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CLARENCE MOORES WEED (1864-1947) AND NOTES ON HIS SPECIES OF OPILIONES (ARACHNIDA)

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ABSTRACT

A biographical sketch and photograph of Clarence Weed, the most prolific 19th century U.S.A. Opiliones researcher, is provided. Examples of his hand-writing are also illustrated. All harvestmen taxa described by him are listed and updated. Whereabouts of his collections are discussed as well as their conservation. *Liobunum elegans* Weed 1889 is transferred to *Nelima* Roewer 1910 (new combination). *Leiobunum gordoni* Goodnight and Goodnight 1945 is newly synonymized with *L. aldrichi* Weed 1893. Numerous misidentifications of Weed and other authors are corrected. Lectotypes and paralectotypes are designated for *Liobunum aldrichi* Weed 1893 and *Liobunum nigripes* Weed 1892. Types of the following species are apparently lost: *Forbesium hyemale* Weed 1890, *Liobunum elegans*, *Liobunum grande* var. *simile* Weed 1892, *Liobunum longipes aldrichi* Weed 1890, *Liobunum politum magnum* Weed 1893, *Liobunum townsendii* Weed 1893, *Oligolophus ohioensis* Weed 1889, *Phalangium longipalpus* Weed 1890, *Sabacon spinosus* Weed 1893. A complete bibliography of Weed's publications on harvestmen is given.

While the bulk of taxonomic descriptions of Opiliones have been made by European researchers, Clarence Weed was one of only six native-born Americans to describe a new species of harvestmen from the New World during the 1800's. Weed was also the most prolific writer on American Opiliones during the 19th century, but all his taxonomic publications were from only a period of six years. Even so, we can find no publication that details his contributions to the study of Opiliones and only a few notes about his life. Like his contemporaries from the 19th Century [Thomas Say 1787-1834 (Stroud 1992), Alpheus Spring Packard 1839-1905 (Mallis 1971), Edward Drinker Cope 1840-1897 (Daintith et al. 1981), Horatio C Wood 1841-1920 (Cokendolpher and Peek 1991), Nathan Banks 1868-1953 (Carpenter and Darlington 1954)], Weed is better known for his studies in other fields.

BIOGRAPHY

The following biographical sketch was assembled from: Anonymous (1950, 1956, 2002); Blewett (1995); Cattell and Brimhall (1921); Weed (1893e); Osborn (1937). Clarence Moores Weed was born in Toledo, Ohio on 5 October 1864 to Jeremiah Evarts, a Presbyterian clergyman, and Sarah Jane (Moores) Weed.

Clarence married Adah Lillian Aber on 4 January 1888 in Lansing, Michigan and they had three children: Helen Irene (Weed) Landers, Walter Aber Weed, and Margaret Aber (Weed) Murphy. Clarence's younger bother, Howard Evarts was primarily remembered for his work in horticulture and economic entomology and collected several of the harvestmen described by Clarence (various papers by Weed during 1889-1892) from Michigan and Mississippi. Weed lived most of his adult life at 854 Andover Street in Lowell, Massachusetts; but summered at his home in Ellsworth (near Plymouth) New Hampshire. He died on 18 July 1947 in Plymouth at age 82. He was a naturalist and educator and is remembered in the literature primarily for his studies of insects, birds, nature study in schools, and harvestmen.

