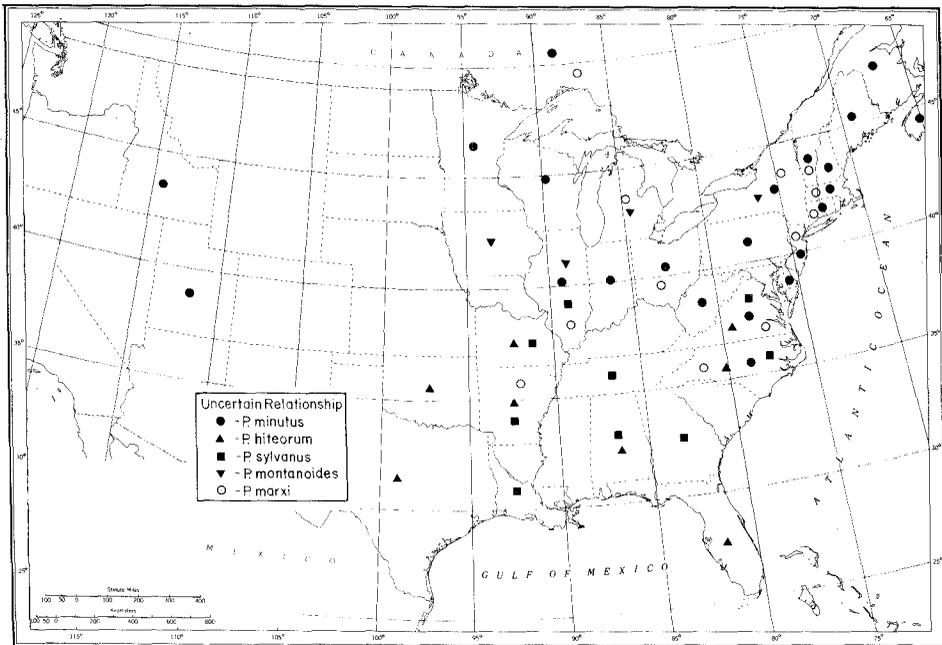


Figs. 199-203.—*P. marxi*, New Jersey, Ramsey, VI-1-10-44: 199, male; 200, female; 201, palpus; 202, epigynum; 203, female, eyes.

Fig. 204.—*P. hiteorum*, n. sp.: Allotype female, eyes.



Description of male.—From Ramsey, New Jersey, June 1-10, 1944, W.J.G. (A.M.N.H.). Carapace 3.2 mm long, 2.4 mm wide, with indistinct, wide submarginal light band and tuning-fork mark that is broken up into paired segments (Fig. 199). General body color in alcohol amber. Dorsum with distinct light-colored hastate mark bordered by black V-shaped mark which is bordered by light-colored converging stripes. Coxae, labium, sternum and endites without markings, venter with a little scattered pigment.

Anterior eye row narrower than the posterior median row slightly procurved; anterior median eyes a little larger than the anterior laterals, closer to each other than to the laterals. Height of the clypeus twice the diameter of an anterior median eye. Lower margin of the furrow of the chelicerae with two teeth.

Legs 4123, without annulae. Tibiae I and II with three pairs of ventrolateral spines, the distal pair apical in position, each with an additional prolateral spine about halfway between the middle and apical pairs. The prolateral spine of the proximal pair on tibia I barely overlaps the middle spine. The prolateral spines of the proximal and middle pairs on tibia II are reduced to about half the size of their mates.

Description of female.—From Ramsey, New Jersey, July 11, 1948, W. Ivie (A.M.N.H.). Carapace 3.5 mm long, 2.7 mm wide, with a rather indistinct submarginal light band and a narrow, light streak extending forward from the cervical groove to between the posterior lateral eyes (Fig. 200). For dorsum see the figure. Coxae, labium, endites and sternum without pigment.

Anterior eye row narrower than the posterior median row, slightly procurved; anterior median eyes about half again as large as the anterior laterals; anterior median eyes closer to each other than to the laterals. Height of the clypeus equal to the diameter of an anterior median eye. Lower margin of the furrow of the chelicerae with two teeth, the largest near the base of the fang.

