa del Valle is only 16 km west of the city of Oaxaca. Unfortunately, the largest and best known Jalapa is in the state of Veracruz, and I believe this is the reason why Hoffmann had some doubts about a locality given as "Jalapa, Oaxaca". Nevertheless, I have examined adult male specimens from the state of Oaxaca that are practically indistinguishable from the holotype, and for this reason there is little doubt in my mind that the holotype did originate from the neighborhood of the city of Oaxaca. Thus, the type locality of *D. rectimanus* is here considered as being Jalapa del Valle (16 km W of Oaxaca city), Oaxaca, México. The holotype is permanently deposited at the British Museum (Natural History), London.

**Distribution.**—Map 1. *D. rectimanus* is known only from the following localities, all of which lie in the state of Oaxaca: one adult male, Caballo Blanco (under logs), 12 July 1963 (G. Sludder, AMNH); one adult male, 2 mi. E Ixtlán de Juarez (7,600 ft.), 20 July 1963 (G. Sludder, AMNH); five adult males, "El Punto," road to Ixtlán de Juarez, 19 August 1961 (C. M. and M. R. Bogert; four at AMNH, one in E. N. Kjellesvig-Waering coll.); one adult male, 1.5 mi. NE "El Punto," road to Ixtlán de Juarez (7,500 ft.), 3 September 1961 (Miller's and Bogert's, AMNH); one adult male, "El Cumbre" (on ridge E Cerro San Felipe, 8,000-9,000 ft.), road to Ixtlán de Juarez, 28 September 1961 (C. M. and M. R. Bogert, AMNH); one adult male, near Tejocote (under logs, 7,800 ft.), summer 1963 (C. M. Bogert, AMNH); one adult female, Oaxaca (? city), 19 June 1947 (B. Malkin, AMNH); one adult female, N slope of Cerro Guirone (7,200-7,500 ft.), Distrito de Tlacolula, 12 June 1970 (M. R. Bogert, AMNH).

**Intraspecific variability.**—The principal sources of variation in *D. rectimanus*, other than sexual dimorphism, appear to be as follows.

**Prosoma.**—Carapace testaceous with distinct fuscous pattern: anterior submargin with diffuse to moderately dense, uniform fuscosity; posterior submarginal fuscosity uniform, dense; discal areas surrounding median ocular prominence uniformly fusco-piceous; other carapacial areas with variegated, irregular fuscosity.

**Mesosoma.**—Tergites testaceous, densely infuscate and appearing darker than carapace; density of fuscosity increases distally between segments. Pectinal tooth counts (Table 5) range from 9-11 in males, eight in females. Sternites ochreous to ochreous fuscous. Sternite VII carinae weak to moderately strong, smooth to feebly crenate.

**Metasoma.**—Ochreous fuscous to testaceous, becoming slightly darker on distal segments; carinae vestigially infuscate on some specimens. Segments I-IV sparsely setate,

segment V moderately setate. Segment V with **Vt** keel emarginate, and with distinct median notch at intersection with **Vm** carina. Distal disc bisected by longitudinal row of three to four granules, extending approximately two-thirds of disc length from median notch of **Vt** towards anal arc. **Ast** keel strong, with 12-14 subconical to oblong granules.

**Chelicera.**—Ochreous: chela dorsally with diffuse, variegated fuscosity; fixed and movable fingers with sparse, uniform fuscosity.

**Pedipalps.**—Trochanter and femur testaceous, moderately setate. Tibia testaceous, dorsal carina diffusely infusate; external face sparsely setate. Chela ochreous fuscous to testaceous, carinae vestigially infusate. Dorsal face of manus sparsely setate, external and internal faces moderately setate; fingers densely setate. Fixed finger inner margin straight to very shallowly arcuate in males, moderately arcuate in females.

**Legs.**—Ochreous; basal segments uniformly, diffusely infusate. Tarsomere II spine counts (Table 6) indicate that the typical formula is 4/5 5/5 : 5/5 5/5 : 6/6 6/6 : 6/6 6/6, with high variability occurring especially on the anterior margin of the first pair of legs, where either four or five spines can be observed with about equal frequency.

**Comparative description.**—Although Kraepelin (1899) synonymized *D. rectimanus* under *D. keyserlingi* only one year after the former was described, these two species are at best distantly related. *D. keyserlingi* can be recognized because the pedipalp femur is wider than deep in males, and as wide as deep in females; and its dorsal face is flat rather than convex. Also, in *D. keyserlingi* the cheliceral fixed finger is shorter than the chela width, and the movable finger is shorter than the chela length; the pectinal tooth counts are 12-13 for males and 8-12 for females (predominantly 10); the fixed finger of the pedipalp chela has the inner margin moderately arcuate in both sexes; and the spine count on the last two pairs of legs is higher, at 7/7 7/7 : 7/7 7/7 as previously indicated.

*Diplocentrus hoffmanni*, new species

Figs. 7, 14, 22, 51-54

**Diagnosis.**—Medium sized, adults seldom exceeding 55 mm in total length. Testaceous to ferruginous, opisthosoma infusate; legs contrasting slightly with opisthosoma in coloration. Carapacial anterior margin moderately granulose, median notch obtusely angular; anterior submargin granulose. Tergite VII disc vestigially bilobed posterolaterally, carinae obsolete. Pectinal tooth count 10-11 in males, nine in female. Metasomal segments I-II with ten complete carinae each, III-IV with eight keels each; intercarinal spaces shagreened; segment I wider than long, segment V longer than pedipalp femur. Chelicera: fixed finger longer than chela width; movable finger longer than chela length, distal external tooth not opposed to distal internal tooth. Pedipalps: femur deeper than wide, moderately convex dorsally; tibia with dorsal median carina strong, dorsal external keel weak to vestigial; fixed finger about as long as femur, shorter than carapace and metasomal segment V; movable finger shorter than carapace. Tarsomere II spine formula 5/5 5/5 : 5/5 5/6 : 6/6 6/6 : 6/6 6/7 .

**Holotype.**—Male (measurements in Table 4).

**Prosoma.**—Carapace ferruginous, with distinct fuscous pattern. Anterior margin strongly emarginate; median notch granulose, obtusely angular, approximately twice wider than deep (Fig. 22). Three pairs of lateral eyes, anterior pair smallest. Anterior median furrow vestigial to obsolete. Ocular prominence feebly convex between median eyes, located at anterior two-fifths of carapace length. Posterior median furrow weak to moderately deep. Posterior marginal furrow moderately deep and wide. Posterior lateral

furrows arcuate, moderately deep. Carapacial surface: anterior submargin with moderately dense, medium sized granules; median and lateral areas shagreened; postero-laterally rugose, minutely granulate. Venter ochreous with diffuse, uniform fuscidity; sparsely setate. Sternum subpentagonal.

