

American Museum **Novitates**

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, N.Y.

NUMBER 1800

OCTOBER 16, 1956

Pseudoscorpions of the Family Chernetidae from New Mexico

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The present paper is the third of a series on the classification and distribution of the pseudoscorpions of New Mexico and is concerned with the monosphyronid pseudoscorpions exclusive of the Cheliferidae. Two genera and eight species are described as new, three species are recorded for the first time from New Mexico, and previously unreported state records are given for two other species. In order to make the account of the pseudoscorpions of New Mexico more useful, brief discussions are given of the higher taxa of monosphyronid pseudoscorpions exclusive of the Cheliferidae and attention is called to the possibility of eventually finding additional groups represented in the New Mexico fauna. The Cheliferidae will be discussed in the fourth paper of this series.

Most of the collections reported here were made from 1947 to 1955, during which time the writer was favored by financial aid from faculty research grants from the University of New Mexico and grants from the American Academy of Arts and Sciences and from the National Science Foundation. Pseudoscorpions reported as associated with rodents in Santa Fe County are from collections made available by Harvey B. Morlan, Sanitarian, United States Public Health Service. These collections were taken in connection with studies on rodent ecology at the Santa Fe, New Mexico, Field Station of the United States Department of Health, Education, and Welfare. Holotypes, allotypes, some duplicate paratypes, and representative specimens of many of the reported collections are deposited at the American Museum of Natural History.

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Drawings were made with the aid of a camera lucida. There was no attempt to show the marginal and accessory teeth of the chelal fingers. Measurements were made with a calibrated ocular micrometer. Lengths given for the chela and the chelal hand do not include the pedicel.

SUBORDER MONOSPHYRONIDA CHAMBERLIN

This suborder contains pseudoscorpions that are characterized by the presence of a single tarsal segment in each of the four legs. For specimens in our area, no further characterization is necessary, because the only difficulty that one might experience would be with the New Zealand and Australian diplosphyronid genus *Synsphyronus* Chamberlin, a genus in which the two tarsal segments are secondarily fused into a single segment. The Suborder Monosphyronida is subdivided into three superfamilies: Feaelloidea, Cheiridioidea, and Cheliferoidea. The superfamilies Feaelloidea and Cheiridioidea contain a limited number of families, genera, and species and, although not as yet found in New Mexico, may well be represented in our fauna. In expectation, it seems advisable to give a brief characterization of each of these two superfamilies, with some comments on the occurrence of representatives of the two superfamilies in the southwestern part of the United States. The third superfamily, the Cheliferoidea, contains four families and by far the majority of monosphyronid pseudoscorpion genera and species. Two of the families are well represented in our fauna.

SUPERFAMILY FEAELLOIDEA CHAMBERLIN

Pseudoscorpions of this superfamily are characterized by the presence of two pairs of eyes, of a carapace with three or more well-developed processes or lobes extending anterior to the eyes, by either a carapace with pleural alae or by an abdomen with pleural plates or sclerites, by having legs I and IV of very similar structure, and by the absence of a maxillary lyriform organ. The superfamily contains two families. One family, Feallidae Chamberlin, has a specialized articulation between the cephalothorax and abdomen, has a series of sclerotic pleural plates along the abdomen, and has peculiarly modified palpi. Members of this family belong to a single genus, *Feaella* Ellingsen, and are confined to the Orient, Africa, and the Seychelles Islands off the east coast of Africa.

The second family, Pseudogarypidae Chamberlin, is found only in the Northern Hemisphere. Pseudoscorpions of this family are characterized by having no specialized articulation between the cephalothorax and abdomen, a carapace with pleural alae or processes, an abdomen without pleural sclerites, and the pedipalps of the prehensile type found in most

pseudoscorpions. A single genus, *Pseudogarypus* Ellingsen, has been assigned to this family. Except for species from Baltic amber (Beier, 1937), the genus appears to be known only by two species, both from the western part of the United States. Of these two, *P. hesperus* Chamberlin, 1931, from the State of Washington, probably will not be found in New Mexico, but the other species, *P. bicornis* (Banks, 1895), may well occur in our fauna, as the type locality is Yellowstone National Park. This species has been redescribed from type material by Hoff (1946b).

SUPERFAMILY CHEIRIDIOIDEA CHAMBERLIN

Members of this superfamily are characterized by having fewer than four eyes and the femoral articulations of all legs very similar in structure. Three families have been established by Chamberlin (1931a) in this superfamily: Pseudocheiridiidae, Cheiridiidae, and Sternophoridae. The exotic family Pseudocheiridiidae includes three small genera from the African and Oriental regions. The families Cheiridiidae and Sternophoridae are known from the United States and ultimately may be found in New Mexico.

FAMILY CHEIRIDIIDAE CHAMBERLIN

Pseudoscorpions of this family have the articulations between the pars basalis and the pars tibialis of the legs obsolete or vestigial, so that the two femoral parts are fused into a single segment. This family contains four genera, of which two are known from the United States. One of these, the geographically widespread *Cheiridium* Menge, is represented in the United States by two species, of which one is from Illinois (Hoff, 1952), and the other is from Utah (Hoff and Clawson, 1952). It is reasonable to expect the ultimate discovery of one or more species of *Cheiridium* in New Mexico. It is probably even more reasonable to expect in our state one or more species of the almost cosmopolitan genus *Apocheiridium* Chamberlin, as three species are known from the Rocky Mountain and Pacific Coast regions (Beier, 1932).

FAMILY STERNOPHORIDAE CHAMBERLIN

In this family, the pseudoscorpions have the articulations between the femoral parts well developed; the trochanters of the first and second legs are pedicellate, those of the third and fourth legs not pedicellate; the coxal area of the cephalothorax is widened centrally, with the coxae medially separated to enclose a pseudosternum; and a venom apparatus is present in both fixed and movable fingers of the chela. The family Sternophoridae contains only two genera, of which one is of uncertain status. This is the

genus *Garypos* Banks to which is assigned a single species from Florida. The other genus, *Sternophorus* Chamberlin, contains a few species from Mexico, the southern part of the United States, and Australia. It is possible that species of *Sternophorus* may ultimately be found in New Mexico.

SUPERFAMILY CHELIFEROIDEA CHAMBERLIN

Pseudoscorpions of this superfamily have two eyes or none, and the femora of the first and second legs differ markedly from those of the third and fourth legs. This is a very large superfamily and is subdivided into three, possibly four, families. The family Myrmochernetidae Chamberlin is of doubtful validity, is poorly known, and is confined to Africa. It is not considered here. The other three families, Chernetidae, Atemnidae, and Cheliferidae, are virtually cosmopolitan and are well known by a multitude of genera and species.

FAMILY ATEMNIDAE CHAMBERLIN

Atemnid pseudoscorpions are characterized by having three or four setae in the flagellum; by having none of the setae of the cheliceral hand smoothly and distinctly clavate; by having the venom apparatus confined to the fixed chelal finger; and by lacking accessory teeth on the chelal fingers. Pseudoscorpions of this family are common in Africa, the Orient, and Australia. Three genera occur in South America and the West Indies. As there are no reports of the presence of this family in the Nearctic region, it is not likely to be found in New Mexico.

FAMILY CHERNETIDAE MENGE

Chernetid pseudoscorpions have a cheliceral flagellum of three or four setae (rarely reduced to two); none of the setae of the base of the chelicera is smoothly and conspicuously clavate; the venom apparatus is confined to the movable chelal finger, although a vestige may occur in the fixed finger as well; and the chelal fingers almost invariably have accessory teeth in addition to the marginal teeth. In forms that have a vestigial venom apparatus in the fixed finger, the occurrence of accessory teeth along the margins of the chelal fingers removes all doubt regarding assignment to the family Chernetidae. The family contains about one hundred genera arranged in two subfamilies. Both of the subfamilies are represented in the fauna of New Mexico.

SUBFAMILY LAMPROCHERNETINAE BEIER

The subfamily Lamprochernetinae (considered here to include the subfamily Goniochernetinae Beier) is characterized by having long and

acuminate or subacuminate investing setae (these never thickened and clavate, but often with a few subterminal spinules); flagellum with three setae; tarsus of fourth leg with a tactile seta; tibia of fourth leg usually with a well-differentiated tactile seta; pleural membranes of abdomen usually with smooth, non-granulate striations; and with the setae of the female genital area arranged to form one or more compact groups. The subfamily is best represented in the Nearctic and Neotropical faunas, although it occurs also in the Palearctic region and to a lesser extent elsewhere. Three genera, *Lamprochernes* Tömösvary, *Lustrochernes* Beier, and *Pycnochernes* Beier, occur in the United States. *Lamprochernes* and *Lustrochernes* are represented in New Mexico.

LAMPROCHERNES TÖMÖSVARY

Lamprochernes TÖMÖSVARY, 1882, Math. Termész. Közlem., vol. 18, p. 185 (quoted from Beier, 1932).

This genus includes lamprochernetin pseudoscorpions with the following combination of characteristics: no accessory teeth on the tarsal claws of the legs; tibia and tarsus of the fourth leg each with a tactile seta; tactile seta of fourth pedal tarsus basal in position, being no farther from the basal margin of the tarsus than 0.3 of the total length of the tarsus; *it* of the fixed chelal finger clearly much closer to *et* than to *esb* and distinctly farther from the finger tip than the distance between *ist* and *isb*, *ist* as close to *it* as to *isb* or *ib* or closer to *it* than to *isb* or *ib*; seta *st* of movable chelal finger about midway between seta *t* and *sb* or *b*; carapace with only a median furrow, the basal furrow not clearly evident; tergites divided except for one or two anterior tergites and the eleventh tergite. About 15 species are assigned to this genus. These occur chiefly in the Holarctic and in the Neotropical faunal areas. Of these, three species are known from the United States. A single species is known from New Mexico.

Lamprochernes ellipticus Hoff

Lamprochernes ellipticus HOFF, 1944, Amer. Mus. Novitates, no. 1271, p. 1.

The original description of this species was based on a single female from Baja California, Mexico. All our specimens agree in detail with the description of this species as originally given by Hoff (1944), although our New Mexico specimens show considerable variation with respect to the shape of the chelal hand as seen from the dorsad and in the absolute size of palpal podomeres. In the holotype (Hoff, 1944, fig. 2) the basal margin of the chelal hand is somewhat rounded and appears to merge

without interruption into the flexor and extensor margins. In our present specimens, a few show this shape of hand, but several individuals have a chelal hand exhibiting a much less rounded basal margin and a very definite extensor-basal bulge that gives the general appearance of a meeting of the two margins in an angle. Because all degrees of variation between the two extremes are shown in our New Mexico material, it has been impossible to separate our specimens into two groups on the basis of the shape of the basal portion of the chelal hand. They also show considerable variation in the absolute size of the palpal podomeres. While most of our females are equal to or very slightly larger than the holotype, one specimen is decidedly smaller. This somewhat small specimen is accompanied by a male and, along with a single specimen of *Albiorix retrodentatus* Hoff, makes up a collection taken near Artesia in Eddy County. As this area is somewhat removed from the localities of our other specimens, the possibility of there being two New Mexico *Lamprochernes* species was very strongly considered. Careful study shows, however, that it is impossible to separate the Eddy County specimens from the rest of our series by any means except size. Inclusion of the measurements of these two specimens, moreover, does not increase ranges for measurements beyond the degree of range commonly exhibited by species of this and related genera. As a result, the Eddy County specimens are considered conspecific with our other specimens assigned to *Lamprochernes ellipticus*.

In order to show the variation in the female and to record the nature of the previously unknown male and nymphs, it seems appropriate to give measurements and morphological details for this species as it is known from New Mexico.

FEMALE: The ranges of measurements taken from four New Mexico females follow: body length 2.95–4.00 mm.; carapace 0.82–0.95 mm. long; palpal trochanter 0.43–0.47 mm. long, 0.23–0.265 mm. wide, length 1.72–2.0 times the width; palpal femur 0.66–0.76 mm. long, 0.30–0.355 mm. wide, length 2.08–2.21 times the width; palpal tibia 0.67–0.79 mm. long, 0.33–0.39 mm. wide, length 1.95–2.03 times the width; chela 1.18–1.33 mm. in length, 0.45–0.54 mm. in width, length 2.43–2.62 times the width; chelal hand 0.68–0.78 mm. long, 0.42–0.50 mm. deep; movable chelal finger 0.53–0.62 mm. in length. With regard to the genital complex, the posterior operculum has eight to 12 setae in a uniseriate row; the anterior operculum has three to four setae well spaced laterally on each side of a compact medial group of 11 to 16 setae. The previously undescribed seminal receptacles are hammer-shaped or, perhaps more appropriately, have an appearance resembling the median longitudinal section of a mushroom.

MALE: The male has the same general structure as the female, with even the palpal hand showing the same extent of variation with respect to the basal margin. Sexual dimorphism appears confined to the genitalia. The ranges of measurements of a number of structures for five males are: body length 2.9–3.4 mm.; carapace 0.85–0.92 mm. in length; palpal trochanter 0.43–0.47 mm. in length, 0.215–0.245 mm. in width, length 1.83–2.00 times the width; palpal femur 0.62–0.73 mm. long, 0.285–0.35 mm. wide, length 2.06–2.18 times the width; palpal tibia 0.65–0.76 mm. long, 0.32–0.385 mm. wide, length 1.94–2.03 times the width; chela 1.13–1.26 mm. in length, 0.43–0.50 mm. in width, length 2.51–2.69 times the width; chelal hand 0.67–0.77 mm. long, 0.41–0.48 mm. deep; chelal finger 0.49–0.56 mm. in length. Serrula exterior of the chelicera with 20 to 22 plates, except for 19 plates in one chelicera of one specimen. Fourth leg with tibia 0.53–0.60 mm. long, 0.13–0.14 mm. deep, length 4.0–4.3 times the depth, tactile seta 0.30–0.34 mm. from the proximal margin; tarsus of fourth leg 0.36–0.39 mm. in length, 0.095–0.10 mm. in depth, length 3.7–4.05 times the depth, tactile seta of extensor surface removed from the proximal margin of the tarsus by a distance of 0.085–0.095 mm. External genitalia of male with 21 to 25 setae on the anterior operculum; posterior operculum with a pair or a group of three setae to each side of the median line on the posterior lip of the aperture; the face of the posterior operculum with 10 to 14 setae, of which about eight are in a submarginal row.

TRITONYMPH: A study of five mounted tritonymphs indicates that the tritonymph is very similar to the adult in general structure and appearance. Besides lacking genitalia, the tritonymph differs from the adult by having fewer setae on the carapace, sternites, and tergites; by having a lighter color; by being less sclerotic; and by having palpal podomeres of slightly different shape and with less well-marked pedicels. Measurements are given as the ranges for the five tritonymphs. The body length is 3.0–3.5 mm. The carapace has eight to 10 marginal setae along the posterior margin. In contrast to the three setae of the adult, each anterior stigmatic plate of the tritonymph has two setae. The chelicera of the tritonymph is very similar to that of the adult, but the galea has only five rami confined to the distal one-half of the galea, and the serrula exterior has 17 to 18 plates. The palps have podomeres differing but little in shape from those of the adult except that the chelal hand has a more rounded contour and is slightly more slender as seen from the dorsad. The color of the chela differs markedly from the color of the rest of the palpus, the chela being of a fairly deep reddish golden color while the rest of the palpus is of a fairly light golden yellow. The trochanter is 0.34–0.39 mm. in length, 0.18–0.20 mm. in width, with the length 1.8–2.0 times the width; the femur is 0.47–0.55 mm. long, 0.23–0.26 mm.

wide, length 1.95–2.15 times the width; tibia 0.50–0.56 mm. long, 0.25–0.285 mm. wide, length 1.9–2.1 times the width; chela 0.87–1.00 mm. long, 0.32–0.37 mm. wide, length 2.7–2.85 times the width; chelal hand 0.50–0.57 mm. in length, 0.30–0.35 mm. in depth; movable chelal finger 0.40–0.44 mm. long. The movable chelal finger has three tactile setae: *t* is somewhat variable in position, but usually about one-third to one-fourth of the finger length from the tip; *st* is proximal to the midpoint of the finger; and *b* or *sb* is about midway between *st* and the proximal margin of the finger. The fixed finger has the tactile setae arranged as in the adult except that *ist* is absent.

DEUTONYMPH: Six deutonymphs were studied; measurements are the ranges of all six specimens. The deutonymphs resemble the tritonymphs very closely except for a smaller size. The body length is 2.0–2.3 mm. The chelicera has 15 to 16, rarely 14, plates in the serrula exterior and the galea has four rami confined to the distal one-half. The anterior stigmatic plate has one, rarely two, setae. The palpus has a trochanter 0.24–0.28 mm. long, 0.125–0.145 mm. wide, length 1.8–1.95 times the width; femur 0.33–0.38 mm. in length, 0.15–0.18 mm. in width, length 2.1–2.2 times the width; tibia with length of 0.34–0.39 mm., width 0.165–0.195 mm., length 1.95–2.15 times the width; chela 0.63–0.70 mm. long, 0.215–0.255 mm. wide, length 2.75–2.95 times the width; chelal hand 0.36–0.41 mm. long, 0.19–0.24 mm. deep; movable finger 0.30–0.33 mm. in length. Movable chelal finger with two tactile setae, one just distal to the middle of the finger and the other within the basal one-fourth of the finger. Fixed finger with six tactile setae, these arranged as in the adult except that *ist* and either *eb* or *esb* are absent.

PROTONYMPH: A study was made of a single mounted protonymph. The protonymph is smaller than the deutonymph, but otherwise is similar except for the more cylindrical appearance of the palpal femur. The body length of the single protonymph is 1.9 mm. The serrula exterior of the chelicera has 14 plates, and the galea appears to have no more than three rami. The palpus has a trochanter measuring 0.21 mm. in length, 0.11 mm. in width; femur 0.26 mm. long, 0.125 mm. wide; tibia 0.265 mm. long, 0.14 mm. wide; chela 0.52 mm. in length, 0.18 mm. in width; chelal hand 0.30 mm. long, 0.17 mm. deep; movable chelal finger 0.24 mm. long. The movable chelal finger has a single tactile seta located a little proximal to the midpoint of the finger. The fixed finger has only three tactile setae; one is located about one-fourth of the finger length from the distal end of the finger and occurs on the external surface; one seta is external and another internal in position near the base of the finger.

RECORDS: *Bernalillo County:* Manzano Mountains, east of Albuquerque, from oak litter at 6600 feet elevation; about 4 miles northeast of

Tijeras, from yellow-pine litter, 6700 feet elevation; from litter of the live oak, *Quercus turbinella* Greene, west foothills of the Sandia Mountains, near Albuquerque, at about 6300 feet elevation; from pinyon litter at the Juan Tabo Recreation Area, Sandia Mountains, northeast of Albuquerque, at 6600 feet elevation. *Catron County*: Near Wall Lake, south of Beaverhead, under bark of yellow-pine stump, about 6500 feet elevation. *Eddy County*: Taken by Willis J. Gertsch, 16 miles south of Artesia, elevation probably about 3300 feet (habitat unknown). *Sandoval County*: Southwest of Golden in the extreme southeast corner of the county, from juniper litter, at 6600 feet elevation; Juan Tabo Recreation Area, northwest side of the Sandia Mountains, northeast of Albuquerque, from pinyon litter at 7000 feet elevation; about 4 miles north of Jemez, from dry juniper litter at 5800 feet elevation. *San Miguel County*: Two miles south of Villanueva, from juniper litter in open juniper stand in grassland area, 6600 feet elevation. *Santa Fe County*: Eight miles southeast of Santa Fe, from juniper litter, 7000 feet elevation; Ortiz Mountains, 8 miles north of Golden, from pinyon litter at an elevation of about 7000 feet. *Socorro County*: From walnut and oak litter, Water Canyon, west of Socorro, 6900 feet elevation; from dry cottonwood litter, 8 miles south of Socorro, 4500 feet elevation; from juniper litter in a canyon on the east side of Ladron Peak, north of Socorro, 6600 feet elevation. *Torrance County*: From juniper litter, 1 mile west of Mountainair, 6800 feet elevation; from oak litter, 8 miles east of Clines Corners, at 7000 feet elevation. *Valencia County*: South side of Mt. Taylor, northeast of Grants, from juniper litter at about 8000 feet elevation.

Our records indicate that in New Mexico *Lamprochernes ellipticus* is characteristically found in dry pinyon, juniper, and oak (not *Quercus gambelii* Nuttall, but live and scrub oaks) litter at elevations not exceeding 8000 and rarely exceeding 7000 feet. The occurrence of this species in a single collection of cottonwood, *Populus wislizeni* (S. Watson) Sargent, litter from the flood plain of the Rio Grande is interesting, because the species has not been found in samplings of cottonwood litter from areas farther north and at higher elevations along the Rio Grande. This may be explained, perhaps, by the apparent preference of *L. ellipticus* for dry litter, the litter south of Socorro being much drier than it is farther north where cooler climatic conditions prevail.