Legs 4123, without annulae. Tibia I and II with two pairs of non-overlapping ventrolateral spines, one apical ventroprolateral spine, and one prolateral spine distal to the

middle pair; the prolateral spine of the proximal pair reduced to a bristle. Metatarsus I and II with 3 pairs of ventrolateral spines, the distal pair subapical; metatarsus II also bears a spine on the midline between the distal pair; this spine is almost apical in position.

Distribution.—Eastern half of the United States and Canada; south into Florida.

Specimens examined.—Canada: *Ontario*; United States: *Arkansas*: Garland County; *Connecticut*: Fairfield, New Haven Counties; *Florida*: Alachua, Lake, Leon Counties; *Illinois*: Lake County; *Maine*: Swan Island; *Massachusetts*: Essex, Hampden, Middlesex, Nantucket Counties; *Michigan*: Calhoun, Clinton, Ingham, Livingston Counties; *New Jersey*: Bergen County; *New York*: Rensselaer, Saratoga, Schuylcr, Nassau, Wayne Counties, Long Island; *North Carolina*: Durham County; *Ohio*: Hocking County; *Virginia*: Fairfax, Lancaster Counties; *Vermont*.

Life history.—This is evidently a rare species in the southern states. The only known males and females from Florida were collected in April. The other southern records are too few to warrant any conclusions. In the northern states there appears to be two broods per year. We have no records of adults from January, February or March; then both sexes for the next four months; no adults in August or September; males are present in October, and both sexes in November and December. The only egg sacs seen by us are from July.

Ecology.—In Florida this species is apparently confined to the leaf litter of wet, swampy, densely shaded areas, usually in a hammock along a stream. In Michigan *P. marxi* is found in swamps and bogs. In the New England and Middle Atlantic states this species inhabits similar situations and is also found in "wet" and "damp" fields. Emerton observed that it passed the winter in leaf litter in Massachusetts and Connecticut.

Remarks.—The pattern and size of *P. marxi* may vary somewhat. A male from Alachua Co., Florida, is larger than the male from New Jersey described above (carapace 3.6 mm long, 2.7 mm wide). Two females from Ramsey, New Jersey vary considerably in size (carapace no. 1, 3.5 mm long, 2.7 mm wide; carapace no. 2, 2.9 mm long, 2.1 mm wide) and somewhat in pattern, the markings on the larger specimen being less distinct than in the smaller. In old alcoholic specimens the pattern is sometimes obscure.

Pirata minutus Emerton

Figs. 208-216

Pirata minutus Emerton, 1885, Trans. Connecticut Acad. Sci., 6:493-494, pl. 48, figs. 10a-c (two males, West Roxbury, Massachusetts, June 2, 1872, J. H. Emerton, coll., M.C.Z., examined); Chamberlin, 1908, Proc. Acad. Nat. Sci. Philadelphia, 60:301-303, pl. 21, fig. 9, pl. 22, fig. 7; Kaston, 1938, Canadian Entomol., 70:16, fig. 9; Kaston, 1948, Bull. Connecticut Geol. Nat. Hist. Survey, 70:307, pl. 50, fig. 1001, pl. 51, fig. 1008.

Pirata exigua Banks, 1892, Proc. Acad. Nat. Sci. Philadelphia, 44:72-73, pl. 1, fig. 48 (female, Ithaca, New York, M.C.Z., examined).