**Mesosoma.**—Tergites brunneous to testaceous, distinctly infusate; tergites I-II with dense, fine variegations; tergites III-V with moderately dense, wide variegations, appearing darker than preceding segments; tergites VI-VII diffusely, irregularly infusate, appearing lighter than preceding segments. Tergites I-VI shagreened. Tergite VI vestigially carinate medially. Tergite VII vestigially bilobed postero-laterally, median area subtly depressed; carinae obsolete. Tergite VII disc shagreened, laterally coarsely granulate.

Genital operculi flavus; ellipsoidal, without postero-median emarginations; median longitudinal membranous connection absent. Genital papillae present. Pectines ochreous, with sparse lamellar setation; middle lamellae partly fused, two per comb. Fulcra subtriangular. Pectinal tooth count 10-10.

Sternites ochreous to ochreous fuscous; III-VI smooth, stigmata about four times longer than wide. Sternite VII tetracarinate: submedian keels present on distal one-half, weak to moderate, crenate; lateral carinae present on distal two-thirds, moderately strong, crenate. Sternite VII with median and submedian intercarinae smooth, laterals shagreened.

**Metasoma.**—Basal segments brunneous, distal segments fusco-rufous; dorsally bare, laterally and ventrally moderately setate with slight density increase on distal segments. **Vm** carinae: on I-II weak, subgranose, slightly convergent distally; on III with basal two-thirds weak, subgranose, biconcave with each other, distal one-third vestigial, smooth, feebly divergent; on IV present on basal two-thirds, weak to vestigial, smooth. **VI** carinae: on I-II strong, crenate, moderately convergent distally; on III moderately strong, feebly crenate, slightly convergent distally; on IV weak to moderate, subcrenate, slightly divergent on distal one-fourth. **Lim** carinae: on I-II weak, complete, feebly crenate; on III-IV vestigial to obsolete. **Lsm** carinae on I-IV weak, subcrenate. **DI** carinae: on I-II vestigial, with short row of small granules distally; on III-IV weak, subgranose.

Segment V considerably longer than pedipalp femur. **Vm** and **VI** carinae: basal one-third weak, subgranose; distal two-thirds strong, with medium sized subconical granules irregularly spaced. **Vt** keel shallowly emarginate, with five medium sized subconical granules. **Lm** carinae present on basal one-half, vestigial, smooth to subgranose. **DI** carinae vestigial, subcrenate. Anal arc circular: **Ast** keel strong, with 10 medium sized oblong granules; **At** keel weak to vestigial, denticulate. Intercarinal spaces on segments I-V shagreened, except for ventrals on I-III being smooth. Segment V distal disc with median longitudinal row of four medium sized granules, appearing as continuation of **Vm** carina. Telson fusco-rufous: dorsally feebly convex, smooth, sparsely setate distally; lateral and ventral surfaces moderately setate, smooth except for ventral submarginal clusters of 4:3:4 medium sized granules. Subaculear tubercle strong, rounded; aculeus short, strongly curved, markedly deviating to left of longitudinal axis of telson (molting accident?).

**Chelicera.**—Chela ochreous fuscous with distinct variegated fuscidity; fixed finger ochreous, basally with diffuse uniform fuscidity; movable finger diffusely, uniformly infusate throughout. Dentition shown in Fig. 7.

**Pedipalps.**—Femur fusco-rufous, deeper than wide. Dorsal internal carina weak, moderately granulate. Dorsal external carina: basal three-fourths strong, granulate; distally weak, subgranose. Ventral internal keel strong, granulate, distally curving dorsad and merging with dorsal internal keel. Ventral external keel obsolete. Dorsal face convex; with

Table 4.—Measurements (mm) of *Diplocentrus hoffmanni*, n. sp., *D. reticulatus*, n. sp., and *D. mitlae*, n. sp.

	<i>hoffmanni</i>		<i>reticulatus</i>	<i>mitlae</i>
	Holotype	Allotype	Holotype	Holotype
	Male	Female	Male	Male
Total length	50.40	53.05	45.75	51.45
Carapace				
Length	6.65	7.30	6.00	6.35
Anterior width	3.50	3.90	3.10	3.40
Width at median eyes	5.10	5.55	4.70	5.50
Posterior width	6.80	7.10	6.20	6.75
Mesosoma length	14.80	17.85	13.15	14.65
Metasoma length	28.95	27.90	26.60	30.45
Segment I				
Length	3.65	3.50	3.05	3.75
Width	4.10	4.15	4.00	4.20
Segment II				
Length	4.00	4.00	3.70	4.30
Width	3.70	3.75	3.65	3.70
Segment III				
Length	4.50	4.30	4.05	4.60
Width	3.65	3.60	3.50	3.55
Segment IV				
Length	5.20	4.80	4.70	5.05
Width	3.35	3.50	3.30	3.30
Segment V				
Length	6.10	5.60	5.80	6.55
Width	2.80	3.00	2.65	2.85
Telson length	5.50	5.70	5.30	6.20
Vesicle				
Length	4.50	4.60	4.15	4.90
Width	2.65	3.30	2.60	2.90
Depth	2.10	2.55	1.90	2.45
Aculeus length	1.00	1.10	1.15	1.30
Pedipalp length	19.00	20.00	17.85	22.90
Femur				
Length	4.55	4.75	4.15	5.20
Width	2.05	2.10	1.80	2.10
Depth	2.60	2.75	2.15	2.50
Tibia				
Length	4.40	4.60	4.35	5.20
Width	2.15	2.15	2.00	2.20
Chela				
Length	10.05	10.65	9.35	12.50
Width	5.35	5.50	4.90	4.80
Depth	3.30	3.55	3.10	2.90
Movable finger length	6.30	6.60	5.75	8.70
Fixed finger length	4.55	4.75	4.05	6.70
Chelicera				
Chela length	2.40	2.50	1.95	2.25
Chela width	1.70	1.85	1.50	1.70
Fixed finger length	1.85	1.90	1.55	1.75
Movable finger length	2.60	2.75	2.20	2.55
Pectinal teeth	10/10	9/9	9/9	7/8

moderately dense small granulation throughout, medially with longitudinal keel-like row of five to six large granules. Internal face flat, densely granulose. External face vestigially granulose distally, external trichobothrium along dorsal margin at middle of femoral length. Ventral face shagreened.