LUSTROCHERNES BEIER

Lustrochernes BEIER, 1932, Zool. Anz., vol. 97, p. 259.

The genus *Lustrochernes* contains lamprochernetin pseudoscorpions recognized by the following combination of characteristics: a tactile seta

present on both the fourth pedal tarsus and tibia; tarsal claws not toothed; tactile seta *it* of fixed chelal finger much closer to *et* than to *esb* and at least as close to the finger tip as the distance between *ist* and *isb*; tactile seta *st* of movable chelal finger closer to *sb* than to *t*; legs robust, with the tibia and tarsus of the fourth leg never more than five times as long as deep; carapace almost smooth, at most finely granulate laterally. The genus is typically Neotropical, but a few species range into Mexico and the United States. A single species is known from New Mexico.

Lustrochernes grossus (Banks), new combination

Chelanops grossus BANKS, 1893, Canadian Ent., vol. 25, p. 65; 1895, Jour. New York Ent. Soc., vol. 3, p. 5; 1902, Proc. Acad. Nat. Sci. Philadelphia, 1901, vol. 53, p. 594.

Lamprochernes grossus, HOFF, 1947, Bull. Mus. Comp. Zoöl., Harvard College, vol. 98, p. 475.

In 1947, Hoff redescribed this species from cotypes at the Museum of Comparative Zoölogy and assigned the species to the genus *Lamprochernes*. After a study of numerous specimens from New Mexico, it becomes evident that the species belongs in the genus *Lustrochernes*, because the tactile seta *it* of the fixed chelal finger is as close to the finger tip as the distance between the tactile setae *ist* and *isb* or closer. A considerable amount of variation is evident in the relative and absolute positions of the tactile setae of the chelal fingers, which makes somewhat difficult generic assignment from isolated individuals, especially when specimens are not properly oriented.

According to Banks (1895) this species is very common in Colorado. According to the same author (Banks, 1902) it occurs in the White Mountains, Lincoln County, New Mexico. In New Mexico we have found the species fairly common in nearly all areas from which we have appreciable numbers of collections. As this is one of the more common and widespread species in New Mexico, it seems advisable to give measurements based on a series of specimens, especially for the male, because the male has never been adequately described in the literature.

FEMALE: Our New Mexico females agree very well with the description given by Hoff (1947). A study of New Mexico specimens indicates that there is considerable variation in absolute size but that, at the same time, the length/width ratios of the palpal podomeres are remarkably consistent. Measurements are given as the ranges of six females selected at random from collections taken in widely scattered areas of the state.

The body length ranges from 3.6 to 4.4 mm.; carapace 0.96–1.07 mm. in length, 0.76–0.86 mm. in greatest width; eyes absent. The movable

cheliceral finger is 0.23–0.27 mm. in length, and the serrula exterior usually has 20 plates although there may be 19 or 21, and in rare instances only 18. The palpal podomeres measure as follows: trochanter about 0.55 mm. long, length 1.7–2.0 times the width; femur 0.76–0.91 mm. long, 0.35–0.42 mm. wide, length 2.1–2.2 times the width; tibia 0.84–1.00 mm. in length, 0.34–0.435 mm. in width, length 2.2–2.32 times the width; chela 1.24–1.48 mm. long, 0.45–0.55 mm. wide, length 2.7–2.86 times the width; chelal hand 0.70–0.85 mm. long, depth 0.44–0.52 mm.; movable chelal finger 0.57–0.64 mm. in length. With respect to the fourth leg, the entire femur has a length of 0.77–0.88 mm., depth 0.26–0.295 mm., length 2.9–3.15 times the depth; tibia 0.56–0.66 mm. long, 0.163–0.18 mm. deep, length 3.4–3.7 times the depth; tactile seta of extensor surface of tibia removed by 0.28–0.335 mm. from the proximal margin; tarsus 0.39–0.43 mm. long, 0.108–0.118 mm. deep, length 3.48–3.75 times the depth; tactile seta of tarsus removed from the proximal margin by 0.088–0.108 mm. The seminal receptacle of the female appears somewhat variable, ranging from an oval bulb placed transversely at the end of a short stalk to a distinctly T-shaped or hammer-shaped structure.

MALE: Except for a smaller body size, differences in the length/width ratios (but not size) of palpal podomeres, and differences in the genitalia, the structure of the male is virtually identical with that of the female. Measurements of the male are given as ranges of six individuals. The body length of the male is 3.3–3.5 mm. The palpal femur, tibia, and chela of the male are more slender than in the female, the difference being so marked that there is very little or no overlapping in the ranges of length/width ratios given for the male and the female. The palpal trochanter is 0.54–0.64 mm. long, 0.33–0.39 mm. wide, length 1.58–1.67 times the width; femur 0.83–0.98 mm. long, 0.37–0.425 mm. wide, length 2.18–2.3 times the width; tibia 0.87–1.03 mm. long, 0.37–0.42 mm. wide, length 2.32–2.45 times the width; chela 1.26–1.48 mm. in length, 0.42–0.50 mm. in width, length 2.85–3.0 times the width; chelal hand 0.69–0.86 mm. long, 0.42–0.48 mm. deep; movable finger 0.59–0.70 mm. long.

TRITONYMPH: A single tritonymph was studied and found to be very similar to the female. The body length is 3.1 mm. The galea of the chelicera has six branches confined to the distal one-half of the galea; the serrula exterior has 16 to 17 plates. The length/width ratios of palpal podomeres approach those of the female more closely than they do those of the male. The general shape of podomeres is somewhat similar to those of the adult, but the pedicels are relatively wider and are less sharply differentiated. In addition, the tibia has a well-rounded and somewhat evenly convex extensor margin. The trochanter is 0.37 mm. long, 0.205

mm. wide; femur 0.52 mm. long, 0.25 mm. wide; tibia 0.53 mm. long, 0.26 mm. wide; chela 0.85 mm. long, 0.31 mm. wide; chelal hand 0.50 mm. in length, 0.29 mm. in depth; movable chelal finger 0.40 mm. in length.

RECORDS: *Catron County*: Beneath the bark of a yellow-pine stump, Wall Lake Camp Ground, south of Beaverhead, about 6500 feet elevation. *Grant County*: Iron Creek Camp Ground, Black Range, east of Santa Rita, by B. Malkin, elevation about 7300 feet. *Lincoln County*: Nogal Canyon, near Nogal, beneath the bark of decaying yellow-pine logs, 7200 feet elevation; beneath the started bark of yellow-pine logs, about $2\frac{1}{2}$ miles from Monjeau Fire Lookout, near Alto, at an elevation of 9000 feet; Red Cloud Canyon, Gallinas Peak, beneath the bark of yellow-pine stumps at elevations of 7600 and 8000 feet. *McKinley County*: A dead male taken from an ant that was carrying the specimen, east of San Mateo on the north side of Mt. Taylor, 7800 feet elevation. *Sandoval County*: North end of Nacimiento Mountains, east of Cuba, under bark of dead standing yellow pine that was evidently killed by bark beetles, 8400 feet elevation. *San Miguel County*: Beneath the bark of a yellow-pine log, just north of Torrero, at 7900 feet elevation. *Torrance County*: Beneath the bark of a yellow-pine log, 3 miles south of Capillo Peak, northwest of Manzano, at 8200 feet elevation; under the started bark of a yellow-pine log, east of Fourth of July Camp Area, west of Tajique, at 7100 feet elevation. *Valencia County*: Beneath the bark of a yellow-pine log, south side of Mt. Taylor, northeast of Grants, at 7500 feet elevation.

Our records clearly indicate that *Lustrochernes grossus* is restricted in habitat to the yellow-pine zone, where it lives beneath the started bark of decaying yellow-pine stumps and logs. The altitudinal band, 6500 to 9000 feet, in which the species has been taken in New Mexico is somewhat wider than might be expected, because yellow pine tends to follow shaded and moist canyon bottoms to relatively low elevations and, in addition, often occurs on rocky, well-drained, south-facing slopes at relatively high elevations.

SUBFAMILY CHERNETINAE BEIER

This subfamily contains chernetid pseudoscorpions in which the investing setae are almost always clearly thickened to strongly clavate; the flagellum of the chelicera has two, three, or four setae or blades; the pleural membranes of the abdomen are never smoothly striate; a tactile seta may be present on the tarsus but is never present on the tibia of the fourth leg. The greater part of the chernetid pseudoscorpions belong to this world-wide subfamily, which is represented in New Mexico by six genera and 12 species.

The subfamily Chernetinae was subdivided into two tribes by Beier (1932), with the tribe Chernetini characterized by two or three setae in the flagellum and the tribe Hesperochernetini characterized by four setae in the flagellum. J. C. Chamberlin (*in litt.*) has indicated that the type species, *Scorpio cimicoides* Fabricius, 1793, of the genus *Chernes* Menge apparently has four setae in the flagellum and, if this is true, then Hesperochernetini and Chernetini are synonymous. Under these conditions, it seems advisable to discontinue use of the tribal categories established by Beier.

PARACHERNES CHAMBERLIN

Parachernes CHAMBERLIN, 1931, Ent. News, vol. 42, p. 192. BEIER, 1932, Das Tierreich, vol. 58, p. 116. HOFF, 1949, Bull. Illinois Nat. Hist. Surv., vol. 24, p. 456.

In a comparison of our present specimens with the type species of the genus, *Parachernes ronniai*, as described by Chamberlin (1931b) and with the generic diagnosis given by Beier (1932), there appear to be two discrepancies. In the first place, tactile seta *st* of the movable chelal finger is sometimes nearer *t* than *sb* (contrary to the diagnosis given by Beier) and in other instances *st* is closer to *sb* than to *t*, as indicated in the diagnosis by Beier (1932) and as shown in the figure of the type species of the genus as given by Chamberlin (1931b, fig. B). In the second place, the tactile seta of the fourth pedal tarsus is much more distally placed in our present specimens than is indicated by Chamberlin (1931b, fig. F) for *P. ronniai*. Rather than establish a new genus on the basis of these somewhat minor and possibly unstable differences, it seems advisable to modify the genus *Parachernes* to include our specimens. The position of *st* in relationship to *t* and *sb* is shown to be somewhat variable in our series of specimens and thus not suited for differentiation between genera. The position of the tactile seta of the fourth pedal tarsus appears to be more constant within a particular species, but, as the exact position is unknown for many of the species described in the literature, the use of the position of this seta is certainly not to be advocated as a basis for distinguishing between genera.

As used here, the genus *Parachernes* is differentiated by the following combination of characteristics: carapace usually with eye spots, surface of carapace more or less clearly granular, the area posterior to the posterior transverse furrow commonly light in color in contrast to the more sclerotic central and anterior portions of the carapace; tergites divided; setae of body and palps varying from toothed to lightly clavate;

flagellum with three setae; palps usually granulate; tactile setae of the interior series and all but *et* of the exterior series of the fixed chelal finger confined to the basal one-half of the finger, *et* being the only seta on the distal one-half of the finger; *st* somewhat variable but usually located about midway between *t* and *sb*, in some instances definitely closer to *t* than to *sb* and in other instances closer to *sb* than to *t*; accessory teeth of chelal fingers not conspicuous in size or number; a well-developed tactile seta located distal to the midpoint of the extensor surface of the fourth pedal tarsus.

Beier (1932) divided the genus *Parachernes* into two subgenera, *Parachernes* and *Argentochernes*, on the basis of the presence of unpigmented or lightly pigmented spots on the posterior carapacial disc in *Argentochernes*. Such lightly pigmented areas are not mentioned on the carapace of *P. ronnaii*, the type species of *Parachernes*, but J. C. Chamberlin (*in litt.*) states that the spots actually are present. This being so, *Argentochernes* becomes a synonym of *Parachernes*.

The genus *Parachernes* is typically New World in distribution, with a concentration of species in the Neotropical region. In addition to New World forms, there are a few species, chiefly of questionable nature, in Australia, Africa, and southern Asia. The genus appears to be absent from the Palearctic region. A limited number of species occur in the United States, chiefly in Florida and Texas. A single species, previously undescribed, is found in New Mexico.

Parachernes nubilis, new species

Figures 1-5

FEMALE: The description of the female is based on four individuals, the holotype and three paratypes. For the more taxonomically important measurements and ratios, the range for all four females follows in parentheses the corresponding measurement or ratio of the holotype. Body stout, palpi fairly stout to stout; tergites, sternites, and carapace of a fairly deep golden color, often tinged with brown; palps deep golden to reddish golden in color; legs light golden to yellow; body length 2.4 (2.4-2.5) mm. Carapace nearly as wide as long, with medial and posterior widths about equal; lateral margins a little convex, posterior margin gently convex but not strongly so; easily observed eye spots present; surface of carapace heavily granulate except slightly less so on the lateral portions of the posterior disc; posterior furrow closer to the posterior carapacial margin than to the median transverse furrow; about 10 distinctly clavate setae along the posterior margin, other similar setae

widely scattered on the face of the carapace; posterior disc of carapace usually lightly pigmented except near the median line; carapace 0.78 (0.72–0.78) mm. long, 0.66 (0.66–0.68) mm. wide across the posterior margin; ocular width 0.35 (0.35–0.37) mm. Abdomen with sternites and tergites divided, the two scuta of each segment separated by a wide striated membrane, which is continuous with a wide band of similar nature along the posterior margin of each sternal and tergal half; scuta of the sternites weakly developed, much less sclerotic and extensive than those of the tergites; sternal halves nearly smooth, tergal halves strongly granulate; each tergal half of the central part of the abdomen with six to eight strongly clavate setae; each sternal half of the center of the abdomen with six to eight acuminate setae, with four to six acuminate setae in a uniseriate transverse row near the center of the fourth sternite; pleural membranes with wavy striations; each anterior stigmatic plate normally with two setae, each posterior plate with one.

Chelicera fairly stout, of golden color, base of hand with sculpturing confined to net-like lines on the exterior surface proximal to the base of the fixed finger; setae *b* and *sb* little thickened and each with a few terminal and subterminal spinules; flagellum of three setae, the shortest a little more than one-half of the length of the longest, the longest seta with a variable number of spinules along one side; fixed finger with a wide lamina exterior, distal one-fourth of inner finger margin with three teeth, three small denticles on the inner surface of the apical tooth; movable finger little curved; serrula exterior with usually 19, but occasionally 18 or 20, plates; sometimes one or two minute teeth are visible on the inner margin of the movable finger just distal to the level of the insertion of the galeal seta, apical tooth of the finger terminally bicuspid, occasionally tricuspid; galeal seta reaching about to the level of the tip of the galea; galea relatively stout, with five or six simple rami confined to little more than the distal one-third (occasionally almost one-half); length of chelicera 0.214 mm., width of base about 0.125 mm., length of movable finger 0.178 (0.171–0.183) mm.

Palpus with surface of trochanter and femur strongly and coarsely granulate; tibia strongly granulate on the flexor surface, by comparison the extensor surface is virtually smooth; flexor surface of hand moderately to weakly granulate, extensor surface appearing smooth; setae of the extensor surfaces of the trochanter, femur, and tibia in the form of short multidenticulate blades, setae becoming moderately clavate on the flexor surfaces; setae of chelal hand widened and denticulate on the flexor side, but more slender and less denticulate on the extensor side. Trochanter with a strongly developed dorsal-extensor protuberance; pedicel well

differentiated and a little wider than long; length of trochanter 0.34 (0.31–0.34) mm., width 0.19 (0.19–0.20) mm., length 1.79 (1.55–1.8) times the width. Femur with pedicel well defined and a little wider than long; dorsal-extensor portion of femur strongly swollen beyond the pedicel; the flexor margin weakly S-shaped, with the basal portion weakly convex and the distal portion weakly concave; the extensor margin gently to flatly convex; length 0.54 (0.51–0.55) mm., width 0.23 (0.21–0.23) mm., length 2.35 (2.35–2.55) times the width. Tibia with pedicel about as long as wide; the extensor margin convex, varying from a well-rounded margin to one that is flatly convex in the central part; flexor margin convex beyond the pedicel, but with a weak sinuation or concavity in the distal one-third; length of tibia 0.555 (0.52–0.555) mm., width 0.24 (0.23–0.24) mm., length 2.32 (2.2–2.35) times the width. Chela in dorsal view with hand fairly stout; pedicel displaced towards the extensor side; hand a little swollen at the basal-flexor corner; juncture of basal margin and other margins well rounded; extensor margin moderately and evenly convex, flexor margin usually a little less convex; fingers regularly and gently curved; chela 0.97 (0.90–0.97) mm. long, 0.38 (0.335–0.38) mm. wide, length 2.55 (2.55–2.7) times the width. From the side, pedicel of chelal hand strongly displaced towards the ventral margin; hand somewhat swollen and bulging at the basal-dorsal corner; juncture of basal margin with other margins well rounded, both ventral and dorsal margins gently convex; hand narrowed somewhat towards the finger base, with the greatest depth proximal to the center and equal to or very slightly less than the width of the hand; fixed finger nearly straight, movable finger gently curved, both fingers somewhat stout in lateral view; chelal hand 0.50 (0.48–0.51) mm. long, 0.37 (0.33–0.37) mm. deep; length of movable finger 0.48 (0.44–0.48) mm., this being equal to or a very little less than the length of the hand. Each chelal finger with 35 to 40 marginal teeth, the base of each tooth nearly square in outline and with the strongly developed cusp slightly retroconical; one to three external accessory teeth on each finger, internal accessory teeth not observed; nodus ramosus of the movable finger located at the level of or not more than one areolar diameter proximal to the insertion of tactile seta *t*; tactile setae as in the genus and as shown in figures 2 and 3.

Legs in general moderately stout; surface of podomeres marked by scale-like sculpturing which, with exception of the pars tibialis of each leg, is insufficiently strong to produce a definitely granulate appearance; setae of extensor surface in general subclavate to weakly denticulate, those of the flexor margin acuminate to paucidenticulate. First leg with trochanter 0.155 mm. long, 0.112 mm. deep; pars basalis 0.195 mm. in

length, 0.123 mm. in depth; pars tibialis with both margins gently and evenly convex, length 0.287 mm., depth 0.116 mm.; tibia with extensor margin nearly straight to very weakly concave except weakly convex in the proximal one-third, flexor margin gently and weakly convex, length 0.291 mm., depth 0.086 mm.; tarsus with extensor margin straight, flexor margin very weakly convex, deepest near the proximal margin and tapering distinctly and regularly towards the distal end, tarsus 0.295 mm. in length, 0.060 mm. in depth. Fourth leg with trochanter 0.247 mm. long, 0.143 mm. deep; pars basalis with nearly straight flexor margin continuous with the flexor margin of the pars tibialis, 0.231 mm. long, 0.151 mm. deep; pars tibialis with extensor margin gently convex, 0.43 mm. long, 0.170 mm. deep; entire femur 0.575 (0.54–0.575) mm. long, 0.170 (0.16–0.17) mm. deep, length 3.38 (3.24–3.4) times the depth; tibia and tarsus with the general shape of those of the first leg; tibia 0.45 mm. long, 0.104 mm. deep; tarsus 0.335 (0.33–0.335) mm. long, 0.068 (0.068–0.071) mm. deep, length 4.93 (4.65–4.95) times the depth; tactile seta of tarsus located 0.25 (0.235–0.25) mm. from the proximal margin of the podomere, being between 70 and 75 per cent of the length of the podomere from the proximal margin and being separated from the apical setae by a distance less than the depth of the tarsus at the level of the insertion of the seta.

Genitalia with 20 to 25 setae in a median cluster on the anterior operculum, with the more posterior setae spreading laterally to form an irregular transverse row just anterior to the aperture; five to seven setae in a uniseriate row on the medial portion of the posterior margin of the posterior operculum; seminal receptacles broadly V-shaped, with the arms extended laterally, relatively short, and with the common stalk almost wanting; each receptacle with a nearly uniform diameter throughout the distal one-half to two-thirds.