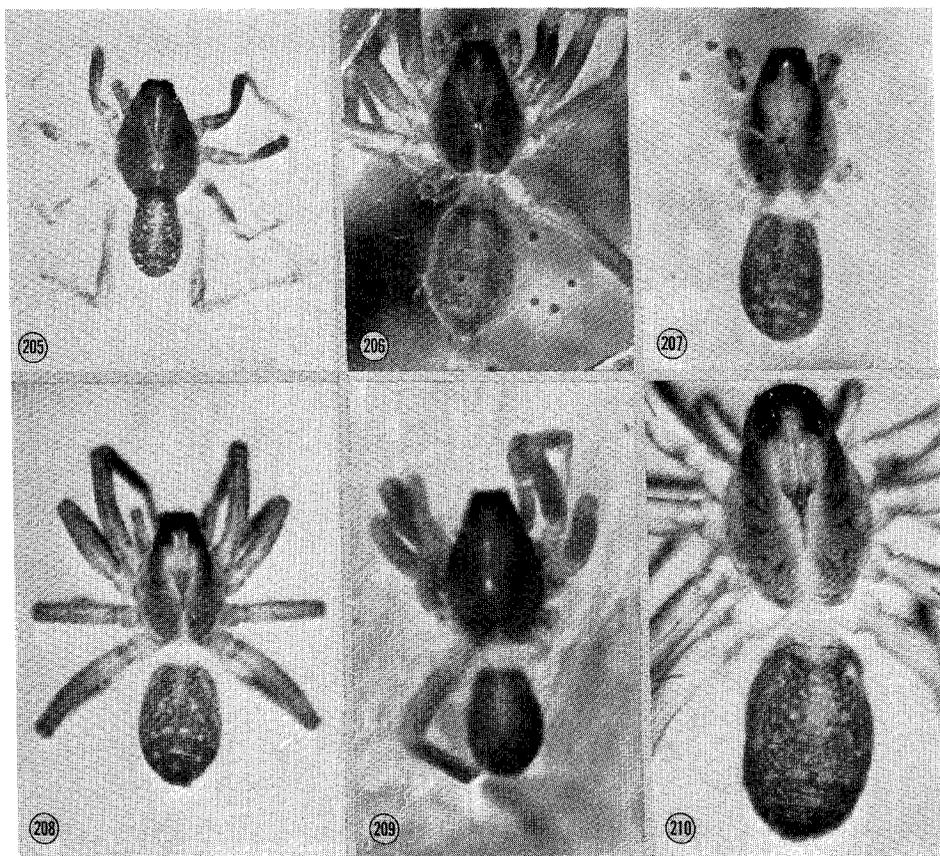
Pirata humicolus Montgomery, 1902, Proc. Acad. Nat. Sci. Philadelphia, 54:575-578, pl. 30, figs. 40-41 (male, female, Philadelphia, Pennsylvania, A.M.N.H., examined).

Remarks on synonyms and types.—Emerton (1885) gave Salem and Roxbury, Massachusetts, and Meriden, Connecticut, as the type localities for *P. minutus*. In May 1971 Dr. H. W. Levi sent to us as types two males, both faded, from West Roxbury, June

2, 1872, J. H. Emerton, collector. The label is underlined in red. In 1937 Wallace made these notes at the M.C.Z.: "*P. minutus* Em., Mass., Salem, June 25, 1877, J. H. Emerton, coll. female - Type is same as *P. exigua* Bks. male, 2 females in Type Bottle—same as *minuta* I have in my collection." The Salem specimens were not included in the M.C.Z. *Pirata* sent to us for examination. In any event, every specimen in the type series examined by us is *P. minutus* (Fig. 209).

The female type of *P. exigua* is labeled Ithaca, N.Y., and has all legs separated from the body. Banks' description and figure are not much help. His measurements of carapace differ from ours: 1.4 mm long by 0.9 mm wide, as opposed to ours of 1.75 mm long by 1.27 mm wide. The epigynum is *P. minutus* (Figs. 207, 215).

Montgomery recognized the similarity between his *P. humicolus* and *P. minutus* Emerton, but considered his species and *P. exiguus* Banks as distinct. He gives the length of the cephalothorax of the male as 1.7 mm, the female 1.8 mm. Wallace measured the types: male 1.5 mm, female 1.6 mm (Figs. 205-206). The male type has two teeth on the lower margin of the furrow of the chelicerae, the female type as three. Montgomery's figures of the genitalia are recognizable in both sexes.