Tibia fusco-rufous, sparsely setate. Orthobothriotaxia "C" (Fig. 14). Dorsal internal keel obsolete; basal tubercle moderately strong, bicuspid. Dorsal median keel strong, coarsely crenate. Dorsal external keel weak to moderate, subcrenate. External keel vestigial. Ventral external keel weak, crenate. Ventral median keel obsolete. Ventral internal keel vestigial, subgranulose. Internal face shagreened. Dorsal, external, and ventral faces rugose, with sparse to moderately dense granules.

Chela fusco-rufous, fingers fusco-piceous. Orthobothriotaxia "C" (Figs. 51-54). Dorsal margin moderately carinate: basal one-half coarsely crenate; distally granulose, extending through fixed finger base. Digital keel moderately strong, crenate. Dorsal secondary and external secondary carinae weak, granulose. Ventral external keel present on distal one-fourth of underhand length, vestigial, subgranulose. Ventral median keel strong, crenate. Ventral internal keel vestigial to obsolete, smooth. Two internal carinae vestigial, smooth.

Dorsal face moderately reticulate, ridges minutely granulose; sparsely setate. External face moderately reticulate, ridges granulose; moderately setate. Ventral face rugose to vestigially reticulate, moderately setate. Internal face: disc vestigially reticulate, bare; dorsal submargin weakly to moderately reticulate, ridges granulose, moderately setate; ventral submargin weakly reticulate with smooth ridges, moderately to densely setate. Fixed finger base shagreened, with dense small and medium granules dorsally and externally; moderately setate. Fixed finger shorter than carapace; inner margin shallowly, evenly arcuate; internal face smooth, dorsal and external faces vestigially reticulate to rugose. Movable finger shorter than carapace, external face weakly granulose basally. Fingers densely setate.

**Legs.**—Basal segments testaceous, diffusely infusate; distal segments ochreous fuscescent, vestigially infusate. Femora and tibiae with dorsal and ventral margins smooth. Tarsomere II spine formula  $5/5\ 5/5 : 5/5\ 5/5 : 6/6\ 6/6 : 6/6\ 6/6$ .

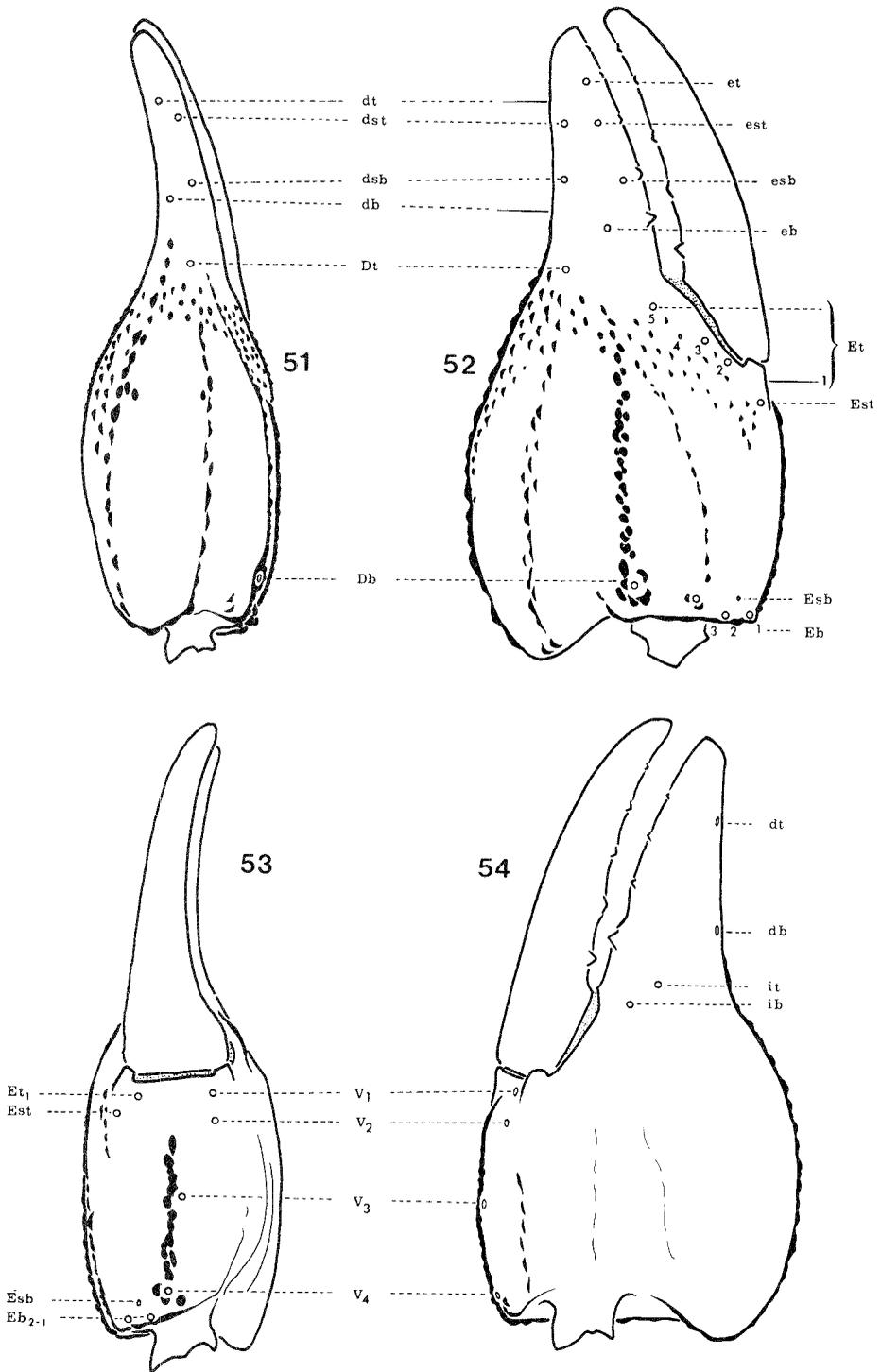
**Allotype.**—Female, differs from holotype as indicated below (measurements in Table 4).

**Prosoma.**—Carapacial submedian areas smooth, lustrous; lateral areas shagreened.

**Mesosoma.**—Tergites lustrous, sparsely granulose at posterior submargins. Genital operculi elliptical, median longitudinal membranous connection present on basal three-fourths. Genital papillae absent. Pectinal tooth count 9-9. Sternite VII with intercarinal spaces smooth.