MALE: The description of the male is based on the allotype and three paratypes. Measurements of the range for all four males follow in parentheses the more critical measurements of the allotype. The male is very similar to the female except for differences in shape, in the relative length of the fingers, and the relative depth of the hand of the chela, the greatly reduced cheliceral galea, and the genitalia. Body of male 2.0 (1.8–2.2) mm. in length; carapace with the lightly pigmented areas of the posterior disc less conspicuous than in the female (where actually they are often not well marked), but this may be the result of individual variation; carapace 0.72 (0.65–0.74) mm. long, greatest width 0.57 (0.56–0.64) mm., ocular width 0.33 (0.31–0.33) mm.; sternal halves more extensively sclerotic and more deeply pigmented than in the female and

marked in the male by conspicuous net-like lines. Chelicera identical with that of the female except for the reduced galea, which has the general appearance of being broken to leave only an acutely pointed and unbranched stump; chelicera 0.195 mm. long, base 0.117 mm. wide; movable finger of chelicera 0.163 (0.155–0.175) mm. long. Except for shape and certain measurements of the chelal hand, the palpus of the male is similar to that of the female; trochanter 0.315 (0.28–0.33) mm. long, 0.19 (0.175–0.195) mm. wide, length 1.66 (1.6–1.7) times the width; femur 0.52 (0.45–0.56) mm. long, 0.21 (0.185–0.22) mm. wide, length 2.48 (2.45–2.65) times the width; tibia 0.51 (0.465–0.54) mm. long, 0.24 (0.20–0.245) mm. wide, length 2.13 (2.1–2.35) times the width. From the dorsad, the chelal hand of the male is more oval in outline than in the female, owing chiefly to the more convex extensor margin of the hand of the male; there is a tendency for the chela of the male to be slightly shorter than the chela of the female, but this may be the result of individual variation in our limited series; chela of the male 0.90 (0.78–0.90) mm. long, 0.325 (0.28–0.35) mm. wide, length 2.77 (2.6–2.8) times the width. From the side, the chelal hand of the male is much more circular in general outline than in the female, with a severe bulging of the dorsal-basal portion of the hand; in the male the movable finger is a little longer than the hand, in the female the finger is usually a little shorter (never longer) than the hand; in the male the depth of the chelal hand is always distinctly greater than the width, while in the female the depth of the hand is never greater than the width; chelal hand of male 0.46 (0.40–0.47) mm. long, depth 0.40 (0.32–0.43) mm.; movable finger 0.48 (0.42–0.50) mm. in length. The chaetotaxy of both fingers and the position of the nodus ramosus of the movable finger appear as in the female; occasionally there are more than the number of marginal and accessory teeth indicated for the female, but this may be the result of individual variation. The legs of the male are similar to those of the female. First leg with trochanter 0.13 mm. long and 0.10 mm. deep; pars basalis 0.171 mm. long, 0.119 mm. deep; pars tibialis 0.26 mm. long, 0.118 mm. deep; tibia 0.276 mm. in length and 0.075 mm. in depth; tarsus 0.271 mm. long, 0.052 mm. deep. Fourth leg with trochanter 0.219 mm. in length, 0.123 mm. in depth; pars basalis 0.199 mm. long, 0.141 mm. deep; pars tibialis 0.402 mm. long, 0.168 mm. deep; entire femur 0.52 (0.44–0.56) mm. long, 0.168 (0.127–0.185) mm. deep, length 3.1 (3.05–3.45) times the depth; tibia 0.43 mm. long, 0.093 mm. deep; tarsus 0.33 (0.285–0.35) mm. long, 0.068 (0.060–0.072) mm. deep, length 4.85 (4.75–4.85) times the depth; tactile seta of tarsus removed from the proximal margin by 0.24 (0.21–0.26) mm., this being 72 to 74.5 per cent of the entire length of the tarsus.

Male genitalia with 40 to 50 relatively long acuminate setae, the majority of these setae forming a U-shaped band, the ends of which are contiguous with a band of setae along the posterior margin of the operculum just anterior to the aperture; posterior operculum with nine or 10 setae on the anterior border near the aperture and five to nine setae widely spaced in a transverse row across the face of the operculum.

TRITONYMPH: The description is based on six mounted tritonymph paratypes. Measurements are given as ranges based on all six specimens. In general characteristics, in sculpturing, in color, and in chaetotaxy the tritonymphs resemble the female. The absolute size of palpal podomeres is less than in the adult, with pedicels less well differentiated, and with the palpal femur distinctly stouter than in the adult. There are also some differences in the shape of the chelal hand, the hand in dorsal view being more regularly oval than in the female and in side view appearing more slender and cylindrical in outline, the basal-dorsal portion not being swollen as in the adult. Length of the tritonymph 1.85–2.05 mm.; carapace 0.59–0.62 mm. long. Chelicera with movable finger 0.125–0.150 mm. in length; serrula exterior with 15 to 17 plates; galea usually with five rami confined to the distal one-third of the finger. Palpus with trochanter 0.24–0.27 mm. long, 0.15–0.16 mm. wide, length 1.6–1.7 times the width; femur 0.36–0.41 mm. long, 0.167–0.183 mm. wide, length 2.15–2.27 times the width; tibia 0.365–0.42 mm. long, 0.179–0.207 mm. wide, length 2.03–2.21 times the width; chela 0.71–0.78 mm. long, 0.255–0.28 mm. wide, length 2.69–2.79 times the width; chelal hand 0.36–0.43 mm. long, 0.26–0.285 mm. deep, movable chelal finger with a length of 0.36–0.38 mm. The chelal fingers with marginal teeth like those of the adult in shape, but usually only 30 to 35 in number; accessory teeth very few in number and difficult to observe because of weak development; tactile setae of the chelal fingers much as in the adult except that either *b* or *sb* is absent from the basal part of the movable finger and *st* is closer to the remaining basal seta than to tactile seta *t*; *ist* is apparently the tactile seta wanting from the fixed finger. Fourth pedal tarsus 0.255–0.270 mm. in length, with the tactile seta removed from the proximal margin by 0.167–0.179 mm., the distance from the tactile seta to the proximal margin of the podomere being 63 to 69 per cent of the entire length of the tarsus.

REMARKS: Our material shows a much greater degree of variation in the actual sizes of structures in the male than in the female. This is clearly shown, for instance, in the ranges given for the palpal femora, the range for the male being from 0.45 mm. to 0.56 mm., while the range for the female is from 0.51 mm. to 0.55 mm. The greater degree of variation in the male is explained at least in part by the presence of two rela-

tively small individuals, the smaller of the two tending to increase appreciably the size range of various body parts. While there is considerable variation in the sizes of structures, the length/width ratio shows ranges no more extensive than in the females. It is possible that the smallest of our males has just molted, which might explain the small body size and the distinct greenish cast in the color of the palps. Careful study indicates that, in spite of the variation in size, all our males are conspecific.

Any attempt to discuss interspecies relationships in the genus *Parachernes* is difficult because the genus contains a large number of species, many of which are poorly described and inadequately known. From other species, our *P. nubilis* can be separated by differences in the sizes and length/width ratios of palpal podomeres. The position of the tactile seta of the fourth pedal tarsus is also useful in separating many species from our new form, but unfortunately the exact position of the seta is not known for many of the species described in the literature. In the United States all species known for the genus *Parachernes* are restricted to the area east of the Mississippi River except for two species reported from Texas. Either or both of these species ultimately may be found in New Mexico, and it seems advisable to give methods of separating each of the two species from *P. nubilis*. Both species were described by Banks in 1908, and the female of each was redescribed from the single available type specimen by Hoff in 1947. Descriptions by Hoff (1947) serve largely as the basis for separation of our species from each of Banks's species, as Banks did not give detailed measurements necessary for differentiation. From *P. tumimanus* separation appears not to be difficult, as the palpal podomeres are a little larger and somewhat stouter than in our new species, the difference in absolute size being evident in the palpal femur and tibia and the difference in length/width ratio being clearly noticeable in the chela. The stouter nature of the chela in *P. tumimanus* is demonstrated when one compares the palpi of the present New Mexico specimens with the figure of the palpus of the lectotype as given by Hoff (1947, fig. 9). Separation of *P. nubilis* and *P. pulchellus* is a little more difficult, although the two species are certainly not conspecific. The palpal podomeres of the species from New Mexico are slightly larger and a little more slender than those of *pulchellus*, and the depth of the chelal hand in *nubilis* is equal to or slightly less than the width of the hand, while in *pulchellus* the depth is a little greater than the width. If males of *tumimanus* and *pulchellus* were available for comparison with the males of *nubilis*, differentiation among the three species might be facilitated.

RECORDS: *Bernalillo County*: The female holotype, one female para-

type, three tritonymph paratypes, and several other nymphs (not studied in detail and not considered paratypes) from sandy to very sandy soil associated with the roots of grasses and snake-weed west of the Rio Grande near Albuquerque, at an elevation of about 5000 feet. *Chaves County*: The male allotype and one male paratype from mesquite litter, 25 miles east of Roswell, elevation about 4000 feet; one female paratype from shin-oak litter collected 38 miles east of Roswell, about 4000 feet elevation; one female paratype from mesquite litter, 40 miles east of Roswell at an elevation of about 4100 feet. *Roosevelt County*: Two collections, containing one male paratype and five tritonymph paratypes, from shin-oak litter, near Milnesand, at about 4300 feet elevation. *Socorro County*: One male paratype and a few nymphs from live-oak litter in a canyon on the east side of Ladron Peak, near Belen, at an elevation of approximately 6600 feet.

Parachernes nubilis is clearly associated with dry litter beneath small, more or less xeric, broad-leaved trees growing in sandy to very sandy soil. Our single exception is the collection from Bernalillo County, where, because of soil and climate, conditions are possibly somewhat similar to those of the localities from which our other collections come. The adaptations of this species to particular micro-environmental conditions probably is responsible for restricting the distribution to relatively low elevations, all of our collections being taken at elevations of 5000 feet or less with exception of the single collection from a dry and relatively warm box canyon on the east side of Ladron Peak in Socorro County.

TYCHOCHERNES, NEW GENUS

DIAGNOSIS: Carapace more elongate than in most chernetin pseudoscorpions, with very strongly developed transverse furrows and with one pair of very weakly developed or obsolete eye spots; setae of carapace, tergites, and proximal podomeres of palpus clavate; chelicera with internal and laminal setae long and slender and inserted near the base of the fixed finger, with setae *b* and *sb* somewhat thickened and with a few spinules in the distal one-half of each; palpus with femur and tibia slender in contrast to the chela, in which the hand is stout and subglobose; movable finger with tactile seta *t* at least as far from *sb* as from the finger tip and *st* appreciably closer to *t* than to *sb*; fixed chelal finger with *it* distal to the midpoint of the finger and with *it* and *ist* well separated from *isb* and *ib*, *it* distinctly closer to the level of *ist* than to the level of *et*; fourth pedal tarsus with an acuminate tactile seta distinctly subterminal in position, being 0.7 or more of the tarsal length from the proximal margin of the podomere and removed from the apical setae by less than the depth

of the tarsus at the level of the insertion of the seta. The genus contains one species, the type species of the genus.

TYPE SPECIES: *Tychochernes inflatus*, new genus and new species.

REMARKS: It is unfortunately necessary to establish this new genus on a single species represented by only one individual. This individual, however, appears to be normal in every way and, as it cannot be assigned to an existing genus, the erection of a new genus is mandatory in order to record the species in the literature. Our new genus belongs to a group of chernetin genera in which the cheliceral flagellum has three setae, the internal setae of the fixed chelal finger are not clustered in the basal one-half of the finger, the chaetotaxy of the cheliceral hand is of the usual chernetid type, and a true tactile seta occurs in a subterminal position on the fourth pedal tarsus. Our new genus is apparently more closely related to the Neotropical genus *Rhopalochernes* Beier than to any other existing genus. This close relationship results in the fact that the new genus ends in the couplet containing the genus *Rhopalochernes* when attempts are made to use the keys given by Beier (1932). *Tychochernes* can be separated from *Rhopalochernes* by the relatively stout and subglobose chelal hand of *Tychochernes* and by the short, thickened but not strongly clavate, and inconspicuous setae of the flexor surface of the palpal femur and tibia, these setae in *Rhopalochernes* being clavate, very conspicuous, and longer than the setae of the extensor surfaces of the femur and tibia.

Tychochernes inflatus, new genus and new species

Figures 6-7

MALE: The description is based on one individual, the holotype. Body length 2.8 mm. Color of carapace golden, tergites and sternites brownish gold, palps rich reddish gold, legs of a yellowish gold color. Carapace with strongly granulate surface; setae well scattered and strongly clavate, apparently eight setae along the posterior margin; carapace with lateral margins nearly parallel except strongly bent medially at the anterior one-third to join the short anterior margin, the carapace thus being strongly narrowed within the anterior one-third of its length; anterior margin of carapace with four setae; median transverse furrow about midway between the posterior and the anterior carapacial margins, posterior transverse furrow closer to the posterior carapacial margin than to the median furrow; a lightly granulate area on each side near the anterior margin representing the vestiges of one pair of eyes; carapace 0.93 mm. long, greatest width 0.64 mm., posterior width 0.60 mm. Abdomen oval in general outline, probably less oval in the living animal than in the pre-

pared specimen; tergites and sternites well divided; tergites strongly granulate, six to eight clavate setae on each tergal half of the central part of the abdomen; sternal halves with scale-like or net-like markings well developed, five or six setae on each sternal half in the central part of the abdomen, the setae truly acuminate except for a few on the more posterior sternal halves where some of the setae are widened and denticulate; anterior stigmatic plate with two or three setae, posterior plate with only one; abdomen of mounted specimen about 1.3 mm. in width.

Chelicera of golden color, base and fixed finger fairly stout, movable finger somewhat slender; chaetotaxy as described for the genus; surface of base unsculptured; flagellum of three blades, two subequal in length, the third at least three-fourths as long as the longest blade of the group, the more distally placed blade strongly and sharply serrate along the margin; fixed finger with a strongly developed lamina exterior, three teeth on the distal portion of the inner finger margin, apical tooth with two or three weakly developed denticles on the inner margin, four plates of the serrula interior free and with serrate margins; movable cheliceral finger little curved, serrula exterior of 21 to 23 plates, two or three minute denticles on the inner margin at the level of and distal to the insertion of the galeal seta, apical tooth terminally bicuspid, stump-like galea with a terminal and a subterminal spinule; length of chelicera about 0.245 mm., width of base 0.155 mm.; length of movable cheliceral finger about 0.22 mm.

Palpus as described for the genus, with the proximal podomeres slender in relationship to the chela; entire surface of all podomeres moderately to coarsely granulate except that the granules become very weak to virtually absent in the extensor-basal portion of the chelal hand; setae varying from moderately clavate on the trochanter, femur, and flexor surface of the tibia to moderately widened and less strongly denticulate on the chelal hand. Trochanter with pedicel as long as wide; extensor-dorsal protuberance fairly well developed, flexor margin evenly convex; length 0.42 mm., width 0.24 mm. Femur with pedicel wider than long; the femur swollen beyond the pedicel on the extensor side, separating the pedicel from the rest of the podomere, and giving the podomere a sub-cylindrical appearance; flexor margin very weakly S-shaped, extensor margin flatly convex in the central part but more convex near the ends; length 0.77 mm., width 0.25 mm. Tibia with pedicel not much longer than wide; extensor margin nearly straight except at the level of the pedicel and in the distal one-fourth of the margin; flexor margin gently convex except virtually straight or a very little concave near the distal end of the margin; length 0.81 mm., width 0.27 mm. Chela with hand stout,

fingers moderately stout, the nearly square pedicel displaced far towards the extensor side; extensor margin of hand well rounded near the base but a little less convex beyond; basal and flexor margins continuous, well rounded, and convex because of the swollen nature of the flexor-basal portion of the hand; hand strongly narrowed towards the finger base; length of chela 1.29 mm., width 0.50 mm. From the side, chelal hand heavy, fingers moderately heavy; depth of hand at finger base much less than across the proximal part of the hand; pedicel displaced towards the ventral side with the dorsal-basal portion of the hand greatly swollen; basal half of ventral margin well rounded, distal half weakly to flatly convex; dorsal and basal margins continuous and well rounded, distal portion of dorsal margin moderately convex; movable chelal finger gently curved, nodus ramosus closer to tactile seta *st* than to tactile seta *t*; fixed finger nearly straight; each finger with 45 to 50 contiguous teeth, those at the distal end acutely and strongly cuspid but becoming flattened and virtually acuspid at the extreme proximal end of the row; movable finger with eight exterior and four interior accessory teeth; fixed finger with nine exterior and five interior accessory teeth; tactile setae as shown in figures 6 and 7; chelal hand 0.68 mm. long, 0.545 mm. deep; movable chelal finger 0.66 mm. in length.

Legs with surfaces of most podomeres marked by net-like or scale-like lines which appear in profile as granulations, these are virtually absent from the trochanter, are most strongly developed on the pars tibialis, and become very weak on the tarsus; setae in general widened and varying from moderately clavate to paucidenticulate, even the acuminate setae of the flexor surface of the tarsi are somewhat stout and spine-like. First leg with trochanter 0.181 mm. long, 0.127 mm. deep; pars basalis with greatly and evenly convex flexor margin, length 0.231 mm., depth 0.139 mm.; pars tibialis with both margins gently convex, length 0.405 mm., depth 0.135 mm.; tibia with basal one-half of extensor margin gently but weakly convex, distal one-half of extensor margin weakly concave, flexor margin gently convex except at the very proximal end, length 0.41 mm., depth 0.088 mm.; tarsus with both margins nearly straight, little more deepened proximally than distally so that the tarsus appears cylindrical in outline, length 0.38 mm., depth 0.068 mm. Fourth leg with trochanter 0.285 mm. long, 0.139 mm. deep; pars basalis 0.255 mm. long, 0.167 mm. deep; pars tibialis with flexor margin virtually straight and continuous with the flexor margin of the pars basalis, extensor margin flatly convex but a little more convex at about the distal one-fourth, length 0.57 mm., depth 0.207 mm.; entire femur 0.73 mm. in length; tibia with the shape of the tibia of the first leg, length 0.61 mm., depth 0.115 mm.; tarsus less

cylindrical than the tarsus of the first leg, tapering a little more strongly towards the distal end but with the margins nearly straight, length 0.43 mm., depth 0.082 mm.; tactile seta of tarsus lost from the leg not treated with caustic, but both third legs and the one fourth leg associated with the treated body have tactile setae removed from the apical setae by a distance less than the depth of the tarsus at the level of the tactile seta, in the treated fourth leg the tactile seta is removed from the proximal margin of the tarsus by a distance about 0.75 of the total length of the tarsus.

Genitalia including an anterior operculum with 42 setae; posterior operculum with eight setae on the posterior rim of the aperture and nine setae in a uniseriate row between the aperture and the posterior margin of the operculum.

RECORD: A single male, the holotype, taken from the nest of a wood rat (*Neotoma*, sp. indet.), at the west base of the Sandia Mountains, just east of Albuquerque, Bernalillo County, at an elevation of about 6100 feet.

CHRYSOCHERNES, NEW GENUS

DIAGNOSIS: Body stout, appendages relatively slender; tergites in part, carapace, and palpal podomeres (except chelal fingers) strongly granulate and with well-developed clavate setae; eye spots absent. Chelicera with three setae in the flagellum; seta *sb* of cheliceral hand terminally and subterminally denticulate, seta *b* acuminate; galea of female with several simple rami, that of the male with rami reduced in number. Palpal chela somewhat cheliferoid in general appearance; chelal fingers long and slender; fingers apparently without accessory teeth except for a questionable accessory tooth located slightly proximal to the apical tooth; movable finger with *st* much farther (1.4 times or a little more) from *sb* than from *t*, *t* closer to *st* than to the finger tip; fixed finger with the distance between *it* and *et* variable but *it* at least slightly closer to *et* than *et* is distant from the finger tip, fixed finger with *ist* and *est* little distal to the midpoint of the finger and at virtually the same level, *isb* and *ib* at about the same level and slightly distal to the level of *esb*, *it* about midway between *ist* and the finger tip or definitely closer to the finger tip than to *ist*, *ist* very little closer to *it* than to *isb*; nodus ramosus of movable finger much closer to *t* than to *st*, no evidence of a vestigial venom duct in the fixed finger. Fourth pedal tarsus without a tactile seta. A single species, the type species, known in the genus.

TYPE SPECIES: *Chrysochernes elatus*, new genus and new species.