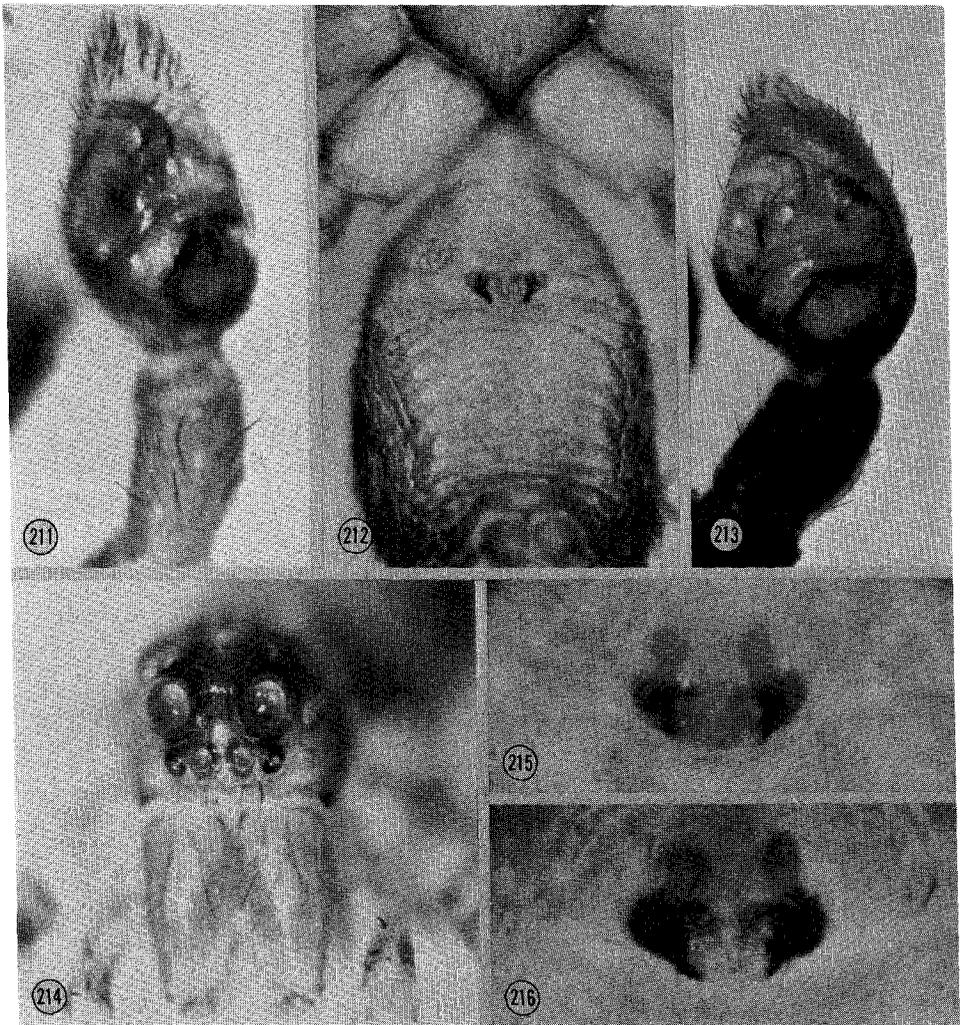
Figs. 205-206.—*P. humicolus*: 205, type male (= *P. minutus*), Pennsylvania, Philadelphia; 206, type female (= *P. minutus*), Pennsylvania, Philadelphia.

Fig. 207.—*P. exigua*: Type female (= *P. minutus*), New York, Ithaca.

Figs. 208-210.—*P. minutus*: 208, female, Michigan, Livingston Co.; 209, type female, West Roxbury; 210, female, Canada.

Data on type specimens.—From West Roxbury, Massachusetts. The large male has a carapace 1.5 mm long, 1.00 mm wide. The small male measures 1.37 mm long by 0.93 mm wide. The carapaces of both are dark and it looks like both had dark femora I. The anterior eye row is narrower than the posterior median row and is slightly procurved; the anterior median eyes are larger than the anterior laterals and are closer to the laterals than to each other.

Description of male.—From Livingston Co., Michigan. Carapace 1.45 mm long, 1.00 mm wide, dusky, with no tuning-fork pattern, lighter in front of cervical groove and along margins of carapace, but not presenting a distinct marginal light area sharply set off from the sides of the carapace. Dorsum dusky with pale hastate mark and indistinct paired



Figs. 211-212.—*P. minutus*: 211, palpus, Canada; 212, female, venter.
 Fig. 213.—*P. humicolus*: Type male (= *P. minutus*), palpus.
 Fig. 214.—*P. minutus*: Female, eyes, Michigan, Livingston Co.
 Fig. 215.—*P. exigua*: Type female (= *P. minutus*), epigynum.
 Fig. 216.—*P. minutus*: Epigynum, Michigan, Livingston Co.

spots posteriorly. Anterior eye row narrower than the posterior median row, procurved; anterior median eyes larger than anterior laterals, anterior eyes about equally spaced. Ventral surface unmarked except for medial longitudinal light stripe on sternum. Lower margin of furrow of chelicerae with three teeth; however, the tooth nearest the base of the fang is so small that under medium magnification only two teeth are visible.