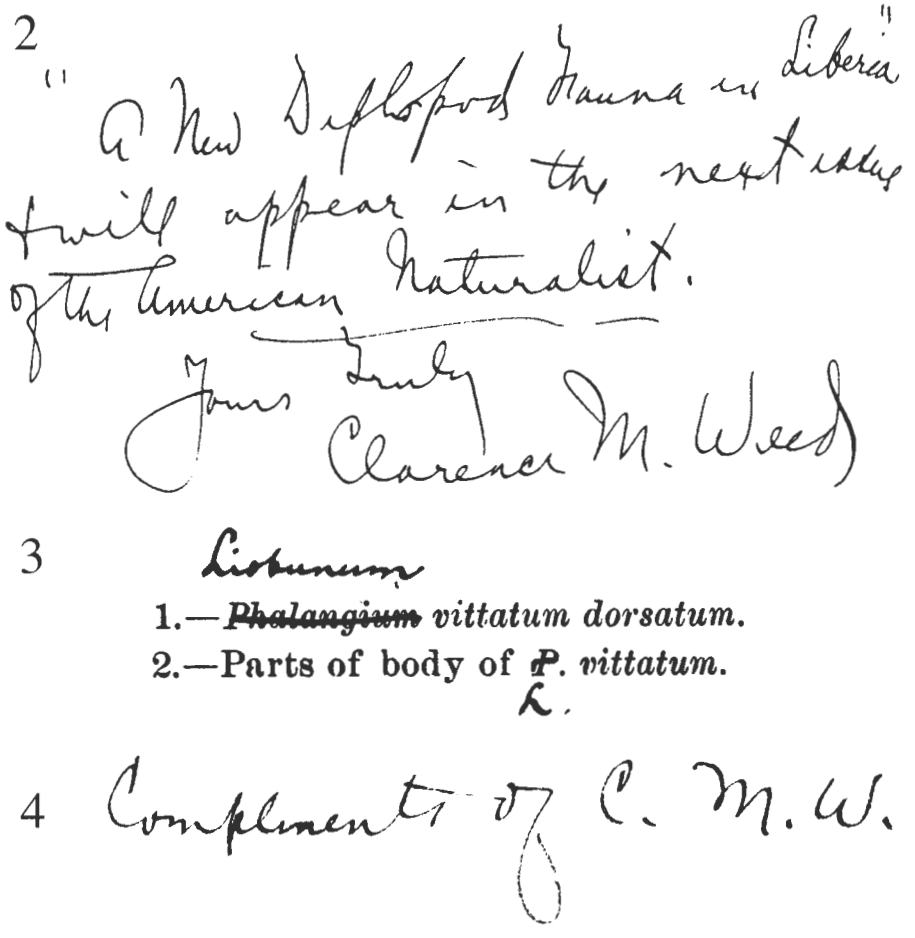
Weed attended public schools in Lansing, Michigan. He was one of the early graduates from the Michigan Agricultural College under the famous entomologist Professor Albert John Cook. He received his B.S. in 1883 and a M.S. in 1884. He did postgraduate work at Cornell University in 1884 and received his Sc.D. degree from Ohio State in 1890 or 1891. He was a fellow of the American Association for the Advancement of Science and member of the Entomological Society of America, Association of Economic Entomologists, Society for the Promotion of Agricultural Science, and the Yorick and Rotary clubs of Lowell, Massachusetts. His religious affiliation was with the Congregational Church. Politically, he was a Republican. Early in life he played golf, but hiking was his main recreation. He was also a photographer; many of his photographs of birds and flowers appeared as illustrations in books. Blewett (1995) described Weed, when Weed was the President of the State Teachers College at Lowell, as a "short, stocky man with a moderate girth. His head was bald with a fringe of snow-white hair, and his skin was ruddy. His sharp eyes were covered by heavy eye-brows. He was a radical in teaching methods, which caused both livid anger and cold fear of public disapproval in the Department of Education and raised hackles among other normal school faculty. Weed expected his orders to be carried out: 'I want it done and I have no question that you can do it.' Perhaps to offset his restless mind or to woo his doubting faculty, he always conducted himself as a 'conservative old-fashioned gentleman.'"

We have only found two photographs of Weed. One is of a younger man (Osborn 1937: pl. 4 and reprinted 1952: pl. 36; Blewett 1995: p. 49), reproduced here as Fig. 1. The other photograph is of an older Weed with white hair. Whitcomb (pers. comm. 6 May 1997) stated that there are further photographs of Weed in year books of the college where he was President.

He began his career as Associate Editor (Entomological Editor) of the "Prairie Farmer" from 1884-1885. Then he became the Assistant State Entomologist for Illinois from 1885-1887 and worked under the direction of Stephen A. Forbes who at that time was the State Entomologist, Director of the State Laboratory of Natural History, and a Professor of Zoology and Entomology at the University of Illinois - Urbana. Weed then served as the Entomologist and Botanist at the Ohio Agricultural Experiment Station at Columbus from 1888-1891. His next position was that of Professor of Zoology and Entomology at the New Hampshire College of Agriculture and Mechanic Arts, in

Figure 1. - Photograph of Clarence M. Weed reproduced from pl. 4 in Osborn (1937).

Hanover from 1891-1904. During this time he was also the Entomologist for the New Hampshire Experiment Station. One of his students in Hanover, W. F. Fiske, became a prominent insect parasite explorer. Weed served as Editor of the Entomology Department of the American Naturalist from 1893-1896 and President of the Cambridge Entomology Club in 1897. From 1904-1922 he was Instructor of Nature Study at the Massachusetts State Normal School at Lowell (after 1932 the named changed to State Teachers College at Lowell [unofficially, the school was referred to as Lowell Teachers College], and after 1960 it is known as the University of Massachusetts Lowell). He served as Principal (1922-1932) and President (1932-1935) of that institution. During his administration a three-year course in elementary education became standard. Eighteen graduates were conferred with a B.S. in Education in 1932. He was also an instructor at the Martha's Vineyard Summer Institute during 1900-1901 and later at the Plymouth Summer School [New Hampshire]. Besides his academic activities, he was the regional director of the U.S. School Garden Army 1918-1920. He was Secretary and Manager of The Moses Greeley Parker Lecture Series, Lowell, from 1918 to 1946. These public lectures were established in 1917 and continue today. There are three letters from Weed at The Academy of Natural Sciences of Philadelphia (archive collection numbers: 150, 567). These are useful for recognizing Weed's handwriting on specimen labels and notes (Fig. 2). His handwriting also occurs in some notations recorded on article reprints (Fig. 3-4). The letters also reveal that Weed used sta-