REMARKS: Our new genus is separated from other genera in the Chernetinae by the number of setae in the flagellum, the absence of a

tactile seta from the fourth pedal tarsus, the nature of the investing setae, the relative stoutness of the palpal podomeres, and the position of the tactile setae of the chelal fingers. When keys given by Beier (1932) are used, our new genus goes to the genus *Sundochernes* Beier, a genus that contains a small number of species from the East Indies and Australia. Careful study indicates that *Chrysochernes* is distinct from *Sundochernes*. In *Chrysochernes* tactile seta *st* of the movable chelal finger is distinctly much closer to *t* than to *sb*, the accessory teeth of the chelal fingers are reduced in number or wanting, the palpal chela is slender, and there is little sexual dimorphism in the chelae. In *Sundochernes*, on the other hand, tactile seta *st* is little closer to *t* than to *sb*, numerous accessory teeth occur on the chelal fingers, the palpal chela is stout, and as far as known there is strong sexual dimorphism in the chela. Perhaps of all the chernetin genera, our new genus shows a close relationship to the New World genus *Neochernes* Beier and the Cuban genus *Neoallochernes* Hoff. It is very difficult to make a satisfactory comparison between *Neochernes* and our new genus, because Beier (1932) based his genus on the inadequately known *Chernes peninsularis* Chamberlin, 1925. The single type individual of this species has the legs missing and, as a result, the presence or absence of the tactile seta of the fourth pedal tarsus is unknown. Beier (1932) assigned a large number of New World species to the genus. Most of the species placed by him in the genus were, however, inadequately known, and a number were later removed to other genera by Hoff (1947) after he had reexamined the type specimens. The majority of species still remaining in *Neochernes* are poorly known and, in the absence of information regarding the tactile seta of the fourth pedal tarsus, there is a strong probability that many actually are not congeneric with the type species of the genus. Confusion is increased by the possibility that *Neoallochernes* Hoff is synonymous with *Neochernes* Beier, but the synonymy cannot be established until the presence or absence of the tactile seta of the fourth pedal tarsus of *Chernes peninsularis* has been determined. The possible synonymy of *Neochernes* and *Neoallochernes* is actually irrelevant, however, to the present study, as *Chrysochernes* can be separated from both of these genera by the much more slender palpal chela and by the absence of accessory teeth on the chelal fingers. In addition, *Chrysochernes* differs from *Neoallochernes* by having strongly clavate setae, even on the chelal hand of the palpus. If *Chernes peninsularis*, the type species of *Neochernes*, is ultimately found to have a tactile seta on the fourth pedal tarsus, then our new genus is easily and clearly distinguished from *Neochernes* by the absence of the tactile seta.

Chrysochernes elatus, new genus and new species

Figures 8-11

FEMALE: The description is based on the single available female, the holotype. Body stout, palpi and legs relatively slender; abdomen, carapace, and legs light to moderately deep golden color, palps of a deeper golden color; setae of tergites, carapace, and palpi strongly clavate except for acuminate setae on the fingers; setae of sternites and legs varying from virtually clavate to subclavate to strictly acuminate; body length 2.7 mm. Carapace moderately granulate on the dorsal face and more strongly granulate on the lateral surfaces; transverse furrows not well impressed; median furrow posterior to the midpoint of the carapace; posterior margin gently convex and with about 12 strongly clavate setae; lateral margins convex; carapace strongly narrowed anteriorly; four to six clavate setae along the anterior margin; setae of surface of carapace numerous and strongly clavate; no eye spots; carapace 0.96 mm. long, 0.87 mm. wide along the posterior margin; greatest width near the center and equal to 0.91 mm. Abdomen with sternites and tergites divided; tergites somewhat less granulate than the carapace, tergal scuta of each tergite separated by a papillose membrane that is continuous with a slightly less papillose band along the posterior margin of each scutum; each tergal half of the central part of the abdomen with nine to 11 strongly clavate setae arranged in a single row except for the setae at the ends of the row; sternites weakly sclerotic, the scuta of each sternite separated medially by a papillose membrane that is continuous with a band of striated membrane along the posterior margin of each scutum; each sternal half of the central part of the abdomen with nine to 10 setae, these setae acuminate towards the anterior end of the abdomen but subclavate to clavate at the posterior end, the setae in the central sternites of the abdomen usually acuminate in the medial portion of the row but subclavate to clavate in the lateral portion of the row; pleural membranes wide, extensive, strongly and roughly papillose; anterior stigmatic plate with two or three setae, posterior plate with one.

Chelicera of yellowish golden color, fairly stout; unsculptured except for net-like markings on the exterior surface of the hand proximal to the insertion of the fixed finger; setae of base of hand as described for the genus; flagellum with the longest blade serrate along one margin and with the shortest seta about one-half of the length of the longest; chelicera 0.285 mm. long, base 0.17 mm. wide. Fixed finger relatively slender, lamina exterior strongly developed; serrula interior with the distal four plates free and serrate; distal one-third of the inner finger margin with

five retroconical teeth; inner surface of apical tooth with three denticles. Movable finger but little curved; subapical lobe located distal to the insertion of the galeal seta, strongly developed, and distinctly elongate-conical in shape; a small denticle on the inner finger margin at the level of the galeal seta; galeal seta not reaching beyond about two-thirds of the galea; apical tooth slender, weakly bicuspid; galea basally stout and with two simple rami near the midpoint, two simple rami between the midpoint and the distal end of the galea, and with the galea terminally subdivided to form two additional rami; serrula exterior with 18 to 19 plates; movable finger 0.245 mm. in length.

Palpus with surfaces of podomeres strongly granulate throughout, except for the smooth chelal fingers; investing setae numerous, strongly clavate, and multidenticulate except for the short acuminate setae of the chelal fingers. Trochanter with the pedicel slightly wider than long; flexor margin evenly convex beyond the pedicel; a well-developed protuberance on the dorsal-extensor aspect of the distal half of the podomere; length 0.53 mm., width 0.28 mm. Femur with pedicel well defined and nearly square in outline; flexor margin of femur weakly and evenly convex in the proximal three-fifths but very weakly concave beyond; extensor margin gently convex in the proximal one-half but more weakly convex beyond; length 0.86 mm., depth 0.28 mm. Tibia with pedicel much longer than wide; flexor margin beyond the pedicel evenly and conspicuously convex except for a weak sinuation or concavity in the distal one-fourth of the margin; extensor margin evenly and gently convex in the central portion but more convex in the distal one-fifth; length 0.79 mm., width 0.29 mm. Chela from the dorsad relatively slender in contrast to the more stout basal podomeres, fingers slender and long in comparison with the chelal hand; pedicel about as long as wide, located a little closer to the extensor than to the flexor margin of the hand; setae strongly clavate even on the extensor surface of the hand; entire hand granulate in all aspects; extensor margin of hand flatly convex except a little more convex just proximal to the base of the fingers and increasingly convex in the very basal portion where the margin meets the basal margin of the hand without interruption; flexor margin gently convex except increasingly convex where the margin joins the basal margin without interruption; basal-flexor portion of hand a little more swollen than the basal-extensor portion; hand widest about one-third of the hand length from the basal margin; chela 1.50 mm. long, 0.39 mm. wide. From the side, chelal hand has the pedicel displaced somewhat towards the ventral margin; both margins weakly convex and nearly straight except where they join the basal margin without appreciable interruption; hand slightly more swollen in the dorsal-basal portion than in the ventral-basal portion;

hand deepest at a level about one-third of the hand length from the basal margin; fingers slender; fixed finger with outer margin nearly straight except weakly convex near the distal end, inner margin weakly convex; movable finger with the inner margin weakly concave and the outer margin gently convex; each finger with nearly 60 marginal teeth arranged along virtually the entire finger margin, each individual tooth with a retroconical cusp except for a few somewhat reduced proximal teeth on each finger; definite accessory teeth absent, although a single extra tooth may occur at one side of the row just proximal to the apical tooth; nodus ramosus of movable finger located between tactile setae *t* and *st* and nearly twice as far from *st* as from *t*; tactile setae as described for the genus and as shown in figures 8 and 9; hand 0.65 mm. long, depth 0.39 mm. and equal to the width of the hand; movable chelal finger 0.94 mm. long.

Legs relatively slender, of golden yellow color; setae strongly clavate except for the acuminate to denticulate setae of the flexor surface of the tarsi of all legs and the flexor surfaces of the trochanter and pars basalis of the third and fourth legs; surface of podomeres virtually smooth except for very weakly developed scale-like markings on the pars tibialis and tibia of each leg, these markings appearing in profile as granules, especially along the margins of the pars tibialis. First leg with trochanter 0.23 mm. long, 0.16 mm. deep; over-all length of the pars basalis 0.31 mm., depth 0.187 mm.; pars tibialis with both margins gently and evenly convex, over-all length 0.49 mm., depth 0.140 mm.; tibia with extensor margin very weakly S-shaped, flexor margin gently convex, length 0.51 mm., depth 0.104 mm.; tarsus subcylindrical, with extensor margin virtually straight, flexor margin weakly and evenly convex, of nearly uniform depth except in the distal one-fourth, length 0.48 mm., depth 0.080 mm. Fourth leg with trochanter 0.34 mm. long, 0.19 mm. deep; pars basalis with flexor margin straight except near the proximal end and continuous with the flexor margin of the pars tibialis, length of pars basalis as measured along the flexor margin 0.30 mm., depth 0.18 mm.; pars tibialis cylindrical in shape, with both margins virtually straight except that the extensor margin is a little convex in the distal one-fourth, length as measured along the extensor margin 0.59 mm., depth 0.18 mm.; entire femur 0.82 mm. long; tibia with evenly and weakly convex flexor margin, extensor margin convex in the basal one-fourth but very weakly concave beyond, length 0.70 mm., depth 0.115 mm.; tarsus with both margins nearly straight, podomere narrowing uniformly and gently towards the distal end, length of tarsus 0.57 mm., depth 0.091 mm.

Genital complex with 30 setae in a triangular cluster on the anterior operculum; 12 setae in a uniseriate, gently curved row across the medial part of the posterior operculum.

MALE: The description of the male is based on one individual, the allotype. Agreement between the two sexes is close, but there is a difference in the absolute size of the body and body parts, the male being appreciably smaller than the female. The body length of the male is 2.3 mm.; carapace 0.88 mm. long, 0.81 mm. wide across the posterior margin and with the greatest width near the midpoint of the carapace and equal to 0.85 mm.; chaetotaxy of carapace and abdomen as in the female except for one or two setae rather than two or three setae on the anterior stigmatic plate. The chelicera of the male is more slender than that of the female, the galea is unbranched except for two short terminal rami, length of chelicera 0.29 mm., width of base 0.14 mm.; movable cheliceral finger 0.215 mm. in length. With respect to the palpus, the trochanter is 0.50 mm. long, 0.26 mm. wide; femur 0.79 mm. long, 0.25 mm. wide; tibia 0.71 mm. long, 0.265 mm. wide; chela 1.34 mm. long, 0.35 mm. wide. From the side, the chelal hand is 0.57 mm. long, 0.35 mm. deep, with the movable finger 0.84 mm. in length; in the male the nodus ramosus of the movable chelal finger is within two areolar diameters proximal to tactile seta *t* and at least three times farther from *st* than from *t*; the marginal teeth of the chelal fingers are slightly fewer in number than in the female, there being between 50 and 55 teeth on each finger; the smaller number of marginal teeth may be the result of the shorter finger length in the male. Legs of the male are essentially similar to those of the female except that the podomeres are smaller and the tibia and tarsus of each leg are somewhat stouter. First leg with trochanter 0.195 mm. long, 0.147 mm. deep; over-all length of pars basalis 0.27 mm., depth 0.167 mm.; over-all length of pars tibialis 0.43 mm., depth 0.133 mm.; tibia 0.45 mm. long, 0.100 mm. deep; tarsus 0.43 mm. in length, 0.072 mm. in depth. Fourth leg with trochanter 0.31 mm. long, 0.155 mm. deep; pars basalis as measured along the flexor margin 0.27 mm. long, 0.155 mm. in depth; pars tibialis less cylindrical than in the female and with a weakly convex extensor margin, length as measured along the extensor margin 0.53 mm., depth 0.167 mm.; entire femur 0.74 mm. long, 0.167 mm. deep; tibia with extensor margin a little less concave than in the female and nearly straight except in the convex proximal one-fourth of the podomere, 0.61 mm. long, 0.112 mm. deep; tarsus 0.48 mm. in length, 0.085 mm. in depth.

Male genital complex with about 27 setae widely scattered on the anterior operculum; 12 setae for the most part irregularly arranged in a transverse row across the face of the posterior operculum; five setae on the very posterior lip of the aperture.

RECORD: The female holotype and the male allotype occur in a collec-

tion made from dry juniper litter in a pinyon-juniper area at about 6800 feet elevation, one mile west of Mountainair, Torrance County. These are the only known specimens of *C. elatus*.

HESPEROCHERNES CHAMBERLIN

Hesperochnes CHAMBERLIN, 1924, Pan-Pacific Ent., vol. 1, p. 89. BEIER, 1932, Das Tierreich, vol. 58, p. 174. HOFF, 1949, Bull. Illinois Nat. Hist. Surv., vol. 24, p. 476. HOFF AND CLAWSON, 1952, Amer. Mus. Novitates, no. 1585, p. 14.

The members of the genus *Hesperochnes* can be recognized by the following combination of characters: carapace clearly longer than wide, two transverse furrows; tergites divided, surface granular; setae of palps and tergites denticulate to typically clavate, never bilaterally feathered and leaf-like; chelicera with four setae in the flagellum; seta *b* of cheliceral hand varying from acuminate to thickened and denticulate, seta *sb* thickened and denticulate; palps stout, of typical chernetid appearance; tactile seta *ist* of fixed chelal finger either opposite *est* or distal to the level of *est*; distance from tactile seta *it* to *ist* generally less and never much more than twice the distance between *it* and *et*; *st* of the movable chelal finger nearer to *t* than to *sb* or rarely appearing to be about midway between *t* and *sb*; eleventh tergite and sternite with acuminate tactile setae; tarsus of fourth leg without a true tactile seta; sperm receptacles of female in the form of long slender paired tubules ending in a terminal sac or bulb.

Hoff and Clawson (1952) pointed out that the type species, *H. laurae* Chamberlin, was reported in the original description as having both setae *b* and *sb* of the cheliceral hand thickened and denticulate and that, on later examination, Chamberlin (*in litt.*) reports that the seta *b* may be acuminate or, at the most, weakly denticulate. The variation evident in the nature of this seta and the confusion arising from the use of an unstable character in the separation of genera suggest the possibility of declaring *Reginachernes* Hoff, 1949, a synonym of *Hesperochnes* Chamberlin, 1924. Actual relegation of *Reginachernes* to synonymy should wait, however, until additional specimens of the type species of the genus *Hesperochnes* become available for detailed study.

The genus *Hesperochnes* is typically North American and contains a considerable number of species, of which three are reported from New Mexico. Our three species are very distinctive and are easily separated by palpal characteristics.

Hesperochnes riograndensis Hoff and Clawson

Hesperochnes riograndensis HOFF AND CLAWSON, 1952, Amer. Mus. Novitates, no. 1585, p. 19.

This species is known only from the type collection, which was taken from the food storage of a kangaroo rat (*Dipodomys*) near Lajoya, Socorro County, New Mexico. In spite of our study of large numbers of pseudoscorpions from rodent nests near Santa Fe, we have not found this species a second time. It is possible that the species is confined to elevations lower than those found near Santa Fe. In one of our collections from mesquite litter taken 18 miles north of Socorro, Socorro County, there occurs, however, a single female that is very similar to the type females of *H. riograndensis*. Differences between this female and those of *H. riograndensis* are for the most part minor. The most conspicuous difference appears to be the more stout chela. In the absence of a series of specimens, it appears advisable to hold this female until more material is available. Also in some of our collections from juniper, live-oak, and cottonwood litter, there occur numerous nymphs. At least some of the tritonymphs are conspecific with the female mentioned above. All these collections come from Socorro County.

A detailed description of *H. riograndensis* is readily available in the publication by Hoff and Clawson (1952). *Hesperochnes riograndensis* can be separated in many ways from a second species, *H. utahensis* Hoff and Clawson, 1952, reported here from New Mexico. A practical separation of the two species is easily made by the more slender palpal femur (length/width ratio over 2.7 in *H. riograndensis*, less than 2.6 in *utahensis*), the unusually slender legs in *riograndensis* (for instance, femur of fourth leg in *riograndensis* with a length/width ratio much more than 4, the same femur in *utahensis* with a length/width ratio much less than 4), and by the fact that the basal seta of the cheliceral hand is acuminate in *riograndensis* and flattened and denticulate in *utahensis*. Separation of *H. riograndensis* from the third New Mexico species, *H. molestus*, new species, is based largely on radical differences in the shape of palpal podomeres. These differences are discussed in connection with the description of *H. molestus*, new species.

Hesperochnes utahensis Hoff and Clawson

Hesperochnes utahensis HOFF AND CLAWSON, 1952, Amer. Mus. Novitates, no. 1585, p. 15.

A careful study of our New Mexico specimens and a direct comparison between our single available female and a female paratype clearly show that our specimens are conspecific with the type specimens from Utah. Our single New Mexico female has the following measurements: body length 2.55 mm.; palpal trochanter 0.36 mm. long, 0.21 mm. wide; femur

0.58 mm. long, 0.23 mm. wide; tibia 0.58 mm. long, 0.255 mm. wide; chela 1.00 mm. in length, 0.365 mm. in width; chelal hand 0.51 mm. long, 0.345 mm. deep; movable chelal finger 0.53 mm. in length. The single New Mexico male measures 2.4 mm. in body length; palpal trochanter 0.36 mm. long, 0.22 mm. wide; femur 0.59 mm. in length, 0.235 mm. in width; tibia 0.59 mm. long, 0.26 mm. wide; chela 0.96 mm. in length, 0.36 mm. in width; chelal hand 0.48 mm. in length, 0.35 mm. in depth; movable finger 0.51 mm. in length.

In the original species description an error relative to the position of the genital aperture resulted in our describing an incorrect number of setae for each operculum. In our present New Mexico male, there are 37 setae on the anterior operculum; the posterior operculum bears six setae on the posterior rim of the aperture and 14 setae in a marginal row, while between the aperture and the marginal row is a short row of six setae on the face of the operculum.

Separation of *Hesperochnes utahensis* from *H. riograndensis* is described above in connection with remarks relative to *H. riograndensis*. A discussion of methods for separation of *H. utahensis* and *H. molestus*, new species, will be found under remarks in the description of the latter.

RECORD: One male, one female, and one tritonymph from juniper litter on sandy soil, Echo Amphitheater Picnic Area, south of Cebolla, Rio Arriba County, elevation about 6700 feet. The species previously has been reported only from Utah, the type locality, where it occurs in the nests of wood rats (*Neotoma*) (Hoff and Clawson, 1952).

Hesperochnes molestus, new species

Figures 12-15

MALE: Detailed description based on seven males, the holotype and six paratypes, mounted in Canada balsam. Measurements are for the holotype except that in some instances the range of measurements of all seven males is given in parentheses following the measurement for the holotype. Body fairly stout, light golden yellow except for the deep golden to reddish golden carapace and palps; body length 2.25 (2.15-2.3) mm. Carapace subquadrate except for the rounded anterior margin; transverse furrows very deeply impressed, the posterior furrow closer to the posterior carapacial margin than to the median furrow; widest across the posterior margin; setae moderately to strongly clavate; posterior margin with about 12 setae in a very irregular and variable row; eye spots absent; dorsal face of carapace weakly to moderately granulate, sides more strongly granular; length of carapace 0.69 (0.67-0.78) mm., great-

est width in holotype 0.51 mm. Abdomen with tergites except the eleventh divided, moderately granulate, spaces between tergal halves wide and papillose; setae strongly clavate; except for one or two setae of the lateral margin, each tergal half has six to seven (occasionally eight) setae arranged in a single marginal row. Sternites less strongly sculptured than the tergites and with markings more scale-like, somewhat lighter in color than the tergites; setae of anterior sternites acuminate, those of the posterior sternites multidenticulate to weakly clavate; each half of fourth sternite with usually three to five acuminate setae; sternal halves of central part of abdomen usually with seven to nine marginal setae. Abdomen with pleural membranes roughly striate, papillose; anterior stigmatic plate with three setae, posterior plate with one; abdomen of prepared specimens subovate in general outline, about 1.5 mm. long and about 1 mm. wide.

Chelicera moderately slender; basal seta acuminate, subbasal seta thickened and with a few subterminal and terminal spinules, surface of hand at base of setae often sculptured with a few net-like lines; flagellum with longest blade wide and strongly serrate along one margin. Movable finger nearly straight; apical tooth terminally sclerotic, fairly stout, and often bicuspid; subapical lobe fairly well developed, not heavily sclerotic, and sometimes terminally divided; galea moderately slender, with five or six simple rami distributed along nearly the entire length of the galea; galeal seta extending about to the level of the end of the galea; serrula exterior with usually 16 or 17 plates. Fixed finger gently but weakly curved; lamina exterior well developed; distal four plates of serrula interior free; apical tooth with three denticles along the inner margin; inner margin of distal portion of fixed finger with four retroconical teeth. Chelicera of holotype 0.24 mm. long, width of base 0.125 mm.; length of movable finger 0.195 mm.