**Metasoma.**—Vsm carinae: on I-II strong, granulose, moderately convergent distally; on III with basal three-fourths moderately strong, granulose, subparallel, distal one-fourth weak to vestigial, slightly divergent; on IV vestigial to obsolete, subgranulose. VI carinae: on I-II strong, granulose to crenate, distally convergent; on III weak, feebly crenate; on IV weak to vestigial, smooth. Lim carinae: on I weak, complete, feebly crenate; on II-III vestigial, smooth; on IV obsolete. Lsm carinae on I-IV weak to vestigial, smooth. Segment V: Dl and Lm carinae obsolete, Ast with 11 oblong granules. Dorsal and lateral intercarinae on I-V smooth to vestigially granulose. Telson wider than segment V; vesicle with ventral submarginal clusters of 4:4:4 medium sized granules. Aculeus broken off distally.

**Pedipalps.**—Femur slightly shorter than metasomal segment IV. Dorsal internal keel weak to vestigial, irregularly granulose. Dorsal external keel obsolete distally. Ventral internal keel moderately strong, granulose. External face smooth.



Figs. 51-54.—Right pedipalp chela of *Diplocentrus hoffmanni*, n. sp., holotype male, illustrating the trichobothrial pattern: 51, dorsal aspect; 52, external aspect; 53, ventral aspect; 54, internal aspect.

Tibia: dorsal median keel moderately strong, feebly crenate; dorsal external keel vestigial to obsolete; external keel vestigial; ventral external keel weak to vestigial, smooth; ventral internal keel obsolete. Internal face: dorsally shagreened, medially and ventrally smooth. External face feebly rugose, vestigially granulose.

Chela proportionately wider, but otherwise morphometrically very similar to chela of male. Dorsal margin subcarinate, granulose with small and medium granules extending to basal one-half of fixed finger. Digital keel weak to vestigial, smooth. Dorsal secondary and external secondary carinae vestigial to obsolete, smooth. Ventral external keel obsolete. Ventral median keel weak, subgranulose. Ventral internal keel vestigial to obsolete. Two internal carinae obsolete. Dorsal and external faces vestigially reticulate with smooth ridges, sparsely setate. Ventral face rugose, granulose. Internal face: disc smooth, bare; dorsal submargin vestigially reticulate, moderately granulose distally, moderately setate; ventral submargin with moderately dense small granulation, sparsely setate. Fixed finger base moderately granulose dorsally and externally, sparsely granulose internally. Fixed finger inner margin arcuate as in male, with moderately dense small granules basally. Left chela with extreme tip of fixed finger broken off.

**Type locality.**—Primary types collected near Tejocote (7,800 ft., under logs), Oaxaca, México, summer 1963 (C. M. Bogert). Deposited at the AMNH, New York.

**Distribution.**—Map 1. In addition to the primary types this species is known only from two adult male paratypes from the state of Oaxaca, as follows: Tejocote (7,600 ft.; 31 mi. NW Oaxaca city), 9 September 1962 (M. R. Bogert, AMNH); and 6 mi. N Telixtlahuaca (7,050 ft., under rocks in moderately dry area with oak and juniper), 26 July 1966 (C. M. Bogert, AMNH).

**Etymology.**—This species is named after Dr. Carlos C. Hoffmann, who spent most of his life studying the Mexican scorpiofauna.

**Intraspecific variability.**—The variation observed between the holotype and the two male paratypes is briefly summarized below. Carapace with anterior median notch obtusely angulose to subangulose, and with posterior submargin fuscous to piceous. Tergites testaceous with moderately dense, distinct fuscous pattern to uniformly fusco-piceous, obscuring the basic coloration completely. Metasomal carinae with vestigial to obsolete fuscosity. Segment V with Ast keel bearing 9-10 oblong granules. Pectinal tooth counts (Table 5) range from 10 to 11. Tarsomere II spine counts observed (including allotype, Table 6), give the following tentative formula for *D. hoffmanni*: 5/5 5/5 : 5/5 5/6 : 6/6 6/6 : 6/6 6/7.

**Comparative description.**—*Diplocentrus hoffmanni* is very closely related to *D. rectimanus*, with which it occurs sympatrically in one locality without any signs of hybridization (near Tejocote, 7,800 ft., Oaxaca). These two taxa can be separated on the basis of the characters indicated below. The base color in *D. rectimanus* is ochreous fuscous, while in *D. hoffmanni* it is testaceous to ferruginous. The external margin of the chelical fixed finger is shallowly curved in *D. rectimanus* (Fig. 6), and it is moderately curved in *D. hoffmanni* (Fig. 7). On the movable finger of the chelicera, the distal external and distal internal teeth are closely opposed in *D. rectimanus*, and moderately opposed in *D. hoffmanni*. The internal margin of the fixed finger on the pedipalp chela is nearly straight in *D. rectimanus* males (Fig. 45), while it is shallowly curved in *D. hoffmanni* males (Fig. 51). *D. rectimanus* has the fixed finger of the pedipalp chela longer than the pedipalp femur, while in *D. hoffmanni* these two structures are approximately equal in length. The movable finger of the pedipalp chela is shorter than the carapace length in both sexes of *D. hoffmanni*, while in *D. rectimanus* the movable finger is longer

than the carapace in males and they are approximately the same length in females. *D. hoffmanni* has a pedipalp chela which is less than two times longer than wide, and it is sparsely granulose in the only female known; while in *D. rectimanus* the chela is over two times longer than wide, and it is densely granulose in the two females known.

*Diplocentrus reticulatus*, new species

Figs. 8, 13, 24, 55-58

**Diagnosis.**—Medium sized, adult males approximately 45 mm long, female unknown. Fusco-ferrugineous with moderately dense fuscosity, legs not contrasting with opisthosoma in coloration. Carapacial anterior margin minutely granulose, median notch rounded; anterior submargin moderately granulose. Tergite VII disc strongly bilobed postero-laterally, carinae vestigial to obsolete. Pectinal tooth count 7-9. Metasomal segments I-IV with 10 complete carinae each, dorsal and lateral intercarinal spaces conspicuously reticulated; segment I wider than long, segment V longer than pedipalp femur. Chelicera: fixed finger longer than chela width; movable finger longer than chela length, distal external tooth not opposed to distal internal tooth. Pedipalps: femur deeper than wide, dorsally convex; tibia with dorsal median keel strong, dorsal external keel weak to vestigial; fixed finger shorter than femur, movable finger equal to or slightly shorter than carapace. Tarsomere II spine formula  $4/5 \ 4/5 : 5/5 \ 5/5 : 5/5 \ 5/5 : 5/6 \ 5/6$ .