Figures 2-4. Examples of handwriting by Clarence M. Weed. 2, portion of letter from Weed dated 12 April 1896, in The Academy of Natural Sciences of Philadelphia, collection 567; 3, corrections in figure legend of reprint (Weed 1892f), in JCC library; 4, on cover of reprint (Weed 1892e), in JCC library.

tionery in 1896 from the Office of the Secretary of the Faculty, New Hampshire College of Agriculture and the Mechanic Arts. The position of Secretary of the Faculty is not mentioned in any of the biographies we have located about him. Weed was a voluminous writer. We have located well over 100 published titles by him, many of which are books. Birds, butterflies, plant pests, farming/gardening, and nature in general occupied most of his interest, but he was able to find time to publish 25 titles which dealt at least in part with harvestmen (Weed 1887-1897; Weed and Dearborn 1912).

REVIEW OF HIS COLLECTIONS

Although Weed published extensively on harvestmen collected for him by his brother and colleagues, he made three major collections of harvestmen during the course of his studies in Illinois, Ohio, and New Hampshire. There are 122 vials of harvestmen, all collected in Illinois before 1887, from the Weed collection now at the Illinois Natural History Survey (INHS) (in 1917, the Office of the State Entomologist and the Laboratory of Natural History were combined to become the INHS). As of 1937, Osborn reported that the Weed collections at the Ohio Experiment Station were housed in Wooster. Twelve vials of harvestmen from Ohio, many with Ohio Agricultural Experiment Station labels, are now housed at the National Museum of Natural History - Smithsonian Institution (NMNH). When and how these were transferred to the NMNH are unknown. These are apparently the only specimens from the Weed collections of Ohio which survive today. All the New Hampshire collections appear to be lost, and Weed himself (1892f) gave no hint as to where the collections were housed.

The type specimens of *Liobunum nigripes* Weed (1892e) were described from Ohio and Illinois. Those from Illinois (INHS) are now much lighter in color than the specimens from Ohio (NMNH). Because the specimens are from separate institutions, we assume that they were housed for the last century in different environments. The Ohio specimens are evenly stained dark brown to black and are hard and brittle. The Illinois specimens are somewhat cleared (some muscles are evident through the exoskeleton) and appear lighter in color than described by Weed. These specimens are more pliable than the Ohio collections and are generally in better condition.

For some unknown reason, the female types of *Liobunum longipes* Weed (1890d) were either better preserved or withstood time better than the males which were maintained in separate vials (both now in INHS). Possibly, there was a lower concentration of alcohol because the specimens in the best condition are those with several other individuals in the same vial. This also was true of non-type *L. longipes* samples in the NMNH. Although Weed stated in his papers that he used alcohol as a preservative he did not mention which type or the concentration.

The INHS specimens from Illinois are currently stored in 3 dram glass vials containing 70% ethanol (prepared from 95% ethanol diluted with distilled water) with gray neoprene stoppers. Prior to 1990 they were stored in the same vials with red rubber stoppers which were hand-made at the Survey. As far as can be determined, the collections originally were stored in ethanol. When they were first examined by one of us (KRZ) in 1990, a lot of the alcohol had evaporated and the vials were only half full.

The specimens from Ohio in the NMNH are now housed in round-bottomed glass vials with cotton stoppers in ethanol, double-sealed in large jars of ethanol. Larcher (pers. comm. 13 April 1992) stated that he did not remember exactly how all the Weed collection was stored, but that some of material did have rubber stoppers. Prior to the rubber stoppers, he was almost certain that they were stored with cork stoppers. The basis for this is that there are racks of vials in the collection that have rubber stoppers, and over the years, he found other racks containing vials, usually dry, with cork stoppers. Larcher thought it likely that the tannins in the cork are the most likely culprit for causing the darkness and brittleness of the specimens.