Palps stout, the chela relatively more stout than other segments; setae of flexor surfaces of podomeres strongly clavate, nearly as clavate on the chelal hand as elsewhere; setae of extensor surfaces moderately clavate on the trochanter and femur to paucidenticulate on the chelal hand; trochanter somewhat conspicuously granulate, flexor surface of femur weakly to moderately granulate, flexor surfaces of tibia and chelal hand near finger base usually with granulations, but these are often somewhat difficult to observe; extensor surfaces of palpal podomeres almost non-granulate. Trochanter with pedicel shorter than wide; flexor margin evenly and strongly convex, heavily developed dorsal-extensor protuberance; length 0.38 mm., width 0.195 mm. in holotype. Femur stout, pedicel wider than long; femur greatly swollen dorsally just distal to the pedicel;

flexor margin weakly convex in the center and a little concave in the distal one-third; extensor margin very weakly and flatly convex; 0.54 (0.54–0.61) mm. long, 0.23 (0.23–0.25) mm. wide, length 2.35 (2.3–2.6) times the width. Tibia stout, pedicel about as wide as long; extensor margin moderately and evenly convex in the basal half but more convex beyond; flexor margin strongly convex and bulging in the center but a little concave beyond; length 0.52 (0.52–0.55) mm., width 0.245 (0.235–0.26) mm., length 2.13 (2.08–2.21) times the width. Chela with hand unusually stout as a result of being greatly swollen on the flexor side near the base, somewhat square in outline; pedicel wider than long and displaced towards the extensor margin; basal margin of chela centrally a little concave; extensor margin evenly and moderately convex except near the ends, flexor margin proximally almost straight or only a little convex and then bent in a pronounced angle to meet the finger bases; fingers relatively less stout than the hand, gently curved; length of chela without pedicel 0.98 (0.91–1.00) mm., width of hand 0.43 (0.37–0.43) mm., length 2.3 (2.3–2.6) times the width. From the side, chela with pedicel strongly displaced towards the ventral margin; hand stout, dorsal-basal portion of hand strongly swollen; ventral margin very weakly convex, dorsal margin swollen and strongly convex and well rounded; fixed finger nearly straight, movable finger a little curved; both fingers relatively slender when compared with the hand; hand without pedicel 0.47 (0.44–0.49) mm. long, 0.445 (0.41–0.45) mm. deep; movable chelal finger 0.56 (0.47–0.56) mm. long. Tactile setae of chelal fingers as shown in figures 12 and 13; each chelal finger with about 40 marginal teeth; fixed finger with usually four but occasionally as many as six external accessory teeth and from two to four internal accessory teeth; movable chelal finger with accessory teeth very similar in number to those of the fixed finger, with usually fewer in the internal than in the external series; venom duct very conspicuous, nodus ramosus usually a little distal to the level of tactile seta *st*.

Legs with setae ranging from weakly clavate on the femoral parts to acuminate on the flexor margin of tibia and tarsus; color deep yellow; surface of basal podomeres of legs weakly granulate but granules not easily observed except along the margins in profile view, distal podomeres of legs almost smooth. First leg with pars basalis of femur having an over-all length of 0.190 mm., depth 0.132 mm.; pars tibialis with both margins weakly convex but the extensor margin more so than the flexor, over-all length 0.304 mm., depth 0.113 mm.; tibia deepest near the center, 0.343 mm. long, 0.085 mm. deep; tarsus slightly narrowing towards the distal end, length 0.354 mm., depth 0.062 mm. Fourth leg somewhat

slender; pars basalis subtriangular, length along flexor margin 0.195 mm., depth 0.132 mm.; pars tibialis with extensor margin weakly to flatly convex, flexor margin a little concave to a little convex; length of pars tibialis 0.43 mm., depth 0.147 mm.; entire femur 0.58 mm. long; tibia with extensor margin a little convex in the basal one-fourth and virtually straight beyond, the flexor margin gently convex, length 0.51 mm., depth 0.101 mm.; tarsus narrowing very little towards the distal end, length 0.40 mm., depth 0.074 mm.

Male genital complex with 14 to 16 setae on the face of the posterior operculum and with three to five additional setae on the posterior rim of the aperture; anterior operculum with 21 to 27 setae.

FEMALE: Description based on the mounted allotype and seven mounted paratypes. Measurements given for the allotype are followed in many instances by the range of measurements of all eight females. The female much like the male in general appearance, but on the average the femur and tibia of the palpus are a little more slender and the chela is conspicuously much more slender than in the male. Body length 2.4 (2.4–3.0) mm.; carapace 0.75 (0.74–0.83) mm. long, carapace of allotype 0.68 mm. wide; abdomen of allotype 1.65 mm. long, about 1.2 mm. wide. Chelicera as in the male; allotype with chelicera 0.237 mm. long, base 0.136 mm. wide; movable finger 0.194 mm. long. Palpi with chaetotaxy as in the male; granulations and color appear to be a little weaker than in the male; sexual dimorphism observed to some extent in the palpal tibia but much more strongly exhibited in the chela; femur of a slightly different shape than in the male, being dorsally less swollen just distal to the pedicel; femur 0.61 (0.60–0.64) mm. long, 0.26 (0.245–0.27) mm. wide, length 2.34 (2.25–2.45) times the width; tibia of female less bulging on the flexor side than in the male and often with little indication of a concavity in the distal third of the flexor margin, tibia 0.54 (0.54–0.59) mm. long, 0.25 (0.24–0.28) mm. wide, length 2.16 (2.1–2.3) times the width; chela from the dorsad differing strongly from that of the male in general outline, pedicel near center of base of hand, basal margin rounded and merging more or less gently with the flexor and extensor margins, extensor margin somewhat evenly convex from the base of the hand to the base of the fingers, flexor margin more convex than the extensor margin, no strong flexor-basal swelling of the hand as evident in the male, flexor margin of hand meeting the fingers without a break in contour; chela without pedicel 0.97 (0.91–1.01) mm. long, 0.34 (0.34–0.385) mm. wide, length 2.85 (2.6–2.85) times the width. From the side, chela of the female is more evenly rounded in contour and the basal-dorsal part of the hand is not so strongly swollen as in the male; pedicel dis-

placed towards the ventral side; well-developed basal margin gently merging with the moderately and evenly convex dorsal and ventral margins; fixed finger nearly straight, movable finger gently curved; hand without pedicel 0.47 (0.46–0.49) mm. long, depth 0.40 (0.395–0.41) mm.; movable finger 0.51 (0.51–0.57) mm. long. Tactile setae shown in figures 14 and 15. Marginal and accessory teeth of chelal fingers as in the male.

Legs of the female like those of the male in shape of podomeres, chaetotaxy, and sculpturing. First leg of the allotype with trochanter 0.142 mm. long, 0.117 mm. deep; over-all length of the pars basalis 0.198 mm., depth 0.128 mm.; over-all length of pars tibialis 0.331 mm., depth 0.115 mm.; tibia 0.323 mm. long and 0.083 mm. deep; tarsus 0.342 mm. long, 0.058 mm. deep. Fourth leg of allotype with trochanter 0.276 mm. long, 0.128 mm. deep; pars basalis 0.195 mm. long, 0.133 mm. deep; pars tibialis 0.44 mm. long, 0.148 mm. deep; entire femur 0.59 mm. long; tibia 0.515 mm. long, 0.097 mm. deep; tarsus 0.392 mm. long, 0.070 mm. deep. Genital complex with 10 to 13 setae in a row along the margin of the posterior operculum; 18 to 24 setae on the face of the anterior operculum; seminal receptacles long and slender, often weakly convoluted, and each ending in a spherical bulb.

NYMPHS: The nymphs are being retained for future study.

REMARKS: It is impossible at this time to express satisfactorily inter-specific relationships within the genus *Hesperochnes*, because of the many incomplete species descriptions in the literature and our inadequate understanding of the taxonomic dependability of many of the structures possibly significant in the determination of natural relationships among species. The marked sexual dimorphism exhibited by the palpal chela suggests a relationship of our new species to *Hesperochnes mimulus* Chamberlin, 1952, a species taken from a *Citellus* (ground squirrel) nest in California, but our present species differs by the acuminate nature of the tactile seta *b* of the cheliceral hand, this seta being strongly flattened and denticulate in *H. mimulus*. A careful study indicates that our new species can be separated from previously described species of the genus by differences in shape, size, and length/width ratios of palpal podomeres. With reference to the other two species of *Hesperochnes* recorded from New Mexico, separation of our species from either of these can be made without difficulty because the hand, especially in the male, is greatly swollen in *H. molestus*. This difference is very conspicuous in a comparison of our species with *riograndensis*, for the males of *molestus* have a length/width ratio of no more than 2.6 and the females a ratio of no more than 2.85, while in *riograndensis* the ratio in both sexes is over 2.9. As

the length/width ratio of the chela in *utahensis* may approach the length/width ratio of the palpal chela of *molestus*, it is well to keep in mind that separation of the two species can be made by the acuminate nature of tactile seta *b* on the cheliceral hand of *molestus*, this seta being flattened and denticulate in *utahensis*.

Because an abundance of specimens is available, no specimens except mounted adults from Santa Fe County have been selected as types. These types are indicated in the listing of records.

RECORDS: *Bernalillo County*: One female, three males, and 14 nymphs from a wood-rat (*Neotoma*, sp. indet.) nest taken on the west side of the Sandia Mountains, east of Albuquerque, at an elevation of about 6100 feet; one male from a nest of *Neotoma albigula* Hartley taken in Monticello Canyon, Sandia Mountains, east of Albuquerque, 7500 feet elevation. *Torrance County*: One female taken from the hair of a grasshopper mouse, *Onychomys leucogaster* (Wied), about 25 miles south of Clines Corners, elevation about 6200 feet. *Santa Fe County*: All collections taken near the city of Santa Fe, elevations between 6200 and 7000 feet; the male holotype, the female allotype, four male paratypes, five female paratypes, and over 300 adults and young taken from six nests of *Dipodomys spectabilis* Merriam; two male paratypes, two female paratypes, and 56 adults and young from a nest of *Dipodomys ordii* (Woodhouse); one female from a nest of *Neotoma micropus* Baird; five males and two females from four nests of *Perognathus flavus* Baird; and one female from the hair of a specimen of *Onychomys leucogaster* (Wied).

DENDROCHERNES BEIER

Dendrochernes BEIER, 1932, Das Tierreich, vol. 58, p. 171; 1933, Zool. Jahrb., Syst., vol. 64, p. 537. VACHON, 1936, Bull. Soc. Zool. France, vol. 61, p. 143. HOFF, Bull. Mus. Comp. Zool., Harvard College, vol. 98, p. 536.

(?) *Pachycheirus* CHAMBERLIN, 1934, Pan-Pacific Ent., vol. 10, p. 125.

Pseudoscorpions of this genus are recognized by the following combination of characteristics: eye spots lacking or indistinct; tergites except the eleventh divided and finely to moderately granulate; setae of body and palps broadened and thickened, toothed, never strongly clavate; flagellum of four setae, but sometimes actually or apparently only three as a result of an abnormality, a loss of one seta, or an oversight because two of the setae lay parallel and closely appressed; palps stout, finely to moderately granulate; accessory teeth of chelal fingers numerous; tactile seta *st* of movable finger nearer to *sb* than to *t*; fixed finger with tactile seta *ist* at the level of or very little distal to the level of *est*; fourth

pedal tarsus with a tactile seta located distal to the midpoint of the tarsus, being 0.6 to 0.7 of the length of the tarsus from the proximal margin of the podomere; so far as known, the seminal receptacles of the female are long and slender, of uniform diameter throughout, greatly coiled, and without a terminal enlargement or bulb.

Consideration must be given to the strong probability that the genus *Pachycheirus* Chamberlin, 1934, is synonymous with *Dendrochernes*. If the two genera actually are synonyms, the type species of *Pachycheirus*, *P. instabilis*, is assignable to *Dendrochernes* and will bring to three the number of species at present recognized in this genus. The genus is Holarctic in distribution.

Dendrochernes crassus, new species

Figures 16-17

FEMALE: The description of the female is based on one individual, the holotype, mounted in Canada balsam. Body somewhat stout, palpi stout, legs moderately stout; abdomen, carapace, and legs of a rich golden yellow color, palps a rich red or deep reddish golden color; setae of carapace, palps, and tergites widened, subclavate, multidenticulate; setae of sternites acuminate except for a very few paucidenticulate setae on the posterior two or three segments; setae of legs varying from multidenticulate on the proximal segments to acuminate in the distal half of the flexor surface of the tarsus; body length 3.4 mm. Carapace with surface moderately granulate, widest near the center; central part of median transverse furrow a little nearer to the posterior than to the anterior carapacial margin, posterior furrow about midway between the median furrow and the posterior margin of the carapace, both furrows with the lateral portions directed anteriorly so that the furrows are gently curved when viewed from the dorsad; surface of carapace with numerous well-scattered setae: six setae along the anterior margin between the weakly developed eye spots, row of posterior margin irregular and at most with no more than 10 or 12 setae; lateral margins centrally convex, posterior margin with a fairly wide membranous stripe between the sclerotic face and the anterior margin of the first tergite; carapace 1.00 mm. long, greatest width 0.81 mm., posterior width 0.75 mm., ocular width measured just behind the eyes 0.48 mm. Abdomen with lateral margins somewhat convex; tergites conspicuously granulate, sternites more weakly sculptured with net-like or scale-like markings; each tergal half of the central part of the abdomen usually with nine to 10 widened and terminally denticulate and subclavate setae; each half of the fourth sternite with four or five setae in a uniseriate

row, each sternal half of the midpart of the body with 12 to 15 conspicuous acuminate setae; each posterior stigmatic plate with one seta; one anterior plate with one seta, the other with three setae; abdomen in prepared specimen about 1.5 mm. in width.

Chelicera moderately stout; surface at base of setae strongly sculptured by coarse, raised, net-like lines; all setae of hand acuminate; flagellum with four setae, the two smaller of which are each about one-third of the length of the longest, the longest seta with one edge finely serrate or feathered, the two smaller setae may easily be mistaken for a single seta, as they lie parallel and approximate one to the other. The fixed finger with a well-developed lamina exterior; serrula interior with the terminal five plates free and marginally serrate; four or five retroconical teeth along the distal two-fifths of the inner finger margin; inner surface of apical tooth with two or three small denticles. Movable finger little curved; an acute denticle at the level of the insertion of the galea can be observed only when the inner finger margin is in profile view; conspicuous subapical lobe just proximal to the apical tooth; the slender and nearly straight galea possessing six simple rami confined to the distal two-fifths of the length of the galea; galeal seta not reaching to the tip of the galea; serrula exterior with 22 or 23 ligulate plates; length of movable cheliceral finger 0.27 mm.

Palpal trochanter with a well-defined pedicel that is wider than long; flexor margin evenly and conspicuously convex; a large dorsal-extensor protuberance that is more strongly granulate than the rest of the podomere; setae numerous, especially on the flexor surface; length 0.51 mm., width 0.29 mm. Femur of palp with pedicel well separated and about as wide as long; the extensor portion of the femur is strongly bulging beyond the pedicel so that the extensor margin is evenly and strongly convex from the level of the pedicel to the distal end of the podomere; flexor margin conspicuously convex except for a weak concavity in the distal one-third, greatest width proximad to the midpoint of the femur; granules hardly as coarse as on the trochanter but covering almost the entire surface; setae less numerous than on the trochanter; length 0.76 mm., width 0.345 mm. Tibia with a well-defined pedicel that is about as long as wide; extensor margin with a very well-rounded and regular contour throughout; flexor margin greatly swollen and strongly convex except nearly straight or very weakly concave in the distal one-fourth; granulations about as coarse as on the femur except that they become reduced and virtually absent on the extensor surface; length 0.78 mm., width 0.39 mm. Chela from the dorsad somewhat oval in outline, all margins rounded and without conspicuous angulations; pedicel near the center of the basal

margin; setae fairly numerous along the flexor margin but becoming sparse and less denticulate on the extensor surface of the hand; flexor surface of hand less granulate than the femur and tibia, extensor surface of hand virtually smooth; extensor margin curved distally and suddenly to meet the finger base; fingers relatively stout, gently curved, and with fine acuminate investing setae; chela 1.34 mm. in length, 0.56 mm. in width. From the side, the hand is very stout and appears somewhat quadrate in general outline; dorsal and ventral margins both gently convex, basal margin more nearly straight; hand narrowed little towards the base of the fingers; pedicel conspicuously displaced towards the ventral side of the hand; fixed finger stout, outer margin a little convex in the distal half, the inner margin weakly S-shaped, with the proximal half convex and the distal half a little concave, the distal end of finger bluntly rounded, with about 35 cusp-bearing marginal teeth, apparently 12 external accessory teeth in a row paralleling nearly the entire row of marginal teeth and five internal accessory teeth confined to less than the distal one-half of the finger length; movable finger well curved, outer margin very strongly convex, inner margin evenly concave, with about 40 marginal teeth like those of the opposing finger, apparently seven external and six internal accessory teeth, a raised or slightly convex portion of the finger margin just proximal to the venom tooth bears regularly triangular and very sclerotic teeth; nodus ramosus a little closer to tactile seta *t* than to *st*; tactile setae as shown in figures 16 and 17.

First leg with anterior surfaces sculptured by somewhat weakly developed, scale-like lines, posterior surfaces virtually smooth; trochanter 0.20 mm. in length, 0.163 mm. in depth; pars basalis with well-defined pedicel, length 0.26 mm., depth 0.19 mm.; pars tibialis with both margins gently and evenly convex, length 0.43 mm., depth 0.197 mm.; tibia with basal one-third of extensor margin gently convex but nearly straight beyond, flexor margin gently convex throughout the distal three-fourths, length 0.44 mm., depth 0.135 mm.; tarsus distinctly cylindrical, length 0.37 mm., depth 0.09 mm. Fourth leg with nearly all surfaces marked by weakly developed, scale-like sculpturing; trochanter distinctly subcylindrical, length 0.34 mm., depth 0.16 mm.; pars basalis subtriangular, greatest length 0.29 mm., depth 0.21 mm.; pars tibialis with extensor margin flatly convex except more convex in the distal one-third, length along the extensor margin 0.58 mm., depth 0.245 mm.; entire femur with flexor margin nearly straight except at the very proximal end, entire femur 0.78 mm. in length; tibia with extensor margin very weakly S-shaped, flexor margin weakly and somewhat evenly convex, length 0.61 mm., depth 0.145 mm.; tarsus almost cylindrical in shape, length 0.42

mm., depth 0.100 mm.; tactile seta of tarsus located 0.25 mm. from the proximal margin of the podomere.

Genitalia with 29 setae on the anterior operculum; 17 setae in a row along the posterior margin of the posterior operculum; seminal receptacles very long, slender, of uniform width throughout, and fairly well coiled.

MALE: Description is based on one individual, the allotype. The male appears to be virtually identical with the female in general appearance, chaetotaxy, sculpturing, and size, but differs by being of a somewhat lighter color. The abdomen and carapace are of a very light brownish yellow to golden color, the palpi are deep golden in color, becoming reddish golden on the chelae, and the legs are of a golden yellow color. Body length 3.2 mm.; carapace 0.91 mm. long, greatest width 0.81 mm., posterior width 0.77 mm., ocular width 0.48 mm.; membranous stripe along the posterior margin of the carapace much less conspicuous than in the female; sternal halves of male virtually unsculptured; 13 setae in a row across the two halves of the fourth sternite; each posterior stigmatic plate with one seta, one of the anterior plates with two and the other with three setae; abdomen about 1.45 mm. in width in the prepared individual. Chelicera like that of the female; movable finger 0.25 mm. long, 22 plates in the serrula exterior. Palpus of male essentially as described for the female except the pedicel of the chela is slightly displaced towards the extensor side of the hand; trochanter 0.51 mm. long, 0.30 mm. wide; femur 0.78 mm. long, 0.34 mm. wide; tibia 0.79 mm. in length, 0.39 mm. in width; chela 1.32 mm. long, 0.55 mm. wide. From the side, chelal hand and fingers are much as in the female; each finger with about 40 marginal teeth, 12 external and five internal accessory teeth, although the number of accessory teeth in both the male and female are difficult to determine accurately; nodus ramosus located about midway between tactile setae *t* and *st*; chelal hand 0.74 mm. long, 0.57 mm. deep; movable chelal finger 0.64 mm. in length. Legs essentially as in the female. First leg with trochanter 0.20 mm. long, 0.155 mm. deep; pars basalis 0.255 mm. long, 0.185 mm. deep; pars tibialis 0.45 mm. in length, 0.191 mm. in depth; tibia 0.45 mm. long, 0.132 mm. deep; tarsus 0.36 mm. long, 0.088 mm. deep. Fourth leg with trochanter 0.33 mm. long, 0.175 mm. deep; pars basalis 0.29 mm. long, 0.20 mm. deep; pars tibialis 0.59 mm. in length, 0.23 mm. in depth; entire femur 0.78 mm. long; tibia 0.62 mm. long, 0.14 mm. deep; tarsus 0.41 mm. long, 0.098 mm. in depth; tactile seta of extensor surface of tarsus located 0.26 mm. from the proximal margin of the tarsus. Male genitalia with 29 setae on the anterior operculum; posterior operculum with four setae on the posterior rim of the aperture,

about 10 setae irregularly placed between the rim of the aperture and the posterior margin of the operculum, and apparently 15 setae along the posterior margin of the operculum.