Legs 4123, unbanded; femora I and II slightly darker than the other segments of the legs.

Description of female.—From Livingston Co., Michigan. Carapace 1.55 mm long, 1.07 mm wide; sides dusky with a narrow marginal light area, the tuning-fork pattern faint on head region; a triangular dark spot in front of cervical groove with its apex at the groove. Dorsum mottled with five pairs of white spots that look like they were covered with white scales in life. Venter, coxae, labium, endites yellow; sternum with a median longitudinal light stripe. Lower margin of furrow of chelicerae with three teeth; however, the tooth next to the base of the fang is so small that under medium magnification only two teeth are visible. Anterior eye row straight, narrower than the posterior median row; anterior median eyes are twice as large as the anterior laterals; the anterior eyes are equally spaced. Clypeus receding, equal in height to the diameter of an anterior median eye.

Legs 4123, dusky, without annulae. Femur I and II darker than the others, iridescent on prolateral surface.

Variation.—There is some variation in size and appearance. A male from Michigan has a carapace 1.52 mm long, 1.07 wide; its femora I and II and palpal segments are dark. The sides of the carapace are dark and there is no marginal band; the venter is dusky.

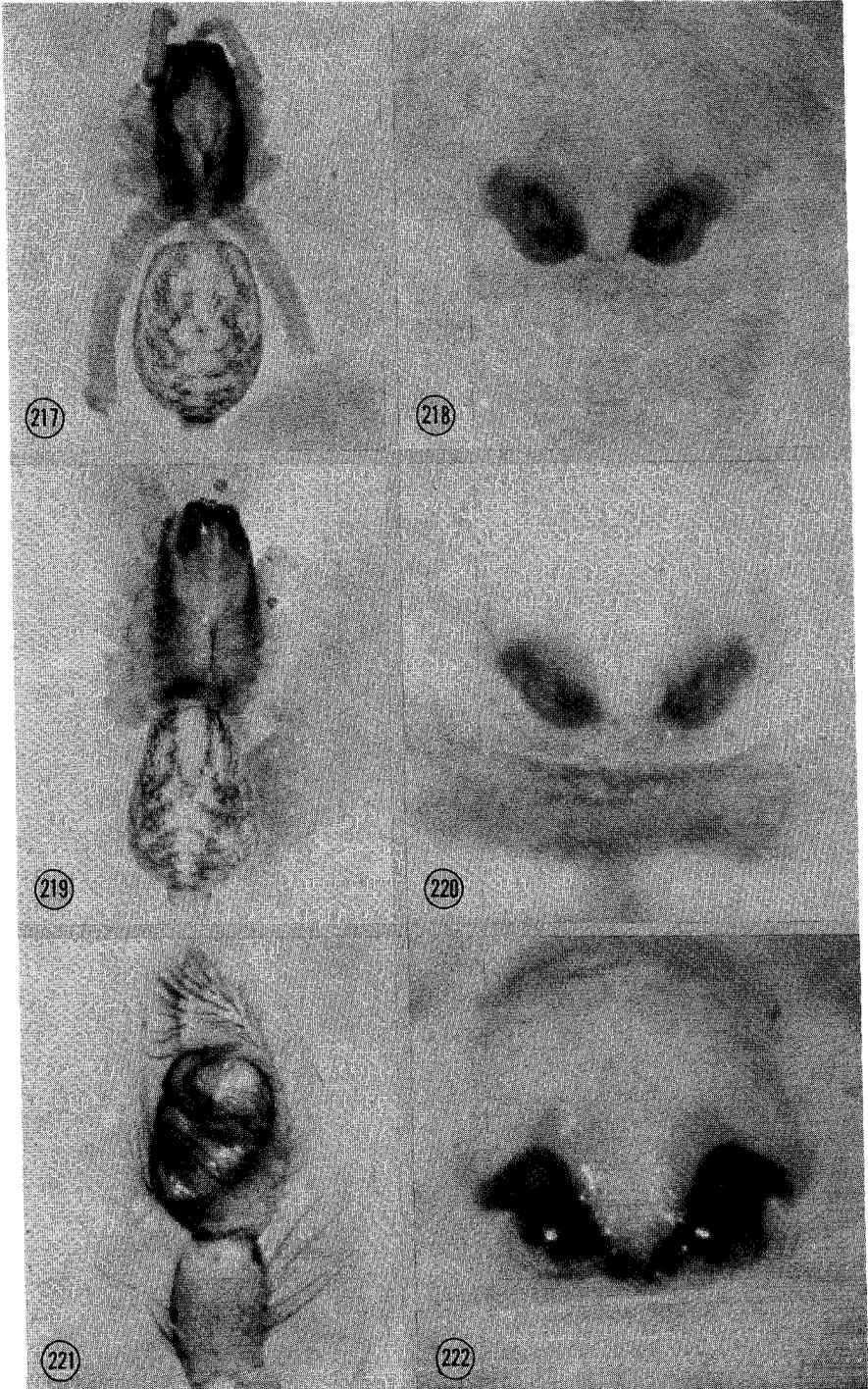
A male from Ontario is larger, carapace 1.62 mm long, 1.20 mm wide. The sides of its carapace are dark with a very thin marginal light area. Femora I and II and palpal segments are dark. There are three pairs of ventral spines on tibia I and the apical spines are reduced to minute hairs. The venter is dusky; the sternum is dusky with a median light streak. The anterior eye row is narrower than the posterior median row and slightly procurved.