Shear (1975) reported that most older specimens (non-Weed collections) at the American Museum of Natural History (AMNH) were in poor condition because of a "yellow substance dissolved out of either

cork or rubber stoppers. In addition to staining the specimens, this substance seems to give them a cheese-like texture that renders study and dissection difficult. When fresh alcohol is added without extensive rinsing, a heavy white precipitate forms." One of us (JCC) has had similar experience with AMNH harvestmen, but has noted ethanol diluted with hard tap water (instead of distilled) produces more of the white precipitate. Reddell and Cokendolpher (1995) also noted the deleterious effects of both red rubber and natural cork stoppers and suggested that rubber stoppers of other colors also appeared to cause the specimens to become hardened and brittle.

OPILIONES TAXA DESCRIBED BY WEED

Taxon names are listed below in their original spellings and combinations. "*Liobunum*" Agassiz 1846 is an unjustified emendation for *Leiobunum* C. L. Koch 1839

Forbesium Weed 1890c

Current usage.—Considered a junior synonym of *Leiobunum*: Leiobuninae, Sclerosomatidae (Crawford 1992).

Type species.—Crawford (1992) designated *Phalangium formosum* Wood 1868 as the type species.

Forbesium hyemale Weed 1890c

Current usage.—*Leiobunum ventricosum hyemale* (Weed): Leiobuninae, Sclerosomatidae.

Types.—Three types from Auburn, Alabama, collected by Prof. George F. Atkinson, apparently lost.

Comments.—Earlier authors placed it in synonymy with *L. ventricosum* (Wood 1868). Crawford (1992) stated this species was unidentifiable. Cokendolpher and Lee (1993) listed it as a subspecies of *L. ventricosum*. New material from the type locality should be obtained and compared to specimens of this species from other regions.

Liobunum elegans Weed 1889c

Current usage.—*Nelima elegans* (Weed), new combination: Leiobuninae, Sclerosomatidae.

Types.—Two types [according to Weed (1889c) they are males] from Champaign County, Illinois (C. M. Weed, autumn 1886), apparently lost.

Comments.—Although *Leiobunum bicolor* (Wood 1868) is a senior synonym of *L. elegans*, the latter is the correct name. Cokendolpher (1984a) proposed *L. elegans* as the replacement name because *Phalangium bicolor* Wood 1868 (= *L. bicolor*) was preoccupied by *Phalangium bicolor* Fabricius 1793.

The female described and illustrated as *L. bicolor* by Weed (1893e: pl. 64) is in the NMNH. It is correctly and first noted here as an adult female of *Leiobunum cretatum* Crosby and Bishop 1924 (see Cokendolpher and Rapp 1985, for a diagnosis of the species).

Leiobunum elegans and "*Leiobunum*" *paessleri* Roewer 1910 are very similar to each other and appear unrelated to other *Leiobunum* from North America. Crawford (1977) listed "*L.*" *paessleri* (but not *L. elegans*) in combination with the Old World genus *Nelima* Roewer 1910 without comment on the new combination. Cokendolpher and Lee (1993) also listed Roewer's species in *Nelima*. The North American "*Leiobunum*" species are very diverse and they await a thorough revision. We transfer this species to *Nelima* so that its close relationship with *N. paessleri* will not be overlooked. Both these species have similar genitalia to those of *Nelima*. They also share with members of *Nelima* the absence of denticles on the leg coxae. No attempt has been made to revise "*Leiobunum*" in the New World, except by political regions. A Nearctic revision (with knowledge of Palearctic fauna) is needed to establish meaningful genera, subgenera, and species groups.

Liobunum longipes Weed 1890d

Current usage.—*Leiobunum aldrichi* (Weed) (= *Leiobunum gordoni* Goodnight and Goodnight, 1945, new synonymy): Leiobuninae, Sclerosomatidae.

Types.—Weed described this species from numerous specimens he had previously reported (Weed 1889b) as *Liobunum nigropalpi* from Cobden, Union County (25 Sept. 1886); Johnson County, Illinois; central Ohio (late summer 1890); and a single specimen from Auburn, Alabama. Of these, we have located several vials of specimens from Cobden, Union County, Illinois from which we herein designate as lectotypes and paratypes. The collection data (INHS Accession Catalogue) and type designations are as follows: boards, etc. (25 September 1886, labeled *Phalangium nigropalpi*) 1 male lectotype with parasitic *Leptus* sp. (Erythraeidae) mite on leg femur, INHS 10846; Earle Farm, on bluffs (25 September 1886, Weed, labeled *Liobunum longipes*)10 female paralectotypes, INHS 8733; rocky bluffs on Earle Farm (25 September 1886, Weed, labeled *Phalangium nigropalpi*), 2 male paralectotypes, INHS 8723.