REMARKS: *Dendrochernes crassus*, the only species of the genus known from New Mexico, can be separated from all other species of the genus by the more stout and much less cylindrical palpal femur. Other differences are also evident. Our new species is much smaller than the European *D. cyrneus* (= *Chernes cyrneus* Koch, 1873), the type species of *Dendrochernes*. From one Nearctic species, *D. morosus* (= *Chelanops morosus* Banks, 1895), our species is separated by the stouter and more centrally bulging palpal tibia, by the more regularly convex inner margin of the fixed chelal finger, and by the longer pedal podomeres. If it be assumed that *Pachycheirus* is a synonym of *Dendrochernes* and that *Pachycheirus instabilis* Chamberlin, 1934, is assignable to *Dendrochernes*, then *instabilis* is the second Nearctic species, and from this species our *D. crassus* can be separated by the more slender chela and by the more rounded chelal hand as seen from the dorsad.

RECORDS: The female holotype was taken from beneath the bark of a yellow-pine log, Fourth of July Camp Area, west of Tajique, Torrance County, elevation of 7400 feet; the male allotype was collected from beneath the bark of a yellow-pine log along the road from Grants to Mt. Taylor, Valencia County, 7500 feet elevation. Our collections contain a single tritonymph unaccompanied by adults but apparently conspecific with the type specimens. This single immature individual was taken beneath the bark of a yellow-pine log near Torrero, San Miguel County, at an elevation of 7900 feet.

DINOCHEIRUS CHAMBERLIN

Dinocheirus CHAMBERLIN, 1929, Pan-Pacific Ent., vol. 5, p. 171; BEIER, 1932, Das Tierreich, vol. 58, p. 137.

Epaphochernes BEIER, 1932, Das Tierreich, vol. 58, p. 173.

DIAGNOSIS: Carapace usually with two well-developed transverse furrows; chelicera with four setae in the flagellum, cheliceral hand with seta *sb* subterminally denticulate and seta *b* acuminate; chela of male stouter than in the female, being conspicuously enlarged and swollen in the ventral and flexor portions of the hand; external digital condyle enlarged in the male; accessory teeth of chelal fingers well developed; movable chelal finger with *st* closer to *t* than to *sb*, distance from *st* to *t* less than the distance of *t* from the finger tip; fixed finger with distance from *est* to *isb* at least almost two, usually two or more, times as great as the distance between setae *esb* and *eb*; tactile seta of the fourth pedal tarsus well devel-

oped, slender, acute, and located at least close to 0.6 and seldom more than 0.7 of the tarsal length from the proximal margin of the tarsus, the distance between the tactile seta and the apical setae never appreciably exceeding the depth of the tarsus; seminal receptacle of the female consisting of a pair of slender and elongated ducts or tubules, each of which ends in an ovoid (sometimes much restricted) reservoir.

About 20 species have been assigned to this genus. These occur chiefly in the warmer parts of the United States, with a few known from Mexico and from the northern part of South America. Five *Dinocheirus* species, of which three are new to the literature, are reported from New Mexico. In addition, mention is made of a few New Mexico collections containing specimens that remain unidentified to species.

Dinocheirus astutus, new species

Figures 18-20

MALE: Description based on five males, the holotype and four paratypes. For many structures, the range of measurements for all five males is given in parentheses following the corresponding measurements of the holotype. Abdomen, carapace, and legs light golden yellow in color, palpi much darker reddish golden to reddish brown color; length of body 2.9 (2.7-3.2) mm. Carapace longer than wide, surface moderately granulate; setae clavate, 10 to 12 along the posterior margin; no eye spots; carapace widest just posterior to the median transverse furrow; length of carapace 0.93 (0.86-0.94) mm., greatest width about 0.84 (0.69-0.90) mm., width across the posterior margin 0.79 (0.63-0.82) mm. Abdomen stout, ovate in outline; tergites except the eleventh divided; surface of tergites fairly granulate; setae strongly clavate, eight to 10 (rarely as many as 12) setae along the posterior margin of each tergal half, with a slight tendency in the posterior tergites for the setae to be biseriate; in addition to the marginal setae, often a seta occurs along the lateral margin of each tergal half. Sternites of abdomen much less granulate; setae varying from strictly acuminate on the fourth sternite to moderately clavate on the more posterior sternites; each half of the fourth sternite with five to seven setae; as many as 13 setae, chiefly in a uniseriate marginal row, on each sternal half in the central part of the abdomen; pleural membrane of abdomen rugose; anterior stigmatic plate with three (rarely two) setae, posterior plate with one seta; abdomen of holotype about 1.9 mm. long, about 1.3 mm. in width.

Chelicera yellow in color, fairly stout; palm of hand at base of fixed finger with scale-like markings; seta *sb* thickened along the entire length

and with a few to several microspinules in the distal one-half, seta *b* acuminate; flagellum with the largest blade much widened and with the distal half sharply serrate along one edge, the two short setae distinctly subequal in length; chelicera of holotype 0.233 mm. long, base 0.14 mm. wide, movable finger 0.185 mm. in length. Fixed cheliceral finger with three denticles on the inner surface of the apical tooth and four (sometimes five) retroconical denticles along the inner margin near the distal end of the finger; serrula interior with the distal four plates free, others fused; lamina exterior broad and conspicuous. Movable finger almost straight; apical tooth well developed and weakly bicuspid, subapical lobe well developed; galeal seta reaching about to the end of the galea; galea spine-like, terminally acute, and without indication of branching except for one or two minute microspinules in the distal one-third or one-fourth; serrula exterior of 18 plates.

Palpus fairly stout; trochanter and flexor surface of femur and tibia moderately granulate; extensor surface of femur and tibia and inner surface of chelal hand near finger base obscurely granulate, otherwise chelal hand is virtually smooth; except for the chelal fingers, the investing setae are strongly clavate to strongly multidenticulate, those of the basal podomeres being more conspicuously clavate. Trochanter with pedicel wider than long; flexor margin evenly and moderately convex; the subdorsal protuberance very conspicuous and well developed; holotype with trochanter 0.42 mm. long, 0.26 mm. wide. Femur with pedicel a little longer than wide; femur strongly swollen and widest just distal to the pedicel; central portion of the flexor margin weakly convex, a little concave in the distal portion; extensor margin centrally flattened, with an angulation at about the distal fourth or fifth; femur 0.73 (0.63–0.74) mm. long, 0.287 (0.245–0.305) mm. wide, length 2.54 (2.42–2.62) times the width. Tibia with pedicel conspicuously stouter than the pedicel of the femur and about as long as wide; flexor surface of tibia bulging near the center, a very little concave to straight in the distal one-third or one-fourth; extensor margin flatly to moderately convex except more convex at each end; length of tibia 0.675 (0.61–0.73) mm., width 0.305 (0.27–0.33) mm., length 2.2 (2.1–2.3) times the width. Chela with hand fairly stout; pedicel about as long as wide and placed near the center of the base of the hand or displaced a little towards the extensor side; flexor margin moderately and evenly rounded, meeting the basal margin without forming a distinct angle; extensor margin less convex and with more of an angulation at the juncture of the extensor and basal margins; fingers from the dorsad gently curved; chela without pedicel 1.14 (1.03–1.28) mm. long, 0.425 (0.42–0.48) mm. wide, length 2.7 (2.45–2.7) times the width. From the

side, chelal hand somewhat rectangular in outline but narrowed at the finger base; both dorsal and ventral margins gently convex, pedicel displaced towards the ventral margin; hand deepest near the center; hand without pedicel 0.59 (0.52–0.64) mm. long, 0.44 (0.44–0.49) mm. deep, movable finger 0.56 (0.54–0.66) mm. long; fixed finger nearly straight, movable finger gently curved; each finger with usually about 45 or 50 marginal teeth and with six to eight internal and a similar number of external accessory teeth scattered along the distal one-half of each finger; nodus ramosus located at the level of tactile seta *st* or no more than one or two areolar diameters distal to the level of *st*; tactile setae as indicated in figures 18 and 19.

Legs yellowish orange to golden in color; setae varying from virtually clavate, to strongly multidenticulate, to acuminate; surface of podomeres almost smooth except for shallow, scale-like sculpturing. First leg with setae of the extensor and flexor surfaces of the pars tibialis and the setae of the extensor surfaces of the tibia and tarsus multidenticulate, others chiefly acuminate; holotype with trochanter 0.171 mm. long, 0.125 mm. deep; over-all length of pars basalis 0.214 mm., depth 0.140 mm.; pars tibialis with flexor margin a very little convex, extensor margin more convex, over-all length 0.358 mm., depth 0.125 mm.; tibia with slightly S-shaped extensor margin, flexor margin gently convex, length 0.362 mm., depth 0.089 mm.; tarsus narrowing somewhat towards the distal end, length 0.358 mm., depth 0.066 mm. Fourth leg with nearly all setae multidenticulate to subclavate except for the acuminate setae of the flexor surface of the tibia and tarsus; trochanter almost cylindrical, 0.285 mm. long, 0.128 mm. deep; pars basalis measured along the flexor margin 0.233 mm. long, 0.164 mm. deep; pars tibialis with flexor margin nearly straight, extensor margin gently convex, length measured along the extensor margin 0.49 mm., depth 0.179 mm.; entire femur 0.65 mm. long; tibia and tarsus with shape similar to that of the first leg; tibia 0.558 mm. long, 0.109 mm. deep; tarsus 0.425 mm. long, 0.074 mm. deep; tarsus with an acuminate tactile seta not much longer than the apical setae of the extensor margin, the distance between the bases of the apical setae and the base of the tactile seta a little less than the depth of the tarsus at the level of the insertion of the tactile seta; tactile seta in holotype removed from the proximal margin of the tarsus by a distance of 0.30 mm.

Anterior operculum of genital complex with usually six setae in a row along the anterior margin of the genital slit and about 20 setae more anteriorly placed and irregularly dispersed; posterior operculum with 10 to 12 setae along the posterior margin, three to five spine-like setae on

the very margin of the genital slit, and a variable number (usually about 12) scattered setae between the marginal row and the genital slit.

FEMALE: Description of the female is based on the allotype and 13 paratypes. Measurements for the allotype are often followed in parentheses by the range of measurements for the same structure in the entire series of 14 females. General appearance as in the male; body length 3.0 (2.3–3.3, usually over 2.8) mm. Carapace moderately granulate except less so near the posterior margin; 12 to 14 setae along the posterior margin, otherwise as in the male; carapace 0.94 (0.76–0.94, usually over 0.84) mm. long, 0.76 (0.69–0.83) mm. wide, posterior width 0.73 (0.66–0.81) mm. Abdomen as in the male; abdomen of allotype 2.05 mm. long, about 1.35 mm. wide. Chelicera essentially as in the male except that the galea has five to six simple and acute rami confined to little more than the distal one-half of the galea, the medial rami fairly long, the subterminal and terminal rami shorter; chelicera of allotype 0.255 mm. long, 0.14 mm. wide, movable finger 0.215 mm. in length.

Palpus much as in the male except the femur is on the average less swollen just distal to the pedicel and the extensor margin is a very little less flattened; pedicel of chelal hand in dorsal view usually displaced a little more towards the extensor margin than in the male; chela usually a little narrower across the hand; trochanter of allotype 0.45 mm. long, 0.24 mm. wide; femur 0.72 (0.56–0.76, usually greater than 0.67) mm. long, 0.27 (0.22–0.29, usually greater than 0.255) mm. wide, length 2.66 (2.3–2.7) times the width; tibia 0.69 (0.54–0.70, usually greater than 0.63) mm. long, 0.295 (0.24–0.30, usually greater than 0.27) mm. wide, length 2.33 (2.15–2.4) times the width; chela without pedicel 1.18 (0.93–1.22, usually greater than 1.05) mm. long, 0.44 (0.345–0.46, usually greater than 0.38) mm. wide, length 2.7 (2.55–2.9) times the width. From the side, chelal hand a little less stout than in the male; chelal hand 0.60 (0.47–0.61, usually greater than 0.54) mm. long, 0.43 (0.35–0.44) mm. deep; movable finger 0.61 (0.50–0.65, usually greater than 0.56) mm. long. Marginal teeth, accessory teeth, and chaetotaxy of chelal fingers as in the male.

Legs as in the male. First leg of allotype with trochanter 0.183 mm. long, 0.135 mm. deep; over-all length of pars basalis 0.225 mm., depth 0.148 mm.; pars tibialis with over-all length 0.373 mm., 0.126 mm. deep; tibia 0.37 mm. long, 0.093 mm. deep; tarsus 0.366 mm. long, 0.068 mm. deep. Fourth leg of allotype with pars basalis measured along the flexor margin 0.26 mm. long, 0.167 mm. deep; pars tibialis measured along the extensor margin 0.515 mm. long, 0.175 mm. deep; entire femur 0.693 mm. long; tibia 0.57 mm. long, 0.110 mm. deep; tarsus 0.44 mm. long,

0.078 mm. deep; tactile seta of tarsus removed by 0.31 mm. from the proximal margin of the tarsus.

Genital complex with 10 to 13 setae along the posterior margin of the posterior operculum; anterior operculum with a dispersed cluster of usually between 17 and 21 setae; each seminal receptacle in the form of a spherical bulb at the end of a very long slender tubule of uniform diameter, occasionally one bulb of the pair may bear a short tubular appendage at the pole opposite the attachment point of the duct.

NYMPHS: Nymphs are being retained for future study.

REMARKS: Our new species appears unusual and distinctive by having the galeal rami of the male reduced to a very few microspinules, a branching galea being the usual type in *Dinocheirus*. This new species appears to be related by the shape of the palpal podomeres to *D. validus* (Banks, 1895) and *D. dorsalis* (Banks, 1895) from California, but separation of our species from these is easily made upon differences in shape, size, and length/width ratios of palpal podomeres. From other New Mexico species, *D. astutus* can be separated by the unbranched galea of the male and differences in size and length/width ratios of palpal podomeres.

RECORDS: *Bernalillo County*: Sandia Mountains, east of Albuquerque, one female from a nest of *Neotoma albigula* Hartley, 7500 feet elevation. *Catron County*: One male and one female from the nest of a wood rat (*Neotoma*), detailed locality not available. *Sandoval County*: Numerous adults and young from cottonwood litter along the Rio Grande, northwest of Pena Blanca, 5300 feet elevation. *Santa Fe County*: The male holotype, the female allotype, four male paratypes, 13 female paratypes, 12 males, 13 females, and 65 nymphs from 18 nests of *N. albigula*, near Santa Fe, elevations between 6300 and 7000 feet. *Socorro County*: One female and four nymphs from juniper litter, east side of Ladron Peak, north of Socorro, 6600 feet elevation; several adults and nymphs from walnut, *Juglans major* (Torrey) Heller, litter, Water Canyon, west of Socorro, 6900 feet elevation.

Dinocheirus athleticus, new species

Figures 21-24

MALE: The description is based on the holotype and three paratypes. Measurements are given for the holotype and are frequently followed in parentheses by the range based on all four males. Body and palps stout, legs moderately stout; legs and abdomen of light golden to yellow color, carapace deeper golden color, palps deep reddish gold; setae of tergites,

carapace, and basal segments of palps strongly clavate; body 2.5 (2.5–2.9) mm. long. Carapace with posterior margin weakly convex, lateral margins gently convex to well rounded, anterior margin evenly and strongly convex; lateral surfaces strongly granulate, posterior one-half of dorsal surface much less strongly granulate; eye spots absent; posterior transverse furrow nearer to the posterior margin than to the median furrow; setae fairly numerous, strongly clavate, about 12 in an irregular row along the posterior carapacial margin; carapace widest posterior to the midpoint; length 0.95 (0.90–0.96) mm., greatest width 0.86 (0.78–0.88) mm., posterior width 0.85 (0.75–0.87) mm. Abdomen ovate in general shape, lateral margins well rounded; pleural membranes very rugose; tergites and sternites except the eleventh divided; tergites strongly granulate, intertergal membranes rugose; most tergal halves with nine or 10 strongly clavate setae along the posterior margin and with a single seta on the lateral margin; sternites with chiefly net-like to scale-like markings, setae acuminate with exception of a few setae in the more posterior sternites, usually 10 to 12 setae in a row along the margin of the fourth sternite; each sternal half in the central part of the abdomen usually with between 10 and 12 setae along the margin; each anterior stigmatic plate typically with three setae, each posterior plate with one; abdomen of holotype about 1.2 mm. in greatest width.

Chelicera as usual in species of the genus; yellowish golden in color; hand fairly stout, net-like markings confined chiefly to the area about the base of seta *sb*; seta *sb* with a few terminal and subterminal denticulations; flagellum with the two shorter setae subequal in length and each with a length equal to about one-half of the length of the longer setae; the more distal of the two longer setae with sharp and well-separated serrations along nearly the entire margin of one side, the other longer seta with a few conspicuous spinules or serrations (sometimes obscure, perhaps because of position) confined to the distal one-third of the margin. Fixed finger relatively slender; lamina exterior well developed and with a conspicuous convex exterior margin; five to seven retroconical teeth in the distal half of the inner margin of the fixed finger, two or three denticles on the inner surface of the apical tooth; the terminal four plates of the serrula interior free and marginally serrate; movable finger curved, subapical lobe less than one-half of the length of the apical tooth; usually two very small denticles on the finger margin near the level of the insertion of the galeal seta; apical tooth terminally bicuspid and sclerotic; galeal seta usually not reaching much beyond the midpoint of the galea; galea with six simple rami confined to a little more than the distal one-half; serrula exterior usually with 17, occasionally 16 or 18, plates. Length

of chelicera of holotype about 0.29 mm., width of base 0.16 mm.; movable finger 0.24 (0.225–0.24) mm. in length.

Palps in dorsal view stout; reddish golden in color; setae ranging from clavate on the proximal podomeres to no less than strongly multi-denticulate and subclavate on the chelal hand, acuminate on the chelal fingers. Trochanter strongly granulate especially on the subdorsal protuberance, femur strongly granulate on the flexor surface and moderately to weakly granulate on the other surfaces, tibia moderately to weakly granular on the flexor surface but otherwise virtually smooth, chelal hand almost smooth except for a weakly granular area on the flexor surface near the base of the fingers. Trochanter with flexor margin evenly convex in dorsal view; pedicel wider than long, subdorsal protuberance very strongly developed but with rounded margin; trochanter 0.52 (0.50–0.54) mm. long, 0.27 (0.27–0.31) mm. wide, length 1.93 (1.72–1.93) times the width. Femur with pedicel a very little wider than long, strongly swollen dorsally just beyond the pedicel; in strict dorsal view, the flexor margin appears evenly convex except for a shallow sinuation close to the distal end; extensor margin flatly convex except a little more convex near the distal three-fourths; greatest width of femur just proximal to the midpoint of the femur, with the femur becoming gradually narrowed towards the distal end; length 0.78 (0.78–0.84) mm., width 0.34 (0.34–0.37) mm., length 2.29 (2.26–2.29) times the width. Tibia with pedicel about as wide as long and relatively stout in comparison with the rest of the podomere; entire extensor margin except at the very distal end forming an unbroken arc, well rounded, and a little more convex in the distal than in the proximal part; flexor margin swollen and convex beyond the pedicel but becoming straight to weakly concave in the distal one-third of the margin; length 0.72 (0.72–0.78) mm., width 0.33 (0.34–0.36) mm., length 2.18 (2.17–2.23) times the width. Chela from the dorsad with both flexor and extensor margins evenly and moderately convex and merging without interruption into the basal margin; central part of basal margin straight to weakly concave; contour of hand rounded in general view; pedicel displaced towards the extensor margin because of the enlargement of the flexor-basal portion of the hand; fingers relatively much less stout than the hand; the digital condyle strongly developed and nodular in appearance; length of chela 1.34 (1.34–1.46) mm., width 0.51 (0.49–0.56) mm., length 2.63 (2.61–2.78) times the width. From the side, chelal hand stout, fingers relatively slender; when the hand is in direct lateral view, acuminate setae are observed to occur on the ventral surface of the hand at the base of the movable finger, these extending in some specimens onto the proximal part of the ventral surface of the hand;

other setae strongly multidenticulate to subclavate; ventral margin evenly and conspicuously convex, dorsal margin a little less convex; basal margin nearly straight to a very little concave and meeting the dorsal and ventral margins without angulation; pedicel displaced strongly towards the ventral side of the hand; hand well rounded, narrowed towards the base of the fingers; fixed finger nearly straight, gradually tapering almost to a point; movable finger slender and gently curved; each finger with usually between 55 and 60 marginal teeth; accessory teeth of chelal fingers variable in number; fixed finger with three to 10 external and four to six internal accessory teeth; movable finger with three to seven external and two to five internal accessory teeth; tactile setae as shown in figures 21 and 22; nodus ramosus somewhat variable in position, placed between tactile setae *t* and *st* but usually well removed from each; length of chelal hand 0.67 (0.67–0.76) mm., depth of hand 0.52 (0.45–0.57) mm., length of movable finger 0.77 (0.76–0.82) mm.