A female from Ontario has a carapace 1.50 mm long, 1.05 mm wide. The carapace is dusky like *P. montanus* and has a narrow marginal light area. The anterior eye row is narrower than the posterior median row and is slightly procurved. There are three pairs of ventral spines on tibia I; the legs are yellow, without annulae; the venter is dusky, the sternum is dusky with a median light streak.

In dark females all legs may be dark distally with proximal ends of femora lighter.

Distribution.—Northeastern United States and Canada; south to North Carolina, west to Minnesota. Gertsch and Davis (1940) reported it from Mexico, but we have seen no specimens from south of North Carolina; since they were juveniles it is very likely that they were something else.

Specimens examined.—Canada: *New Brunswick*: June 17-24, 63, two males, July 10, 68, 2 females, egg sacs, T. R. Renault; *Nova Scotia*: Barrington, IX-23, Bryant, female (M.C.Z.), Canard, June 27, 56, C.D.D., 5 males (C.D.D.), Cow Bay, June 15, 1960, Fox and Sawler, 2 males, female (C.D.D.); *Ontario*: Bruce, Middlesex, Nippissing, Ontario, Prince Edward, York Counties, Elmhurst Beach, Rednersville, Chatterton, St. Joseph Island. United States: *Connecticut*: Fairfield, New Haven Counties, Brooksville; *Delaware*: Wilmington, A. Bacon, male (A.M.N.H.); *Idaho*: Adams Co., Mesa, July 2, 1943, W. Ivie, males, females (Utah); *Illinois*: Montgomery Co., Farmersville, 6-1-33, W.I., male (Utah), Arlington Heights, VI-36, F. Schubel, male (D.C.L.); *Indiana*: Lake Co., Gary,



Figs. 217-222.—*P. montanoides*: 217, female type no. 1, New York, Ithaca; 218, female type no. 1, epigynum; 219, female type no. 2, New York, Ithaca; 220, female type no. 2, epigynum; 221, palpus, Iowa, Cerro Gordo Co.; 222, epigynum, Michigan, Utica.