**Holotype.**—Male (measurements in Table 4).

**Prosoma.**—Carapace fusco-ferrugineous, with distinct fuscous pattern. Anterior margin feebly granulose, moderately emarginate; median notch rounded, approximately three and one-half times wider than deep (Fig. 24). Three pairs of subequal lateral eyes. Anterior median furrow obsolete. Ocular prominence slightly convex between median eyes, located at anterior three-eighths of carapace length. Posterior median furrow shallow to moderately deep. Posterior marginal furrow moderately deep and wide. Posterior lateral furrows arcuate, moderately deep. Carapacial surface shagreened, anterior submargin with moderately dense small and medium granules. Venter ochreous fuscous, sparsely setate. Sternum pentagonal.

**Mesosoma.**—Tergites fusco-ferrugineous, with distinct variegated fuscosity. Tergites I-VI shagreened, IV-VI vestigially carinate medially. Tergite VII strongly bilobed postero-laterally, median and lateral emarginations distinct, median area feebly depressed (Figs. 25-26); carinae obsolete. Tergite VII shallowly reticulate, ridges granulose, cells shagreened.

Genital operculi ochreous, ellipsoidal, without membranous connection. Genital papillae present. Pectines ochreous, sparsely setate; fulcra subtriangular. Pectinal tooth count 9-9.

Sternites brunneous: III smooth, IV-VI laterally shagreened; stigmata three times longer than wide. Sternite VII tetracarinate (see Fig. 25); median and submedian intercarinae smooth, laterals shagreened.

**Metasoma.**—Basal segments brunneous to testaceous, distal segments fusco-ferrugineous; dorsally bare, laterally and ventrally sparsely setate without marked density increase distally. **Vsm** carinae: on I-II strong, coarsely crenate, slightly convergent distally; on III moderate to weak, crenate, feebly sinuate; on IV moderate to weak, subgranose, subparallel. **VI** carinae: on I-II strong, coarsely crenate, moderately convergent distally; on III moderately strong, feebly crenate, subparallel; on IV present on basal seven-eighths, moderately strong, feebly crenate, subparallel. **Lim** carinae: on I moder-

ately strong, complete, coarsely crenate; on II weak to moderate, complete, subgranose; on III-IV weak, complete, subgranose. **Lsm** carinae: on I-II moderately strong, coarsely to moderately crenate; on III-IV moderately strong, feebly crenate. **DI** carinae: on I vestigial, with three to four small granules distally; on II weak to vestigial, feebly granulose distally; on III moderately strong, feebly crenate; on IV moderately strong, crenate.

Segment V longer than pedipalp femur. **Vm** and **VI** carinae strong, with medium and large subconical granules irregularly spaced. **Vt** keel feebly emarginate, with three medium sized granules per side. **Lm** carinae present on basal two-thirds, weak to vestigial, granulose. **DI** carinae vestigial to obsolete. Anal arc circular: **Ast** keel strong, with 15 small and medium oblong granules; **At** weak, dentate.

Intercarinal spaces on segments I-IV: dorsals and laterals weakly reticulate, ridges smooth to subgranose, cells shagreened; ventrals on I-II smooth, on III-IV sparsely to moderately granulose. Segment V: dorsally and laterally moderately granulose; ventrally sparsely granulose.

Telson fusco-ferrugineous. Dorsally smooth, bare. Laterally and ventrally with basal one-fourth sparsely, minutely granulose; distally smooth, sparsely to moderately setate; ventral submargin with clusters of 3:3:3 medium sized granules. Subaculear tubercle strong, rounded; aculeus short, moderately curved.

**Chelicera**.—Chela ochreous, distinctly infuscate dorsally; fingers ochreous fuscous with moderately dense, uniform fuscous basally. Dentition shown in Fig. 8.

**Pedipalps**.—Femur brunneous, feebly infuscate dorsally; deeper than wide. Dorsal internal carina moderately strong, granulose. Dorsal external keel: basal one-half weak to moderate, granulose; distally obsolete. Ventral internal keel moderately strong, coarsely granulose, distally curving dorsad and merging with dorsal internal carina. Ventral external keel obsolete. Dorsal face moderately convex; shagreened, with median longitudinal cluster of six to eight medium sized granules. Internal face flat, densely granulose. External face smooth, external trichobothrium along dorsal margin at basal four-ninths of femoral length. Ventral face shagreened.