Legs much like those of other species of the genus; yellow to golden yellow in color; without definite sculpturing except for weak granulations on the extensor and flexor surfaces of the femur, poorly developed, scale-like sculpturing on the tibia and tarsus of the first and fourth legs, and weakly developed granules on the trochanter of the fourth leg; setae variable; first leg with setae acuminate on the trochanter and flexor surface of the tarsus, moderately multidenticulate and variable on the flexor surface of the tibia, otherwise clavate; fourth leg with acuminate setae on the flexor surfaces of trochanter, pars basalis, and tarsus and strongly multidenticulate to subclavate setae on the flexor surface of the tibia, otherwise setae strongly clavate. First leg with trochanter of holotype 0.211 mm. long, 0.147 mm. deep; pars basalis 0.275 mm. long, 0.175 mm. deep; pars tibialis with both margins gently and evenly convex, length 0.42 mm., depth 0.147 mm.; tibia with basal half of extensor margin weakly convex and proximal half weakly concave, extensor margin becoming distinctly S-shaped in some individuals, flexor margin gently convex, length 0.43 mm., depth 0.107 mm.; tarsus with both margins nearly straight, tapering somewhat towards the distal end, length 0.41 mm., depth 0.071 mm. Trochanter of fourth leg 0.32 mm. long, 0.175 mm. deep; pars basalis 0.287 mm. in length, 0.203 mm. in depth; pars tibialis with straight flexor margin continuous with the flexor margin of the pars basalis, extensor margin gently and regularly convex, length 0.54 mm., depth 0.223 mm.; entire femur with a length of 0.74 mm.; tibia and tarsus like those of the first leg in general appearance; tibia 0.62 mm. long, 0.131 mm. deep; tarsus 0.48 mm. long, 0.086 mm. deep; tactile seta of tarsus located 0.34 mm. from the proximal margin.

Genital complex characterized by numerous long, scattered, irregularly arranged setae; about 30 setae on each operculum (including those along the posterior margin of the posterior operculum) but subject to considerable variation in number.

FEMALE: Description based on four individuals, the allotype and three paratypes. Measurements given for the allotype are often followed in parentheses by the range of measurements for all four females. The female essentially like the male in all respects except smaller and distinctly more slender palpal podomeres; body length 3.1 (2.7–3.1) mm.; length of carapace 0.95 (0.93–0.95) mm., greatest width 0.83 (0.82–0.83) mm., posterior width 0.79 (0.78–0.83) mm.; width of abdomen of allotype about 1.6 mm.; six to nine setae in the marginal row on the fourth sternite. Chelicerae like those of the male except that in the allotype one chelicera has seta *sb* apparently smooth and acuminate, possibly owing to the fact that the seta was viewed from the edge rather than from the flat surface of the blade; plates of serrula exterior usually about 17 in number (ranging from 16 to 19); chelicera of holotype 0.258 mm. long, base 0.16 mm. wide, movable finger 0.235 (0.23–0.235) mm. long. Palpus, especially chela, much more slender than in the male; general outlines of podomeres similar to those of the male except that the chelal hand lacks the flexor-ventral enlargement; hand from dorsad with regularly well-rounded flexor and extensor margins that meet the slightly convex basal margin without interruption; extensor margin slightly less convex than the flexor margin; pedicel located near the center of the basal margin; fingers slender and gently curved; external digital condyle not so pronounced as in the male; trochanter with range of 0.47–0.52 mm. in length, 0.24–0.26 mm. in width, length about 1.95 times the width; femur 0.73 (0.72–0.75) mm. long, 0.295 (0.28–0.295) mm. wide, length 2.47 (2.47–2.57) times the width; tibia 0.67 (0.65–0.70) mm. in length, 0.295 (0.28–0.295) mm. wide, length 2.27 (2.25–2.41) times the width; chela 1.25 (1.25–1.33) mm. long, 0.40 (0.39–0.42) mm. wide, length 3.13 (3.13–3.21) times the width. From the side, chela much less stout than in the male; pedicel displaced towards the ventral side of the hand; both ventral and dorsal margins regularly and moderately convex, basal margin very weakly convex and joining the ventral and dorsal margins without definite angulation; fingers appear a little stouter than in the male, fixed finger nearly straight, movable finger gently curved; dentition and chaetotaxy as in the male; length of chelal hand 0.62 (0.62–0.67) mm., depth 0.405 (0.37–0.41) mm.; movable chelal finger 0.69 (0.66–0.75) mm. in length. Legs as in the male, with podomeres virtually identical in shape. First leg with trochanter 0.20 mm. long, 0.135 mm. deep; pars basalis with

over-all length of 0.26 mm., depth 0.163 mm.; pars tibialis 0.405 mm. long, 0.137 mm. deep; tibia 0.41 mm. in length, 0.104 mm. in depth; tarsus 0.38 mm. long, 0.072 mm. deep. Fourth leg with trochanter 0.35 mm. long, 0.148 mm. deep; pars basalis 0.279 mm. long, 0.191 mm. deep; pars tibialis 0.52 mm. long, 0.207 mm. deep; entire femur with length of 0.72 mm.; tibia 0.61 mm. long, 0.121 mm. deep; tarsus 0.47 mm. long, 0.084 mm. deep, with tactile seta removed by 0.34 mm. from the proximal margin. Genital complex with 19 to 21 setae on the anterior operculum and 14 to 17 setae along the margin of the posterior operculum; each seminal receptacle consisting of a long coiled tubule ending in an elongate sac with a diameter not appreciably exceeding twice the diameter of the tubule at a point near its union with the sac; in many specimens the sac is characterized by having a few to several nodules on the surface.

NYMPHS: The few available nymphs have not been studied.

REMARKS: *Dinocheirus athleticus* appears to differ from other species of the genus by size and length/width ratios of palpal podomeres. The serrate nature of the next to the longest seta of the flagellum has not been reported in the majority of other species of the genus. From other New Mexico species, separation of this new species can be made by characteristics of the palp and the position of the tactile seta of the fourth pedal tarsus.

Our collections contain a male (from Mt. Taylor) that is smaller than the type specimens, has a slightly different contour on the flexor side of the palpal femur, and has a somewhat more slender hand. In side view, the chelal hand strongly resembles that described for the female. This male is tentatively assigned to the present species, because no other differences have been observed, and the size of palpal podomeres and the more slender condition of the chela may well be abnormalities. In addition, the shape and length/width ratio of the chela are approached to some extent by the shape and ratio of one of the paratypes. Until more material is available, the logical course is to assign this apparently abnormal or unusual individual to the new species *D. athleticus*. Measurements of this male include: body length about 2.4 mm.; carapace 0.73 mm. in greatest width; movable finger of chelicera 0.215 mm. long; palp with trochanter 0.45 mm. long and 0.24 mm. wide, femur 0.66 mm. long and 0.28 mm. wide, tibia 0.62 mm. in length and 0.28 mm. in width; palpal chela 1.19 mm. in length, 0.42 mm. in width; chelal hand 0.60 mm. long, 0.40 mm. deep; movable chelal finger 0.65 mm. long.

RECORDS: *Rio Arriba County*: East of Canjilon along road to El Rito, one paratype male from beneath bark of rotten and dry yellow-pine stump in an aspen-fir area at 8650 feet elevation; two paratype males, one

paratype female, one tritonymph, and one protonymph from beneath the bark of a yellow-pine log and stump, about 6 miles north of El Rito, elevation 7600 feet. *Sandoval County*: The male holotype, the female allotype, one male paratype, and one female paratype, from a rotten fir log on bottom of Las Huertas Canyon, near north end of Sandia Mountains, elevation about 6800 feet; one female paratype from beneath the bark of a yellow-pine log at 8000 feet elevation and one female paratype from a rotten coniferous log at 8700 feet, both northwest of Jemez Springs. *Valencia County*: One male and one tritonymph tentatively assigned to this species, taken from beneath the bark of a yellow-pine log, northeast of Grants on the south side of Mt. Taylor, at 9200 feet elevation.

Dinocheirus imperiosus, new species

Figures 25-28

MALE: Description of the male is based on three individuals, the holotype and two paratypes. Many measurements of the holotype are followed by the range of measurements for all three males. Body and palpi stout, legs moderately stout; color of abdomen and legs moderately deep golden to brownish yellow, palps golden to deep reddish golden in color, carapace moderately to dark golden in color; setae of carapace, tergites, and basal segments of palpi strongly clavate, setae of more distal segments of palpi weakly clavate to multidenticulate; body 2.4 (2.3-2.4) mm. in length. Carapace strongly granulate except moderately granulate on the posterior part of the dorsal surface; posterior transverse furrow about midway between the median furrow and the posterior carapacial margin; setae very strongly clavate, about 10 setae along the posterior margin; lateral margins gently convex, posterior margin weakly convex, anterior half of carapace well rounded and with moderately convex margins; eye spots absent or at most very poorly indicated by non-granulate areas; carapace widest near the midpoint; carapace 0.74 (0.69-0.74) mm. long, greatest width 0.65 (0.60-0.69) mm., posterior width 0.60 (0.56-0.64) mm. Abdomen ovate in general shape and with evenly convex lateral margins; tergites and sternites except the eleventh divided; surface of tergites strongly granulate, usually eight to nine strongly clavate setae on each tergal half in the central part of the abdomen, intertergal membranes wide and strongly rugose; setae of sternites acuminate except some clavate setae on the more posterior sternites, sternites sculptured with net-like or scale-like lines, intersternal membranes more striate than rugose, fourth sternite with eight to 10 (sometimes only six or seven, especially in the female) setae, each sternal half in the central part of the

abdomen with eight to 10 setae; anterior stigmatic plate with three setae, posterior plate with one; pleural membranes very strongly rugose; abdomen of holotype about 1.1 mm. in greatest width.

Chelicera golden yellow in color, fairly stout, very few net-like markings on the hand at the base of seta *sb*; seta *sb* in the form of a flattened blade with a few terminal and subterminal denticulations; flagellum with the two smaller setae less than one-half of the length of the longest seta, the longest seta with sharp serrations along one margin, the next to the longest seta apparently smooth but at most with no more than two or three fine denticulations; chelicera of holotype 0.22 mm. long, 0.123 mm. wide; movable finger between 0.183 and 0.195 mm. in length. Fixed finger of chelicera moderately slender, usually three denticles on the inner surface of the apical tooth and four (rarely five) retroconical teeth of varying size along the inner margin of the distal one-third of the finger; lamina exterior wide and conspicuous; serrula interior with the terminal four plates free and serrate. Movable finger fairly stout and straight; apical tooth bicuspid, subapical lobe more than one-half as long as the apical tooth and often appearing bicuspid; inner margin of finger frequently with two minute teeth at the level of the insertion of the galeal seta; serrula exterior usually with 16 teeth but occasionally 17 or even 18 may be present; galeal seta not extending to the level of the tip of the galea; galea with six simple and terminally acute rami confined to the distal one-half of the galea.

Palpi stout and with trochanter, femur, and flexor surface of tibia strongly to moderately granulate; flexor surface of chelal hand moderately to weakly granulate; setae of trochanter, femur, and flexor surfaces of tibia and hand strongly to moderately clavate, setae of extensor surfaces of tibia and hand subclavate. Trochanter with evenly and moderately convex flexor margin; dorsal protuberance strongly developed; well-developed pedicel little wider than long; length of trochanter 0.37 (0.35–0.37) mm., width 0.205 mm. in all specimens, length 1.7 to 1.8 times the width. Femur with pedicel about as long as wide and strongly separated from rest of podomere; femur strongly swollen on the dorsal side just beyond the pedicel; extensor surface gently convex; flexor surface centrally convex but a little concave near the distal end; greatest width near the midpoint of the femur; length of femur 0.54 (0.53–0.54) mm., width 0.25 (0.245–0.25) mm., length about 2.15 times the width. Tibia with fairly stout pedicel about as wide as long; extensor margin either a little convex in the center and more convex at each end or almost evenly convex throughout the margin; flexor margin bulging and convex in the center but very weakly concave beyond; length of tibia 0.515 (0.515–

0.52) mm., width 0.25 (0.25–0.255) mm., length about 2.05 times the width. Chela with hand very stout and fingers moderately stout; basal margin nearly straight and joining the flexor and extensor margins without interruption, extensor margin gently to flatly convex; flexor margin a little more convex; external digital condyle well developed; length of chela 0.92 (0.92–0.95) mm., width of chela 0.425 (0.405–0.425) mm., length 2.16 (2.16–2.32) times the width. From the side, hand of chela stout and with the dorsal-basal portion very strongly developed; pedicel of hand displaced far towards the ventral side; basal margin straight to very weakly concave in the center; both ventral and dorsal margins regularly and gently convex and meeting the basal margin without distinct interruption; setae of the dorsal margin of the hand weakly clavate to subclavate, setae of ventral margin acuminate except multidenticulate at the very proximal end of the margin; chelal hand 0.48 (0.48–0.49) mm. long, 0.425 (0.42–0.43) mm. deep; movable finger 0.49 (0.49–0.53) mm. long. Fixed chelal finger from the side moderately stout and straight, movable finger gently curved and with the inner concave margin not forming a regular arc but interrupted by a weak break in the regularity of the contour near the midpoint of the finger and again near the proximal end of the inner margin; number of teeth somewhat variable; fixed finger with usually between 40 and 50 marginal teeth, four to five external accessory teeth, and two to five internal accessory teeth; movable finger with about 40 to 45 marginal teeth, five to six external accessory teeth, and three to five internal accessory teeth; inner surface of basal half of each finger granulate; nodus ramosus usually distal to tactile seta *st* by no more than two areolar diameters; tactile setae as shown in figures 25 and 26.

Legs with surfaces of podomeres chiefly smooth but with weak, scale-like markings appearing in profile as granules on the femur and tibia of the first leg and weakly developed to virtually absent on the femur and tibia of the fourth leg; setae of pars tibialis and extensor surfaces of tibia and tarsus strongly clavate to subclavate; setae of trochanter, pars basalis, and flexor surfaces of tibia and tarsus at least in part acuminate. First leg with trochanter 0.14 mm. long, 0.112 mm. deep; pars basalis 0.17 mm. long, 0.13 mm. deep; pars tibialis with extensor margin evenly and gently convex, flexor margin less convex, 0.29 mm. long, 0.115 mm. deep; tibia with extensor margin gently convex in the basal half but almost straight to very little concave beyond, flexor margin moderately convex, length 0.295 mm., depth 0.088 mm.; tarsus subcylindrical but tapering a little in the distal half, 0.30 mm. long, 0.060 mm. deep. Fourth leg with trochanter 0.225 mm. long, 0.123 mm. deep; pars basalis 0.20 mm. long, 0.135 mm.

deep; pars tibialis with flexor margin straight and continuous with the flexor margin of the pars basalis, extensor margin gently to moderately convex, length 0.38 mm., depth 0.135 mm.; entire femur 0.525 mm. in length; tibia with basal half of extensor margin weakly convex and distal half very weakly concave, flexor margin gently and evenly convex, length 0.445 mm., depth 0.099 mm.; tarsus shaped as in the first leg, 0.345 mm. long, 0.068 mm. deep, with tactile seta removed 0.243 mm. from the proximal margin of the tarsus.

Genital complex with about 20 setae on the face of the anterior operculum and usually six setae on the very anterior rim of the aperture; posterior operculum with four setae on the rim of the aperture, eight to 12 setae in an irregular posterior row and not well separated from a variable number (usually 10 to 15) of setae on the face of the operculum.

FEMALE: The description of the female is based on the allotype and four paratypes. Measurements for all five individuals are given as ranges and follow in parentheses the corresponding measurements of the allotype. The female and male agree very closely in structure except that in the female the podomeres of the palps, especially the femur and chela, are definitely more slender. From the side, the chelal hand of the female is less swollen in the dorsal-basal portion, the movable finger and its inner margin are more regularly curved, and the granulations of the inner surface of the fingers are virtually absent on the movable finger and greatly reduced on the fixed finger. The dentition (except a smaller number of marginal teeth in some females) and chaetotaxy of the chelal fingers similar in the two sexes. Female with body 2.4–2.8 mm. long; carapace about 0.78 mm. long, greatest width 0.63–0.74 mm.; the cheliceral finger 0.185–0.20 mm. in length, serrula exterior of 16 to 17 plates; palpal trochanter 0.36 (0.34–0.38) mm. long, 0.21 (0.195–0.215) mm. wide, length 1.72 (1.7–1.85) times the width; femur of palp 0.54 (0.52–0.57) mm. long, width 0.235 (0.225–0.245) mm., length 2.3 (2.25–2.37) times the width; palpal tibia 0.53 (0.51–0.55) mm. in length, 0.25 (0.24–0.26) mm. wide, length 2.12 (2.08–2.17) times the width; chela 0.91 (0.88–0.98) mm. in length, 0.365 (0.355–0.40) mm. wide, length 2.5 (2.43–2.58) times the width; chelal hand 0.45 (0.45–0.48) mm. long, 0.36 (0.35–0.40) mm. deep; movable chelal finger 0.49 (0.48–0.53) mm. in length. First leg of allotype with trochanter 0.143 mm. long, 0.119 mm. deep; pars basalis 0.191 mm. long, 0.136 mm. deep; pars tibialis 0.29 mm. in length, 0.115 mm. in depth; tibia 0.30 mm. long, 0.084 mm. deep; tarsus 0.302 mm. in length, 0.058 mm. in depth. Fourth leg with trochanter of allotype broken; pars basalis 0.218 mm. long, 0.14 mm. deep; pars tibialis 0.395 mm. long, 0.15 mm. deep; entire femur 0.55 mm. in length; tibia 0.455 mm. in

length, 0.095 mm. in depth; tarsus 0.35 mm. long, 0.068 mm. deep; tactile seta of tarsus removed 0.259 mm. from the proximal margin of the tarsus. Genital complex with 14 to 17 setae on the anterior operculum and a marginal row of nine to 12 setae on the posterior operculum; each seminal receptacle consisting of a long coiled tubule ending in an ovate to elongate sac of somewhat variable shape and size.

NYMPHS: Our collections contain numerous nymphs, but these are not described at this time.

REMARKS: The new species, *Dinocheirus imperiosus*, differs from previously described species of the genus by size, length/width ratio, and shape of palpal podomeres. There seems to be some relationship of our new species to *D. texanus* Hoff and Clawson, 1952, from Texas and *D. dorsalis* (Banks, 1895) from California, but separation of our species from these two is not difficult. In contrast to *D. dorsalis* as figured by Hoff (1947, fig. 26), the female of *D. imperiosus* has the palpal tibia characterized by a more centrally bulging flexor margin and a chelal hand distinguished by a less round and more nearly straight basal margin. Our new species is slightly smaller than *D. texanus*, and the male has the basal portion of the chelal hand less rounded than in *D. texanus*. Other differences also occur. *Dinocheirus imperiosus* may be separated from other New Mexico species by characteristics of the palp and the fourth pedal tarsus.

In our collections there occurs a single male tentatively assigned to this species and worthy of an explanatory note. The male is accompanied by nymphs and was taken from an unused wood-rat (*Neotoma*) nest in the same general area from which our type specimens come. This single male agrees in all respects with our type individuals, except that the setae in general are a little less clavate, and the shape of the hand is distinctly peculiar. The first-mentioned difference probably has no significance, as the setae are somewhat variable among the type specimens, and one type individual has setae almost as slender as found in the male under consideration. The shape of the chela in both dorsal and lateral views is considerably different, however, from the shape exhibited by our three type males. From the dorsad, the flexor margin is distinctly and strongly broken by an angulation distal to the midpoint of the margin, with the result that the hand is widest at a point distal to the midpoint of the hand rather than being of greatest width at a point slightly proximal to the midpoint. Correlated differences are also evident in the side view of the hand, as the contour of the dorsal margin appears distinctly broken near the center of the margin, the basal-dorsal portion of the hand is more greatly swollen, and the ventral margin is less convex than in the type

specimens. On the basis of a single adult, in which the chela may be abnormal, it seems advisable to relegate this specimen and the accompanying nymphs to the species *D. imperiosus*. The discovery and study of additional specimens may make necessary the description of this male as the type of a new species. More critical measurements of this individual are given here: body length slightly over 2.0 mm., but abdomen apparently somewhat contracted; carapace 0.76 mm. long, 0.58 mm. in greatest width; palpal trochanter 0.34 mm. long, 0.205 mm. wide; palpal femur 0.51 mm. long and 0.235 mm. wide, tibia 0.53 mm. long and 0.245 mm. wide; chela 0.93 mm. in length, 0.425 mm. in width; chelal hand 0.45 mm. long, 0.43 mm. deep; movable chelal finger 0.53 mm. long.