6-16-33, W.I., female (Utah); *Maine*: Cumberland, Hancock Counties; *Massachusetts*: Essex, Middlesex, Nantucket Counties, Allston; *Michigan*: Calhoun, Charlevoix, Clinton, Ingham, Kalamazoo, Livingston, Menominee, Midland, Washtenaw, Wayne Counties, Douglas Lake; *Minnesota*: Freeborn, Marshall, Ramsey, Sant Luis Counties; *New Hampshire*: Coos, Frafton Counties, Mt. Washington; *New Jersey*: Bergen County, Grosswicks; *New York*: Albany, Chautauqua, Columbia, Essex, Fulton, Monroe, Nassau, Rensselaer,

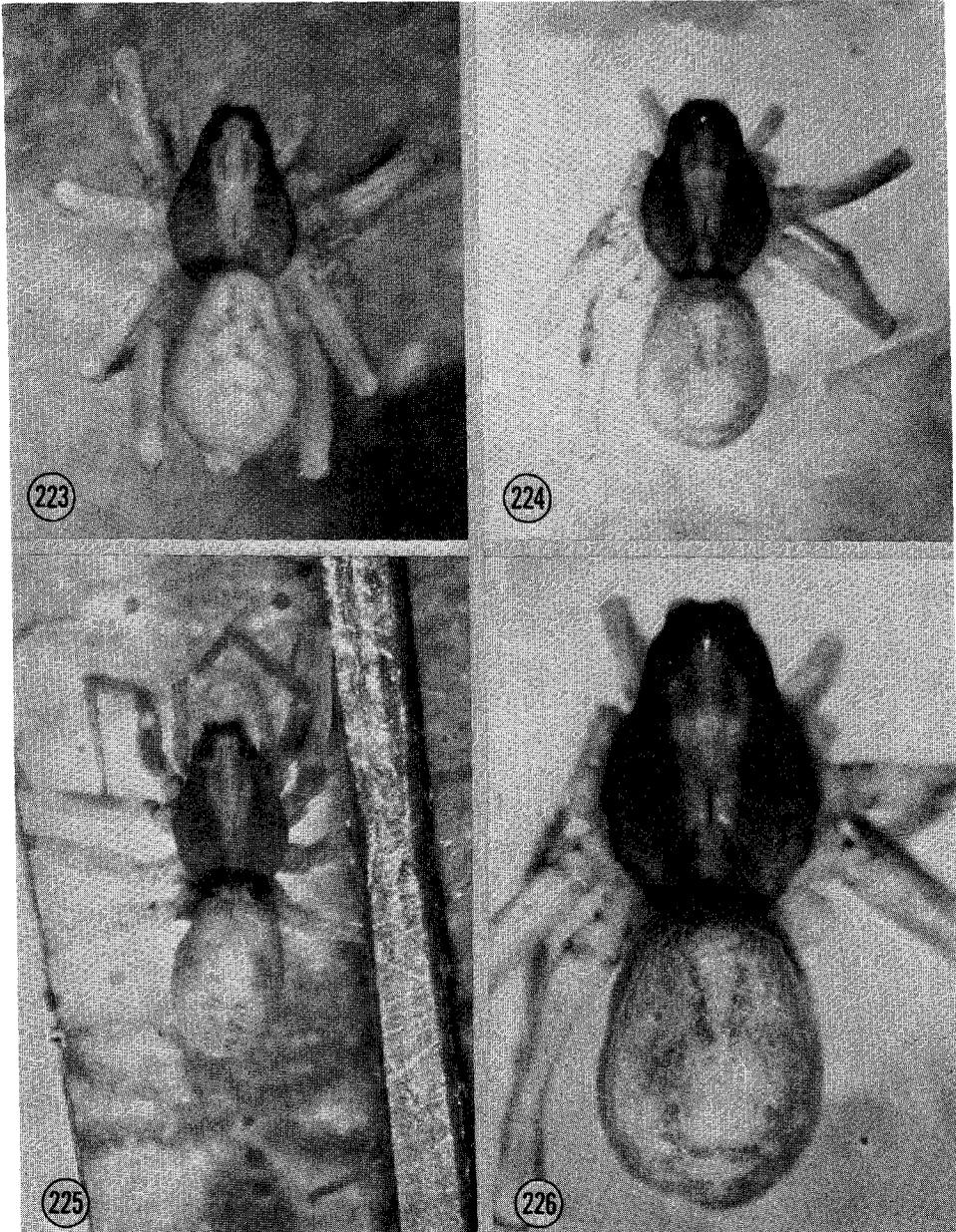


Fig. 223-224.—*P. agilis*: 223, juv. type male (= *P. montanus*), New York, Ithaca; 224, type female (= *P. montanus*), New York, Ithaca.