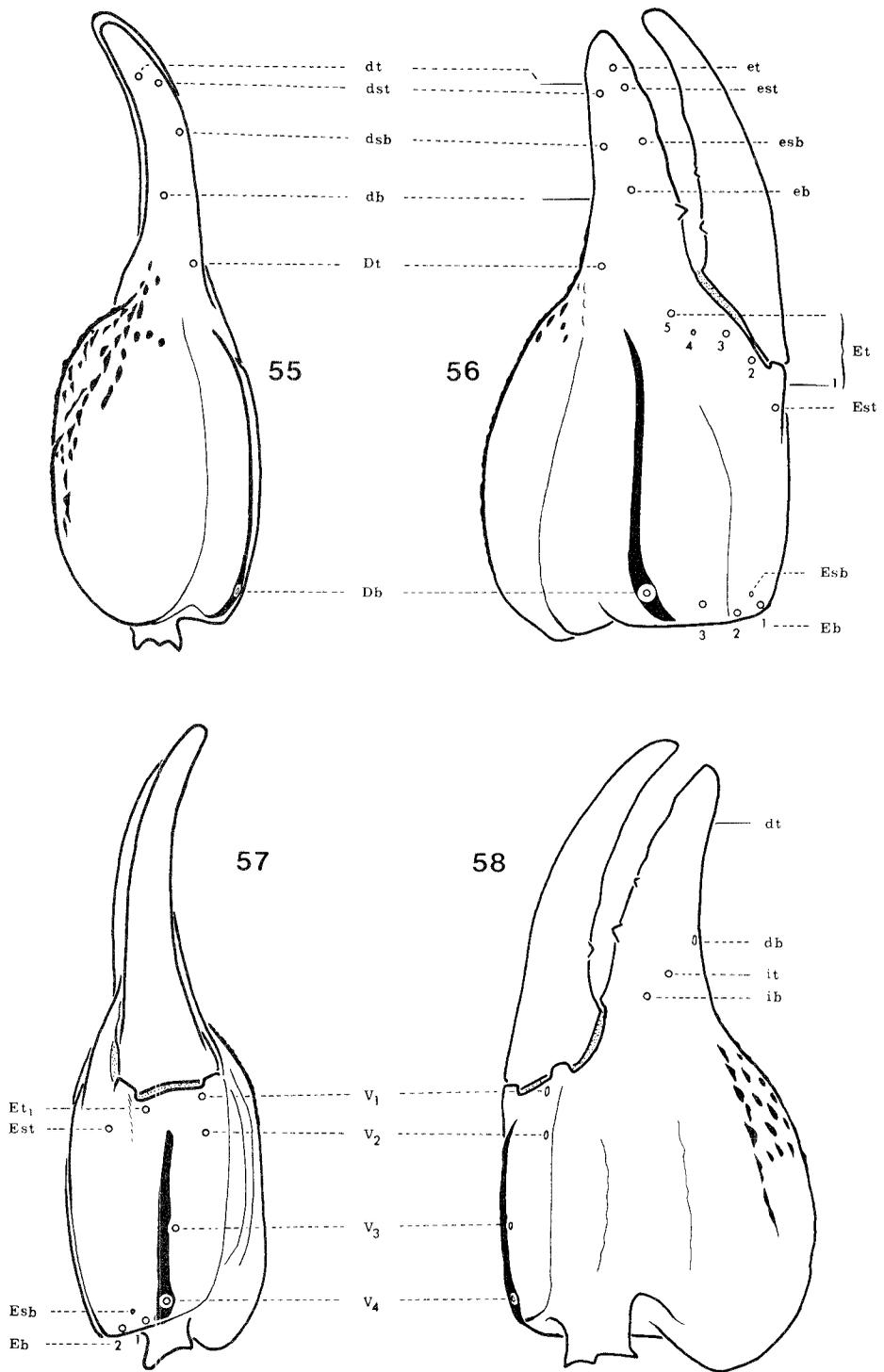
Tibia brunneous to testaceous, diffusely infuscate. Orthobothriotaxia "C" (Fig. 13). Dorsal internal keel obsolete; basal tubercle weak, with three medium to small granules. Dorsal median keel strong, subcrenate to smooth. Dorsal external keel weak to vestigial, smooth. External keel weak to vestigial. Ventral external keel moderately strong, smooth. Ventral median keel obsolete. Ventral internal keel weak to vestigial, smooth. Internal face shagreened. Dorsal face with moderately strong reticulation, ridges granulose. External face shallowly reticulate, ridges smooth. Ventral face vestigially reticulate.

Chela brunneous, fingers slightly darker. Orthobothriotaxia "C" (Figs. 55-58). Dorsal margin of manus subcarinate: basal one-fifth smooth; distally irregularly granulose, extending through fixed finger base. Digital carina strong, smooth. Dorsal secondary keel moderately strong, smooth. External secondary keel weak, smooth. Ventral external keel vestigial to obsolete. Ventral median keel strong, subcrenate. Ventral internal keel weak to vestigial, smooth. Two internal carinae weak to vestigial, subcrenate.

Dorsal, external, ventral, and internal faces strongly to moderately reticulate, cells shagreened to smooth; sparsely setate. Fixed finger with inner margin evenly, moderately arcuate. Fixed and movable fingers smooth, moderately setate.

**Legs**.—Testaceous, with moderately dense fuscous. Femoral ventral margins minutely granulose. Tarsomere II spine formula 4/5 4/5 : 5/5 5/5 : 5/5 5/5 : 5/5 5/6 .

**Type locality**.—Holotype collected near Tejocote (7,800 ft., under logs), Oaxaca, México, summer 1963 (C. M. Bogert). Deposited at the AMNH, New York.



Figs. 55-58.—Right pedipalp chela of *Diplocentrus reticulatus*, n.sp., holotype male, showing the trichobothrial pattern: 55, dorsal aspect; 56, external aspect; 57, ventral aspect; 58, internal aspect.

Table 5.—Pectinal tooth count variability in *Diplocentrus* spp. from Oaxaca, Mexico, expressed by the number of combs observed with a given tooth count. Each specimen normally has two pectinal combs, which are not necessarily symmetrical in the number of teeth they bear.

		7	8	9	10	11	12	13	14	15	16	17	18	19
<i>mexicanus</i> ssp.														
<i>mexicanus</i>	♂							2						
	♀				2									
<i>oaxacae</i>	♂								1	10	6	3		
	♀					2	4	19	7					
<i>ochoterenai</i>	♂											6	4	2
	♀										4			
<i>tehuano</i>	♂					1	14	14	1					
	♀				3	25	4							
<i>tehuacanus</i>	♂					3	3	7	3					
	♀					6	4	3						
<i>rectimanus</i>	♂			3	14	4								
	♀		4											
<i>hoffmanni</i>	♂				5	1								
	♀			2										
<i>reticulatus</i>	♂	1	2	3										
<i>mitlae</i>	♂	1	1											

**Distribution.**—Map 1. In addition to the holotype this species is known only from two adult males from the state of Oaxaca, as follows: one paratopotype, same data as holotype (AMNH); one paratype from “El Punto,” road to Ixtlán de Juárez, 19 August 1961 (C. M. and M. R. Bogert, AMNH).

**Etymology.**—Specific name based on the distinctive reticulations present on the metasoma and the pedipalps.

**Intraspecific variability.**—The three adult males known are very similar in most respects. Pectinal tooth counts (Table 5) range from 7-9. Tarsomere II spine counts (Table 6) give the following tentative formula for *D. reticulatus*: 4/5 4/5 : 5/5 5/5 : 5/5 5/5 : 5/6 5/6.

**Comparative description.**—*Diplocentrus reticulatus* appears to be related to *D. rectimanus* and *D. Hoffmanni* in terms of their cheliceral morphometrics, the relative proportions of the pedipalp femur, and the position of the femoral external trichobothrium at approximately one-half of the femoral length. *D. reticulatus* can be recognized by the cheliceral morphology, particularly by having the distal internal tooth of the movable finger only moderately curved distally (Fig. 8); by the presence on ten carinae on metasomal segments I-IV, and the strong postero-lateral bilobations on the disc of tergite VII (Figs. 25-26); and finally, by the conspicuous reticulations that earned it the name *D. reticulatus*.