RECORDS: *Bernalillo County*: All collections from the foothill zone at the west side of the Sandia Mountains, just east of Albuquerque; the male holotype, the female allotype, two male paratypes, one female paratype, two males, eight females, and four nymphs taken from the litter of the live oak, *Quercus turbinella* Greene, near the entrance to Piedra Liza Canyon, 6400 feet elevation; three female paratypes, one female, and 25 nymphs from live-oak litter, south of entrance to Embudo Canyon at about 6300 feet elevation; one male and 13 nymphs tentatively identified as belonging to *D. imperiosus*, taken from an unoccupied wood-rat nest near a clump of live oaks, south of entrance to Embudo Canyon, 6300 feet elevation. *Socorro County*: One male, one female, and several nymphs from live-oak litter, in a canyon on the east side of Ladron Peak, north of Socorro, elevation 6600 feet. The species appears to be definitely associated with the live oak, *Quercus turbinella*.

Dinocheirus validus (Banks)

Chelanops validus BANKS, 1895, Jour. New York Ent. Soc., vol. 3, p. 7; (?), 1902, Proc. Acad. Nat. Sci. Philadelphia, vol. 53, p. 594.

Dinocheirus validus, BEIER, 1932, Das Tierreich, vol. 58, p. 138. HOFF, 1947, Bull. Mus. Comp. Zool., Harvard College, vol. 98, p. 526.

Our specimens agree very well with the description and figures given by Hoff (1947) for the type specimens at the Museum of Comparative Zoölogy. The only difference noted in the male is a variation in the number of setae on the genital opercula, where considerable individual variation is to be expected in this and related species. With respect to the female, our specimens have the chela somewhat more slender, with the length/width ratio greater than in the type specimens. Again considerable individual variation in the length/width ratio of the chela is frequently observed in species of the genus *Dinocheirus* which may explain the variation in our specimens. Our females also show some difference in the

relative positions of tactile setae *est* and *ist* of the fixed chelal finger, deviating both from the description of type specimens given by Hoff (1947) and from the condition in our males. Actually in our females *ist* is very little distal to *est*, while the two setae are well separated in the male. It now becomes impossible to follow Hoff (1947) and use the proximity of *ist* and *est* as a means of separating females of *D. dorsalis* and *D. validus*.

In 1902, Banks published a record of two specimens of *D. validus* from Mesilla, Doña Ana County, New Mexico, and remarked that the specimens are larger than the type specimens from California. In view of this remark, it becomes difficult to assign with certainty Banks's specimens to *D. validus*, especially as our present New Mexico specimens are of the same size as the type specimens. It is probable that the specimens reported as *D. validus* by Banks actually belong to some other species of this or a related genus.

In order to fix more firmly in the literature this species as it occurs in New Mexico, certain critical measurements of our present specimens are given here. Two males occur in our collections. One of these deviates considerably from the type specimens in the length/width ratio of the chela, and measurements for this individual are given in parentheses following corresponding measurements of the male that agrees more closely with the lectotype as described by Hoff (1947). Male with body length 2.8 (2.45) mm.; carapace 0.90 (0.86) mm. long, 0.73 (0.74) mm. wide; cheliceral finger 0.210 (0.203) mm. long; palpal trochanter 0.43 (0.41) mm. long, 0.26 (0.27) mm. wide; palpal femur 0.65 (0.65) mm. long and 0.29 (0.28) mm. wide, tibia 0.67 (0.65) mm. long and 0.31 (0.30) mm. in width; chela 1.10 (1.10) mm. long, 0.48 (0.415) mm. wide; chelal hand 0.57 (0.55) mm. long, 0.475 (0.41) mm. deep; movable chelal finger 0.57 (0.58) mm. in length; tarsus of fourth leg 0.355 (0.36) mm. long, tactile seta removed by 0.207 (0.22) mm. or 58 (61) per cent of the length of the tarsus from the proximal margin of the tarsus. Measurements for the female are given as the ranges for the three available specimens. Female with body length 2.5–2.7 mm.; carapace 0.81–0.88 mm. long, 0.69–0.76 mm. wide; movable cheliceral finger 0.203–0.210 mm. in length; palpal trochanter 0.385–0.43 mm. long, 0.215–0.24 mm. wide, length 1.71–1.79 times the width; palpal femur 0.60–0.66 mm. long, 0.26–0.265 mm. wide, length 2.31–2.49 times the width; palpal tibia 0.58–0.64 mm. long, 0.28–0.29 mm. wide, length 2.07–2.22 times the width; chela 1.00–1.10 mm. long, 0.36–0.37 mm. wide, length 2.78–2.98 times the width; length of chelal hand 0.53–0.57 mm., depth 0.34–0.35 mm.; movable chelal finger 0.50–0.57 mm. in length; tarsus of fourth leg 0.34–

0.39 mm. long, with tactile seta removed by 0.205–0.243 mm. from the proximal margin of the tarsus, this distance being 57 to 63 per cent of the total length of the tarsus.

RECORDS: *San Miguel County*: One male from Pecos, no other data available. *Santa Fe County*: One male and one tritonymph beneath the started bark of a fir log, 9 miles northeast of Santa Fe, 8150 feet elevation. *Taos County*: Three females beneath fairly tight bark of large coniferous log in mixed stand of fir and yellow pine, 5 miles west of Red River Village, elevation 8500 feet.

Dinocheirus aequalis (Banks)

Chelanops aequalis BANKS, 1908, Bull. Wisconsin Nat. Hist. Soc., vol. 6, p. 41.

Dinocheirus aequalis, ROEWER, 1937, Die Klassen und Ordnungen des Tierreichs, Leipzig, vol. 5, div. 4, book 6, p. 302. HOFF, 1946, Amer. Mus. Novitates, no. 1318, p. 14; 1947, Bull. Mus. Comp. Zool., Harvard College, vol. 98, p. 520.

For descriptions of this species, reference may be made to the works of Hoff, who (1946a) described the males and females from specimens taken in the central part of Mexico and deposited in the collections of the American Museum of Natural History and who (1947) redescribed the female from the lectotype taken at El Paso, Texas, and deposited in the Museum of Comparative Zoölogy at Harvard College. A comparison of one of the previously described males from Mexico and the present male from New Mexico indicates that the two are conspecific.

Because *Dinocheirus aequalis* previously has not been known from New Mexico, it seems advisable to give pertinent measurements and ratios for the single available male and female. Male 3.6 mm. long; carapace 1.14 mm. in length, 0.86 mm. across the posterior margin, greatest width 0.99 mm.; chelicera with 21 plates in the serrula exterior; palpal trochanter 0.64 mm. long, 0.33 mm. wide; femur of palpus 1.02 mm. long and 0.375 mm. wide; palpal tibia of the same length as the femur, but 0.43 mm. wide; palpal chela 1.69 mm. long, 0.70 mm. wide; chelal hand 0.86 mm. long, 0.73 mm. deep; movable finger of chela 0.92 mm. long; fourth leg with entire femur 0.93 mm. long and 0.23 mm. deep, tibia 0.81 mm. long and 0.143 mm. deep, tarsus 0.57 mm. long and 0.105 mm. deep; seta of fourth pedal tarsus removed by 0.355 mm. from the proximal margin of the tarsus. Female with body length 3.8 mm.; carapace 1.14 mm. long, greatest width 1.03 mm., posterior width 0.95 mm.; serrula exterior of one chelicera with 19 plates, number in other chelicera not determined because of orientation on slide; palpal trochanter 0.65 mm. long and 0.33 mm. wide, femur 0.96 mm. long and 0.36 mm. wide; tibia of palpus 0.96 mm. long, 0.40 mm. wide; palpal chela 1.64 mm. long and

0.58 mm. wide; chelal hand 0.85 mm. long, 0.59 mm. deep; movable chelal finger 0.86 mm. in length; entire femur of fourth leg 0.95 mm. long, 0.223 mm. deep; tibia of fourth leg 0.76 mm. long and 0.143 mm. deep, tarsus 0.57 mm. long and 0.104 mm. deep; tactile seta of fourth pedal tarsus removed by 0.34 mm. from the proximal margin of the tarsus.

RECORD: One male and one female from a clump of dead *Yucca baccata* Torrey in an area of open pinyons and junipers, 1 mile west of Mountainair, Torrance County, at an elevation of about 6800 feet. The two adults are accompanied by four nymphs, of which only one, a tritonymph, appears to be conspecific with the adults. The other three nymphs probably belong to another species of *Dinocheirus*, but at present the species identity of these nymphs cannot be ascertained.

Dinocheirus spp. indet.

It has been impossible to assign to definite species five individuals in our collections. These individuals may represent three, or even four, different species. The specific status of the individuals eventually may be determined when additional collecting makes possible study of a series of specimens in association with these isolated individuals. Two of the specimens are males, two are females, and one is a tritonymph. The individuals are all of fairly large size, with the adults having a chela that, without including the pedicel, has a length of more than 1.3 mm. and has a length/width ratio of 2.95 or more. The tritonymph is also large, having a chelal length of 1.03 mm. and a length/width ratio of 2.91. While all the specimens are large, there is considerable variation in shape of podomeres, in the degree of development of the clavate setae, and in the extent of surface granulation. There seem to be adequate differences to preclude the assignment of any two of the four adult specimens to the same species. Until more material is available for study, it seems inadvisable to give more than the locality records for these specimens.

RECORDS: *Bernalillo County*: One tritonymph from a decaying leaf of *Yucca baccata* Torrey taken at 6700 feet elevation in the Manzano Mountains, east of Albuquerque. *Doña Ana County*: One female from rotten wood of a cottonwood stump near the Rio Grande, south of Hatch, at an elevation of about 4100 feet. *Sierra County*: One female from Hot Springs (now Truth or Consequences), no ecological data. *Socorro County*: One male from a nest of a prairie dog (*Cynomys*), near Socorro, no elevation given. *Taos County*: One male taken from the rotten wood of a coniferous stump, north of Red River Village, about 8700 feet elevation.

LITERATURE CITED

BANKS, NATHAN

- 1895. Notes on the Pseudoscorpionida. Jour. New York Ent. Soc., vol. 3, pp. 1-13.
- 1902. Some Arachnida from New Mexico. Proc. Acad. Nat. Sci. Philadelphia (1901), vol. 53, pp. 568-597.
- 1908. The pseudoscorpions of Texas. Bull. Wisconsin Nat. Hist. Soc., vol. 6, pp. 39-42.

BEIER, MAX

- 1932. Pseudoscorpionidea. II. Subord. Cheliferinea. Das Tierreich, vol. 58, pp. 1-294.
- 1937. Pseudoscorpione aus dem baltischen Bernstein. Festschrift für Prof. Dr. Embrik Strand. Riga, vol. 2, pp. 302-316.

CHAMBERLIN, JOSEPH C.

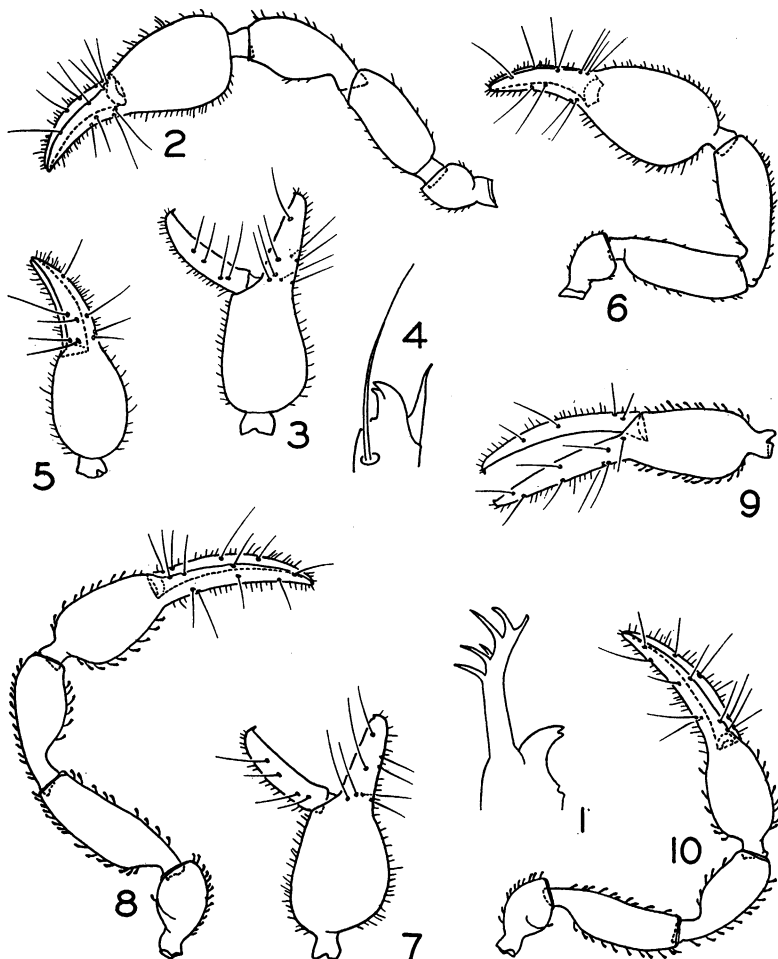
- 1931a. The arachnid order Chelonethida. Stanford Univ. Publs., Biol. Sci., vol. 7, pp. 1-284.
- 1931b. *Parachernes ronnaiti*, a new genus and species of false scorpion from Brazil (Arachnida—Chelonethida). Ent. News, vol. 42, pp. 192-195.

HOFF, C. CLAYTON

- 1944. New pseudoscorpions of the subfamily Lamprochernetinae. Amer. Mus. Novitates, no. 1271, pp. 1-12.
- 1946a. New pseudoscorpions, chiefly neotropical, of the suborder Monosphyronida. *Ibid.*, no. 1318, pp. 1-32.
- 1946b. A study of the type collections of some pseudoscorpions originally described by Nathan Banks. Jour. Washington Acad. Sci., vol. 36, pp. 195-205.
- 1947. The species of the pseudoscorpion genus *Chelanops* described by Banks. Bull. Mus. Comp. Zool., Harvard College, vol. 98, pp. 473-550.
- 1952. Two new species of pseudoscorpions from Illinois. Trans. Illinois Acad. Sci., vol. 45, pp. 188-195.

HOFF, C. CLAYTON, AND DAVID L. CLAWSON

- 1952. Pseudoscorpions from rodent nests. Amer. Mus. Novitates, no. 1585, pp. 1-38.



FIGS. 1-5. *Parachernes nubilis*, new species. 1. Distal part of movable cheliceral finger to show galea, female holotype. 2. Dorsal view of palp, female holotype. 3. Lateral view of chela, female holotype. 4. Distal part of movable cheliceral finger, male allotype. 5. Dorsal view of palpal chela, male allotype; tactile setae of movable finger not shown.

FIGS. 6-7. *Tychochernes inflatus*, new genus and new species, male holotype. 6. Dorsal view of palp. 7. Lateral view of chela.

FIGS. 8-10. *Chrysochernes elatus*, new genus and new species. 8. Dorsal view of palp, female holotype. 9. Lateral view of chela, female holotype. 10. Dorsal view of palp, male allotype.

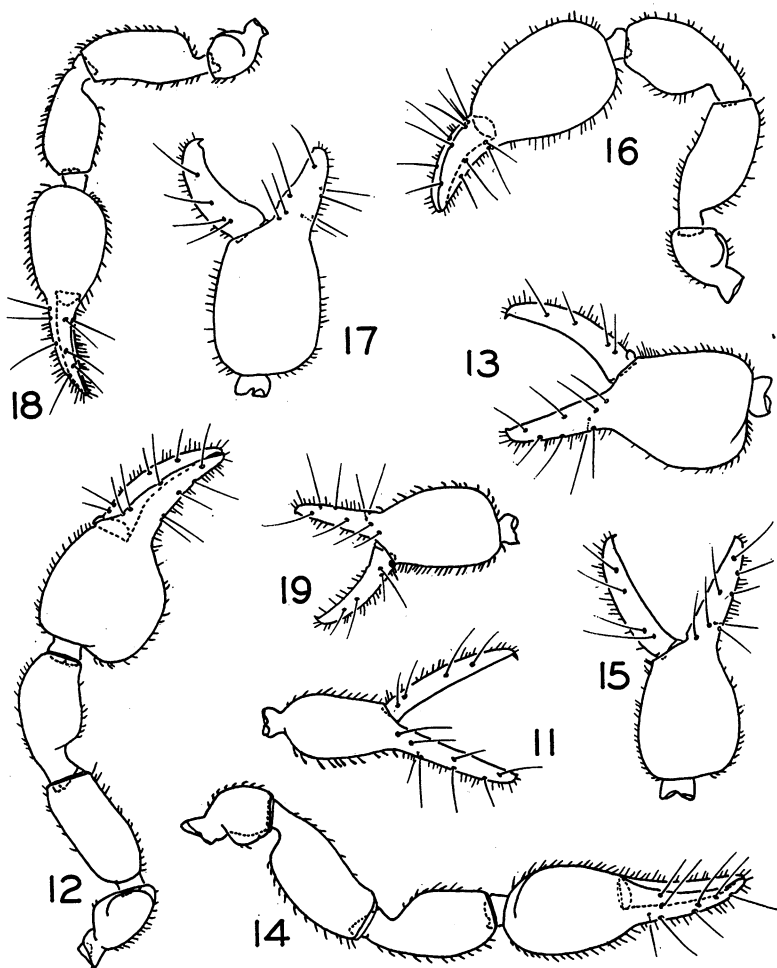


FIG. 11. *Chrysochnes elatus*, new genus and new species, male allotype. Lateral view of chela.

FIGS. 12-15. *Hesperochnes molestus*, new species. 12. Dorsal view of palp, male holotype. 13. Lateral view of chela, male holotype. 14. Dorsal view of palp, female allotype. 15. Lateral view of chela, female allotype.

FIGS. 16-17. *Dendrochnes crassus*, new species, female holotype. 16. Dorsal view of palp. 17. Lateral view of chela.

FIGS. 18-19. *Dinocheirus astutus*, new species, male holotype. 18. Dorsal view of palp; tactile setae of movable chelal finger not shown. 19. Lateral view of chela.

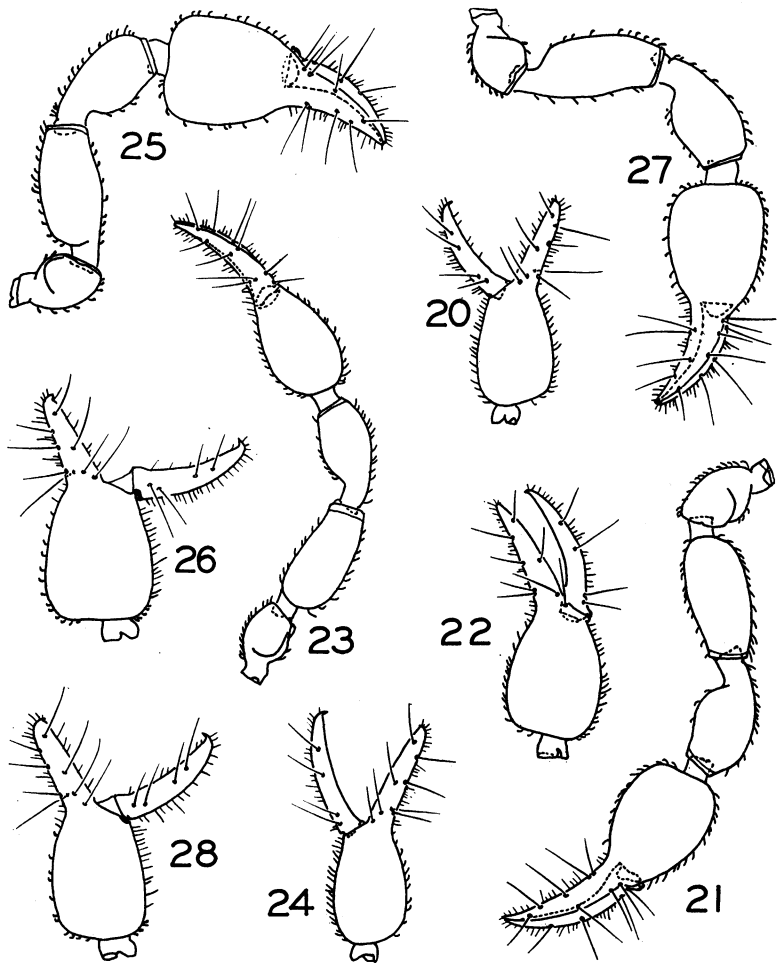


FIG. 20. *Dinocheirus astutus*, new species, female allotype. Lateral view of chela.
FIGS. 21–24. *Dinocheirus athleticus*, new species. 21. Dorsal view of palp, male holotype. 22. Lateral view of chela, male holotype. 23. Dorsal view of palp, female allotype. 24. Lateral view of chela, female allotype.
FIGS. 25–28. *Dinocheirus imperiosus*, new species. 25. Dorsal view of palp, male holotype. 26. Lateral view of chela, male holotype. 27. Dorsal view of palp, female allotype. 28. Lateral view of chela, female allotype.