Comments.—This species has a somewhat complicated nomenclatural history which we hope will not be further complicated by the data presented herein. The name *Liobunum longipes* Weed 1890d is preoccupied by the older name *Leiobunum longipes* Menge in C. L. Koch and Berendt (1854). Therefore, Cokendolpher (1984a) proposed that one of Weed's later subspecific names, *Leiobunum longipes aldrichi*, should be used as a replacement name. Cokendolpher's proposal assumed, like all previous authors, that *L. aldrichi* and *L. longipes* were conspecific. He, like all recent authors, has not recognized any differences at a subspecific level in *L. aldrichi*.

Weed (1889b) described this species first under the name of *L. nigropalpi* (Wood). In that description, he gave data only on what he reported as males and stated females were not to be found at Cobden on 25 September 1886 nor in Johnson County. At that time, Weed either felt the females collected at Cobden on that same day were a different species or he was unable to discern the sexes. We believe that he did not distinguish the differences in the sexes in his 1889 paper. First, he quoted Horatio Wood's description of the female of *L. nigropalpi*, which did not match any of his material (because he had misidentified his specimens). Second, Weed did not record the females of another *Leiobunum* sp. collected at Cobden on 25 September 1886 in his 1889b publication. Weed (1889b) stated that the legs of his samples had white annulations at the distal extremities of the femora and tibia, especially on II and IV, and that the palpi were light brown with the distal portion of the femur and almost all of the patella were black. The official publication of the name *Liobunum longipes* was in 1890d, when Weed restated his description of 1889b with the addition of drawings of the male and the first mention of what he regarded as females. The females were reported to be slightly larger than the males and had the central figure of the abdomen more distinct. Although he stated both sexes were taken in central Ohio, it is unknown if he then recognized the specimens from Cobden as females (of the species). Presumably this was the case as entries into the catalogue now housed at the INHS show the identification of the Cobden females as "*Liobunum longipes*." The species was redescribed with the earlier illustrations by Weed (1892f, 1893e). From examples preserved at the NMNH, Weed's specimens (males and females) from southwestern Ohio included individuals of *L. longipes* with only white leg bands on tibiae II. At this point, Weed (1893e) apparently decided that he had not previously identified the females of this species correctly as he stated that he had a single female of this species taken during October 1890 (after the original description!). He also gave a brief description of that female stating that the legs had white annulations at all joints, including the tarsi and a transverse blotch on the dorsum of the abdomen. Furthermore, he stated "if this is the female *longipes* the forms with plain brown legs [without annulations at each articulation] must be the immature ..." Based on the size and coloration, he was incorrect and probably the female he was describing was *Leiobunum elegans* Weed (= *Leiobunum bicolor* Wood, see Cokendolpher 1984a for name change). This is the only Leiobuninae species of the region that has white annulations on all leg joints; especially noticeable on tarsi of adults and subadults.

In 1893g, Weed described a new subspecies as *Liobunum longipes aldrichi* from Brookings, South Dakota. His description differed only slightly from that of the nominate subspecies. Unlike the male of the nominate subspecies, *aldrichi* was reported to "generally, though not always, with apical tenth of tibiae of second pair [of legs] white." This form was also reported to have the dark markings on the palpi.

New descriptions of this species were done by Walker (1928) and Davis (1934). Walker's description was essentially like Weed, but she did not note the white bands on the leg femora. Davis (1934) keyed and described *L. longipes* as a species without white bands on the leg femora but with the "Palpus yellow, distal end of femur and patella often darker." From their accounts it is clear neither examined any material studied by Weed. From this point on, *L. longipes* became the species without white bands on the femora, excepting the description by Bishop (1949), which will be discussed below.

In North America, there are several unrelated species of *Leiobunum* that have white bands on some or all of their leg femora and tibiae. These bands have been used to differentiate these species. Currently, there are four such groups recognized as distinct species in the U.S.A (Edgar 1990). *Leiobunum townsendii* Weed 1893 has these bands subdistal on the femora and tibiae, whereas the other species only have distal bands. Although *Leiobunum relictum* Davis 1934 looks (same size and general coloration) and behaves (rest in groups on underside of vertical surfaces) like *L. townsendii*, study of the genitalia immediately reveals they are not closely related [penes of *L. relictum* are non-alate; *L. townsendi* are alate (Davis 1934; Cokendolpher 1982)]. This similarity caused one of us (JCC in Cokendolpher and Bryce 1980) to misidentify *L. relictum* from the Wichita Mountains in south-central Oklahoma. This is the only report (restated by Ekpa et al. 1985; Cokendolpher and Lee 1993) of *L. townsendii* from Oklahoma and it is incorrect. *Leiobunum relictum* has only been collected in the Wichita Mountains of south-central Oklahoma (Davis 1934; JCC pers. obs.).