*Diplocentrus mitlae*, new species

Figs. 4, 16, 23, 59-62

**Diagnosis.**—Medium sized, known only from adult male holotype 51 mm long. Brunneous, sparsely to moderately infusate; legs not contrasting with opisthosoma in coloration. Carapacial anterior margin minutely granulate, median notch obtusely angulate; anterior submargin sparsely granulate. Tergite VII disc weakly bilobed postero-laterally, carinae obsolete. Pectinal tooth count 7-8. Metasomal segments I-II with eight complete

Table 6.—Tarsomere II spine count variability observed in *Diplocentrus* spp. from Oaxaca, Mexico, expressed as the number of tarsomeres observed with a given spinal count. Each individual normally has two spine counts per row per tarsomere (i.e., leg I, anterior row, right and left legs spine counts), which are not necessarily symmetrical with each other on the number of spines borne. Individuals occasionally have one or more tarsomeres II missing, giving rise to odd numbers of observations.

	<i>mexicanus</i> <i>mexicanus</i>	<i>mexicanus</i> <i>oaxacae</i>	<i>ochoterenai</i>	<i>tehuano</i>	<i>tehuacanus</i>	<i>rectimanus</i>	<i>hoffmanni</i>	<i>reticulatus</i>	<i>mitlae</i>
Leg I									
Ant.									
3				1					1
4	1			59	22	14	2	6	1
5	2	40			6	11	6		
6		7	16						
7			2						
Post.									
4				10		1			1
5				50	28	24	6	6	1
6	3	42	5				2		
7		5	13						
Leg II									
Ant.									
4				15		1			1
5	1			45	28	23	8	6	1
6	3	46	2			1			
7		1	15						
Post.									
4						1			
5				56	26	18	5	5	2
6	2			4	2	6	3	1	
7	2	47	12						
8			5						
Leg III									
Ant.									
5				36	4	1			2
6	1			24	23	24	8		
7	3	49	16		1				
8		1	1						
Post.									
5					1	1			2
6				60	25	23	8	5	
7		13	3		2	1		1	
8		37	15						
Leg IV									
Ant.									
5				7	1				1
6				52	25	25	8		
7	4	36	9		2				
8		14	9						
Post.									
5				2	1	2			1
6				56	25	21	5	6	
7	4	6		1	1	2	3		
8		43	18						
9		1							

carinae each, III with six keels, IV with four carinae; intercarinal spaces smooth to vestigially shagreened; segment I wider than long, segment V longer than pedipalp femur. Chelicera: fixed finger longer than chela width; movable finger longer than chela length, distal external tooth not closely opposed to distal internal tooth. Pedipalps: femur deeper than wide, dorsally moderately convex; tibia with dorsal median keel vestigial, dorsal external keel obsolete; chelal carinae vestigial to obsolete; fixed finger longer than carapace. Tarsomere II spine formula 3/5 4/4 : 4/5 5/5 : 5/5 5/5 : 5/6 X/X.

**Holotype.**—Male (measurements in Table 4).

**Prosoma.**—Carapace brunneous, with well defined fuscous pattern. Anterior margin minutely granulose, emarginate; median notch obtusely angulose, about four times wider than deep (Fig. 23). Three pairs of lateral eyes, second pair largest. Anterior median furrow obsolete. Median ocular prominence flat to feebly convex between median eyes, located at anterior three-eighths of carapace length. Posterior median furrow vestigial to moderately deep submarginally. Posterior marginal furrow moderately deep, wide. Posterior lateral furrows obtusely angular, moderately deep. Anterior submargin with sparse granulation. Carapace laterally shagreened, medially smooth. Venter ochreous, sparsely setate. Sternum subpentagonal.

**Mesosoma.**—Tergites brunneous; with dense, irregular fuscosity throughout decreasing slightly in density distally. Tergites I-VI shagreened. Tergite VII weakly bilobed posterolaterally, median area slightly depressed; submedian and lateral carinae obsolete. Tergite VII shagreened, with dense small granules laterally.

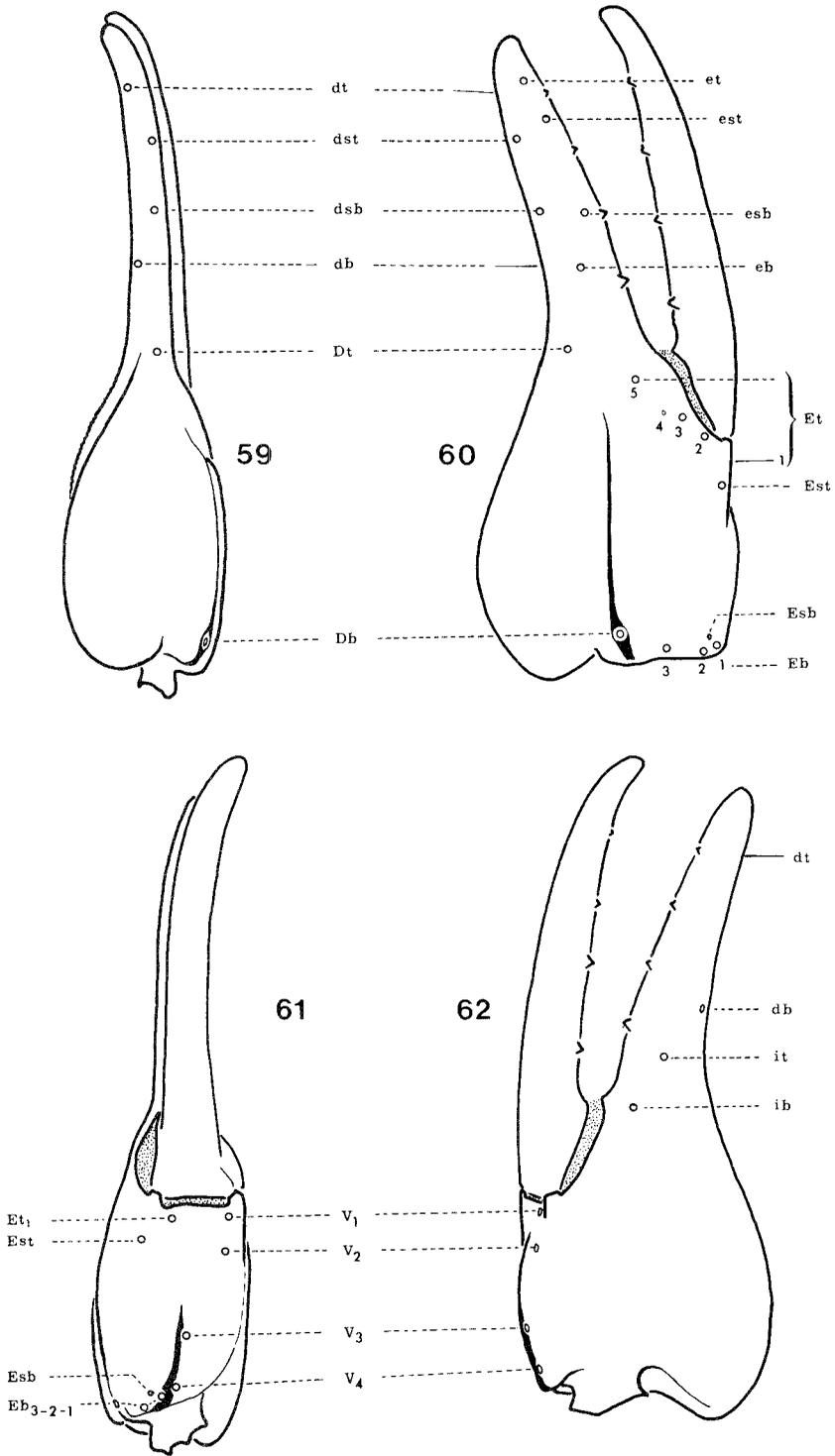
Genital operculi ochreous, subtriangular; median longitudinal membranous connection absent. Genital papillae present. Pectines ochroleucus, lamellar setation sparse to moderate; middle lamellae partly fused, three to four per comb. Fulcra subtriangular. Pectinal tooth count 7-8.