When Goodnight and Goodnight (1945) described *L. gordoni*, they stated it was closely related to *L. relictum*. Examination of the female holotype [Cove hardwoods, National Forest, Haleyville, Alabama (S15: 17 July 1943, D. Sparkman, AMNH)] and numerous males and females from one of the paratype localities (Giant City State Park, Illinois - JCC collection) of the former species revealed it was not closely related to *L. relictum*. Instead, it was the same as Weed's *L. longipes*.

Leiobunum gordoni and *L. aldrichi* were separated in the key to species by Edgar (1990) by the lack of white bands on the leg femora of the latter, which are present in *L. gordoni*. Our examination reveals a variety of forms ranging from only faint leg bands on tibiae II to strong bands on all tibia and femora. These colorations appear to be fairly constant within a single locality. Because only small samples from scattered localities were examined, we are unsure what effects latitude/longitude and elevation might have on this character. We did note several animals that were especially dark and suspect it was due to a difference of age. Similarly, young *L. townsendii* from Texas have sharply bicolored legs. With increasing age these bands become darker. In some very old individuals the bands are undetectable (JCC pers. obs.). Among females of *L. aldrichi*, we noted individuals ranging from those with extensive areas of white to silvery-white on the coxae and dorsum of the abdomen (like the Weed types we have studied of *L. longipes*) to examples with little to no white (holotype of *L. gordoni*). There appears, likewise, to be considerable variation in the shape of the labrum (extremes illustrated by Tsurusaki 1985). We, like Edgar (pers. commun. 11 Nov. 1991), did not find more than one color variety per locality. We assume this is simply variation within a widely distributed species. For now, we accept all of these variations as representing a single species, *Leiobunum aldrichi* (Weed). In the event some future researcher disagrees, a neotype should be designated for Weed's *L. aldrichi* to include the forms without femora leg bands and those forms with femora leg bands would then become *L. gordoni* Goodnight and Goodnight. As noted by Cokendolpher (1984a), no new material of *Leiobunum aldrichi* has been reported from the Dakotas.

Bishop (1949) recorded *L. longipes longipes* from New York as being a species with yellow palpi and sometimes with a white band on femora II. We have examined only two males from New York and find that they agree with the description of Bishop, except they lack the femora bands. Furthermore, the male penis matches the one illustrated by Bishop. Our New York material suggest that there may be an unrecognized variety (species?) which can be diagnosed by the lack of dark markings on the palpi, white bands

only on tibiae II, alate portion of penis extending about half of the length of the truncus. Although Bishop did not remark upon it, males are noticeably smaller sized than males of "*L. longipes*" from more southern and western localities. We do not feel it prudent to name this "form" until this species/species group is thoroughly revised.

Weed (1892f) reported that the "*L. longipes*" mentioned by him from Alabama (part of type series) was something else but did not mention what it actually was. Because this specimen is apparently lost we are unable to determine its identity.

Leiobunum aldrichi and all of its varieties are most similar to *Leiobunum cretatum* (see Cokendolpher and Rapp 1985). These species agree in general penal morphology and ocular tubercle armament. They differ in labrum morphology (Tsurusaki 1985) and coloration (Cokendolpher and Rapp 1985).

In a little known paper, Roewer (1952) described three new species of *Leiobunum* from North Carolina. One of these, *Leiobunum zimmermani*, appears quite unlike anything else in the region. The coloration of the coxae and the form of the palpus (Roewer 1952: Figs. 5, 6) appear similar to members of the tropical American genus *Prionostemma* Pocock 1903. If correct, this would not be the first time Roewer overlooked femoral nodules (present in *Prionostemma*, absent in *Leiobunum*) or described a mislabeled specimen (see Cokendolpher 1984b; Cokendolpher and Rylander 1986). When Roewer (1952) described *Leiobunum cavernarum*, he noted that it was like "*L. longipes* Weed" but that it differed by the length of the leg femora and details of the dentition of the palpus. McGhee (1977) did not find this the case and synonymized *L. cavernarum* under *L. politum*. The third *Leiobunum* described by Roewer (1952) from North Carolina, *L. davisi*, was based on a single female from "Highlands." When describing this species, Roewer noted it was similar to *L. gordoni* but stated that it could be distinguished by the differences in thickness and lengths of the leg segments. Oddly, Roewer did not mention any white leg bands on *L. davisi*. It is unknown if such bands exist. Possibly they are present and Roewer did not feel they were worth mentioning or possibly he felt that they need not be mentioned as their presence was assumed since the species was compared with *L. gordoni*. These are all questions which will have to be answered after an examination of the types; which are in the Senckenberg Nature Museum (Roewer 1957). We did not examine the material as we thought it best that this should be done in context of a revision which would consider the possibility of clinal variations in appendages.

Because Weed described and illustrated the male of *Liobunum longipes* in detail and only briefly discussed the female, we have chosen a male as the lectotype. Leg bands are not clearly evident in all of the males, in their present condition (faded and partially cleared so that the muscles show through the exoskeleton of the legs). Because the legs were almost totally cleared in one male only a band at tibia II was present, one specimen had all the legs broken so no bands could be detected, and a third (lectotype) had faint bands on the femora and tibia II. Except for fading and some clearing the lectotype is in good condition, and the penis is intact. The females from Cobden are considered paralectotypes and they can be used to resolve any future problems regarding the relationships of *L. gordoni* and *L. davisi* (the *L. davisi* type is a female).

Liobunum longipes aldrichi Weed 1893g

Current usage.—*Leiobunum aldrichi* (Weed): Leiobuninae, Sclerosomatidae.

Type.—Brookings, South Dakota, probably collected by Aldrich, apparently lost.

Comments.—See comments above on *Liobunum longipes*.

Liobunum nigripes Weed 1892e

Current usage.—*Leiobunum nigripes* Weed: Leiobuninae, Sclerosomatidae.

Types.—This species was described from numerous males and females from: Champaign, Illinois (June and July 1887); Clermont County, Ohio (Aug. 1890); Franklin County, Ohio (7-10 July 1890); Warren County, Ohio (28 June and 23 July 1890). We were able to locate several vials of syntypes, both males and females. Because Weed illustrated a male in his descriptions (1892e, pl. 7: reprinted 1893e, pl. 60),

we selected a male as the lectotype. We have two series of males which have collection data matching that given in the original description. At first we thought one of these series was not part of the original series as Weed (1892e) listed the Illinois collection locality as Champaign, not Champaign County. The series in question was from near Urbana, Champaign County (8 July 1887). Checking the synonymy listed by Weed in his original description we found that he had reported this species earlier (Weed 1889b) as "*Liobunum verrucosum* (Wood)." In his earlier paper, he gives the collection data as: "Champaign Co., Ill., 23rd to 26th June, and 8th July 1887." We have selected the male which is in best condition (the only one with most legs and not darkly stained) as the lectotype. It has been placed in a separate vial and labeled as the lectotype.

The collection data and designations for the available collections are: ILLINOIS: Champaign County, woods near Urbana, (8 July 1887, Hart), male lectotype (INHS, original cat. no. 12890) 1 male paralectotype (INHS, original cat. no. 12890); Urbana (21 June 1887, Weed) 1 female paralectotype (INHS, original cat. no. 12802); Urbana, University farm, among boards about barn (23 June 1887) 1 female paralectotype (INHS, original cat. no. 12817). OHIO: Clermont County (August 1890), 2 male paralectotypes (NMNH, Ohio Agricultural Experiment Station # 1453 or 1458).

Comments.—The lectotype agrees with what is currently referred to as *L. nigripes* (Edgar 1990). The species was redescribed by Davis (1934) and Bishop (1949). Tsurusaki (1985) illustrated the male labrum. The type specimens from Illinois are much lighter in color than the specimens from Ohio (see comments under "review of his collections" above).

Based on the morphology of the male penis (see illustrations in Davis 1934; Bishop. 1949), *L. nigripes* is most closely related to *L. flavum* Banks 1894 and *L. ventricosum* (Wood 1868). Traditionally, *L. nigripes* has been separated from *L. flavum* and *L. ventricosum* by having the coxae and trochanters contrasting in color. In the types of *L. nigripes* (especially the Ohio series) this difference is not as clearly seen as it is in freshly preserved material. In fresh material, the legs of *L. nigripes* are brown to black in color whereas the legs (including the trochanters) of the other two species are yellow-orange in color. In addition, *L. nigripes* can be separated by having short legs (femur I about 3/4 length of female body, slightly longer than body in male) and by having the posterior rows of denticles on leg coxae I-III weak or absent. Both *L. nigripes* and *L. flavum* have short truncated abdomens, whereas *L. ventricosum* has a long pointed abdomen (most pronounced in males). Similarly, *L. ventricosum* has a male labrum that is digitform whereas the other two have the labrum shaped more like an arrow head (see Tsurusaki 1985).

Liobunum politus Weed 1889b

Current usage.—*Leiobunum politum* Weed: Leiobuninae, Sclerosomatidae.

Type.—3 types [according to Weed (1889c) they were males] taken from around shed in Champaign County, Illinois (25 July and 9 Aug. 1887), apparently lost.

Comments.—The most recent redescription of species is by McGhee (1977).

Liobunum politum magnum Weed 1893f

Current usage.—*Leiobunum politum* Weed: Leiobuninae, Sclerosomatidae.