Sternites ochreous fuscous; III-VI smooth, stigmata about four times longer than wide. Sternite VII tetracarinate; submedian keels present on distal two-thirds, weak, smooth; lateral carinae present on distal three-fourths, moderately strong, smooth. Sternite VII with median and submedian intercarinae smooth, laterals shagreened.

**Metasoma.**—Brunneous, slightly darker distally; dorsally bare, laterally and ventrally sparsely setate. **Vsm** carinae: on I-II moderately strong, coarsely crenate, weakly convergent distally; on III-IV with basal two-thirds weak to vestigial, smooth, distally obsolete. **VI** carinae: on I-II strong, coarsely crenate, markedly convergent distally; on III-IV moderately strong, smooth, weakly convergent on basal two-thirds, divergent distally. **Lim** carinae: on I moderately strong, complete, feebly crenate; on II-III weak, complete, subcrenate; on IV vestigial to obsolete. **Lsm** carinae: on I-II weak, feebly crenate; on III-IV moderately strong, smooth. **DI** carinae: on I vestigial, smooth; on II weak, subgranose; on III-IV vestigial to obsolete. Intercarinal spaces smooth to sparsely granulose.

Segment V longer than pedipalp femur. **Vm** and **VI** carinae strong, with medium sized subconical granules irregularly spaced. **Vt** keel not emarginate, with four medium sized subconical granules. **Lm** keels present on basal one-third, vestigial, smooth. **DI** carinae obsolete. Anal arc circular: **Ast** keel moderate, with 10 oblong granules; **At** keel weak, dentate. Intercarinae: ventrals smooth; laterals and dorsal sparsely granulose. Telson brunneous: dorsally feebly convex, smooth, bare; laterally and ventrally smooth, sparsely setate, with ventral submarginal clusters of 3:3:3 medium sized granules. Subaculear tubercle strong, rounded; aculeus short, strongly curved.

**Chelicera.**—Chela and fingers ochreous, diffusely infuscate. Dentition shown in Fig. 4.



Figs. 59-62.—Right pedipalp chela of *Diplocentrus mitlae*, n.sp., holotype male, showing trichothrial arrangements: 59, dorsal aspect; 60, external aspect; 61, ventral aspect; 62, internal aspect.

**Pedipalps.**—Femur brunneous, feebly infusate dorsally; deeper than wide. Dorsal internal keel moderately strong, granulose. Dorsal external carina weak to vestigial, smooth. Ventral internal keel moderately strong, granulose, distally curving dorsad and merging with dorsal internal carina. Ventral external keel obsolete. Dorsal face with basal one-half convex, moderately granulose; distally flat to feebly concave, densely granulose. Internal face flat, densely granulose. External face smooth, external trichobothrium on dorsal margin halfway along femoral length. Ventral face smooth.

Tibia brunneous with diffuse, variegated fuscidity dorsally and externally. Orthobothriotaxia "C" (Fig. 16); right tibia with only four basal trichobothria, left tibia with five (normal condition).

Chela brunneous, with vestigially infusate carinae. Orthobothriotaxia "C" (Figs. 59-62). Dorsal margin of manus rounded; basal two-thirds smooth; distally with vestigial, minute granulation extending through fixed finger base. Digital carina vestigial, smooth, ending at fixed finger base. Dorsal secondary, external secondary, and ventral external carinae obsolete. Ventral median keel with basal one-half moderately strong, obsolete distally; directed towards midpoint of movable finger articulation. Ventral internal and two internal carinae vestigial to obsolete.

Dorsal face smooth except for sparse granulation at dorsal submargin, bare. External face smooth, bare. Ventral face smooth, sparsely setate. Internal face smooth, bare. Fixed finger base smooth, moderately to densely setate. Fixed finger inner margin straight except for shallow subterminal curvature. Fixed and movable fingers smooth, densely setate. Fixed and movable fingers longer than carapace and metasomal segment V.

**Legs.**—Basal segments brunneous with moderate fuscidity, distal segments ochreous. Tarsomere II spine formula  $3/5$   $4/4$  :  $4/5$   $5/5$  :  $5/5$   $5/5$  :  $5/6$  X/X, with fourth left leg broken off at femur.

**Type locality.**—This species is known only from the holotype, collected about 6 mi. N Mitla (6,200 ft.), Oaxaca, México, 1 September 1962 (M. R. Bogert). Deposited at the AMNH, New York.

**Etymology.**—Named after the Aztec ruins of Mitla, which are close to the type locality.

**Comparative description.**—*Diplocentrus mitlae* is rather distinctive, and on the basis of the only specimen known it can not be properly related to any of the described species in the genus. Some characters, such as cheliceral morphology, pedipalp femur proportions, and the relative position of the external trichobothrium along the femur indicate a possible relationship with *D. rectimanus*, *D. hoffmanni*, and *D. reticulatus*. However, the characters given in the key, and in the diagnoses to the respective species are sufficient to recognize *D. mitlae* without difficulties. The morphology of the pedipalp tibia and chela in *D. mitlae* is somewhat similar to that observed in *D. nitidus* Hirst, which is known only from the holotype female from Nicaragua. *D. nitidus* can be recognized because the cheliceral fixed finger is shorter than the chela width, the distal internal and distal external teeth of the cheliceral movable finger are closely opposed, and the pedipalp femur is wider than deep.

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