Type.—Several specimens from Mississippi Agricultural College, Oktibbeha County, Mississippi (Howard Evarts Weed, June, July, and 1 female in October), apparently lost.

Comments.—The most recent redescription of species is by McGhee (1977). He did not accept the subspecies as valid.

Liobunum similis Weed 1890c (manuscript name)

Liobunum grande var. *simile* Weed 1892e

Current usage.—*Hadrobunus grandis* (Say 1821): Leiobuninae, Sclerosomatidae.

Type.—Males from Cuyahoga County, Ohio (August 1889); Butler County, Ohio (Sept. 1890), apparently lost.

Comments.—Cokendolpher and Lee (1993) listed *Liobunum similis* as a *nomen nudum*.

Liobunum townsendii Weed 1893a

Current usage.—*Leiobunum townsendii* Weed: Leiobuninae, Sclerosomatidae.

Type.—1 male, 2 female types from Las Cruces, New Mexico (C. H. Tyler Townsend), possibly lost. Roewer (1923) stated that the type was in the collection of Banks and the cotype was in his collection. Later, Roewer (1957) listed a male and female from his collection (cat. no. RI/4/44) and stated that the identifications were determined by Banks [not Weed]. The specimen from Banks collection is now in the Museum of Comparative Zoology, Harvard University.

Liobunum vittatum minor Weed 1893g

Current usage.—*Leiobunum vittatum* (Say 1821): Leiobuninae, Sclerosomatidae.

Type.—Six types from Brookings, South Dakota, apparently lost.

Comments.—This species was redescribed by Davis (1934), Bishop (1949), and Ekpa et al. (1985).

Mesosoma Weed 1892b

Current usage.—*Eumesosoma* Cokendolpher 1980 (replacement name given for *Mesosoma* Weed which was preoccupied): Leiobuninae, Sclerosomatidae (Crawford 1992).

Type species.—*Eumesosoma roeweri* (Goodnight and Goodnight 1943).

Comments.—Cokendolpher (1980) stated the type species was *Phalangium nigrum* Say 1821. As noted by Crawford (1992) this is incorrect because the type species as originally designated by Weed was based upon a misidentified species. When an author deliberately adopts a type species for a new genus in the misidentified sense of a second author, he has established a new species (I.C.Z.N. Art. 70c). This new species then becomes a junior homonym of the misidentified species and must be replaced by the oldest available synonym. Thus, *Mesosoma nigrum* Weed (1892b) is a junior homonym of *Mesosoma nigrum* (Say 1821) and must be replaced by the oldest available synonym, *E. roeweri* (Goodnight and Goodnight).

Mesosoma nigrum Weed 1892b

Types.—No types exist as this name was created purely for nomenclatural reasons.

Current usage.—*Eumesosoma roeweri* (Goodnight and Goodnight): Leiobuninae, Sclerosomatidae. Weed's name is preoccupied and therefore had to be replaced by the oldest available synonym (Crawford 1992). See comments above on *Mesosoma* Weed.

Mesosomatinae Weed 1892b

Current usage.—Not in current usage.

Type genus.—*Mesosoma* Weed 1892b.

Comments.—This is an invalid name because the type genus is a junior homonym (I.C.Z.N. Art. 39) (Crawford 1992). See comments above on *Mesosoma* Weed.

Oligolophus ohioensis Weed 1889a

Current usage.—*Odiellus pictus* (Wood 1868): Oligolophinae, Phalangiidae.

Type.—A single female (reported as a juvenile by Weed 1893e) type from Warren County, Ohio, collected by Weed (summer 1889), apparently lost.

Comments.—Species redescribed by Bishop (1949) and Edgar (1966).

Phalangium longipalpus Weed 1890b

Current usage.—*Phalangium opilio* Linné 1758: Phalangiinae, Phalangiidae.

Type.—Arkansas Experiment Station, collected by C. W. Woodworth (pre-August 1890), apparently lost.

Comments.—Species redescribed by Bishop (1949).

Sabacon spinosus Weed 1893d

Current usage.—*Sabacon cavicolens* (Packard 1884): Sabaconidae.

Type.—Male type from Hanover, New Hampshire (autumn 1892), apparently lost.

Comments.—Latest revision of this genus in North America was by Shear (1975).

Trachyrhinus Weed 1892b

Current usage.—*Trachyrhinus* Weed, a valid genus: Gagrellinae, Sclerosomatidae (Crawford 1992).

Type species.—*Phalangium favosum* Wood 1868.

Comments.—Latest revision of the genus was by Cokendolpher (1981).

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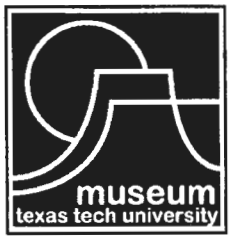

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