Figs. 225-226.—*P. elegans*, female co-type (= *P. montanus*), Pennsylvania, York.

Tompkins Counties, Wells, Dormansville, Enfield Glen, Cold Spring Harbor, Cross Lake; *North Carolina*: Avery Co., Pineola, N. Banks, VII-14-03, male (M.C.Z.); Watermount, 7-8-10, R.V.C., 77:34 NW, female (Utah); *Ohio*: Ashtabula, Guernsey, Wayne Counties; *Pennsylvania*: Cambria, Potter, Westmoreland Counties; *Tennessee*: Roane Co., 7-12-33, W.I., male, females (Utah); *Utah*: Cache Co., 1 mi. S. Logan, 7-1-27, R.V.C., female (Utah); Emery Co., Ferron, 6-23-34, W.I. and H.A.R., female (Utah); *Vermont*: Lamoille County; *Virginia*: Giles, Montgomery Counties; *West Virginia*: Mercer, Pocahontas Counties; *Wisconsin*: Eau Claire, Iron, LaCrosse, Marinette, Rock, Walworth, Winnebago Counties, Point Comfort.

Life history.—Adult males and females are present in the northeastern states from May through September; in Canada from June through September. Females with egg sacs are present from June through September. "This species apparently overwinters half-grown, and matures in late May and early June" (Kaston, 1948, p. 307).

Ecology.—*P. minutus* is not restricted to aquatic situations. In northwestern New Brunswick it was collected in pitfalls in a spruce-fir forest and under stones; in Nantucket, Massachusetts, in a salt marsh. In Michigan it has been taken in swamps, in *Typha* marsh, in a rotten log in upland field, and running on the steps of a house in upland field; in New York on the summit of Mt. Marcy. At Mountain Lake, Virginia, Wallace collected *P. minutus* on numerous occasions, and often in the company of *P. hiteorum*, n. sp., by turning rocks, logs, etc., in meadows and old fields; also on moist road banks and seepage areas. Levi and Field (1934) reported *P. minutus* as "fairly common" in Wisconsin, "usually in woods." Chamberlin (1908) said it occurred in "damp meadows, margin of ponds. Egg sacs late in summer."

Remarks.—This species has been misidentified frequently. We have found it labeled as *P. montanus*, *P. arenicola*, *P. montanoides*, *P. insularis*, *P. sylvestris*, *P. exiguus*, and *P. febriculosa*. *P. hiteorum* has been identified as *P. minutus* and at Mountain Lake, Virginia, they occur in the same field. Since they look very much alike, are of about the same size, and have epigyna that resemble each other somewhat, they can be confused easily. However, they differ in the following ways: *P. minutus* has a narrow marginal light area on the carapace and the front legs are dark, whereas *P. hiteorum*, n. sp., has a wide marginal light area on the carapace and the front legs are not dark; *P. minutus* usually has two teeth on the lower margin of the furrow of the chelicerae and *P. hiteorum*, n. sp., usually has three, but this is not a constant character. They differ in the structure of both palpus and epigynum; this can best be checked by referring to the illustrations (Figs. 194-195, 197-198, 211, 216). The *P. hiteorum* epigynum has a pair of posteriorly pointed projections somewhat like *P. suwaneus* and the palpus has a median apophysis of the *P. aspirans* type, while the *P. minutus* epigynum lacks posterior projections and the median apophysis is a curved tooth somewhat like that in *P. insularis*.

Pirata montanoides Banks

Figs. 217-222

Pirata montanoides Banks, 1892, Proc. Acad. Nat. Sci. Philadelphia, 44(1):71-72, pl. 1, fig. 46 (two females, Ithaca, New York, M.C.Z., examined).

Remarks.—The two type females from Ithaca, New York, differ in size: no. 1 carapace is 1.75 mm long, 1.27 mm wide; no. 2 carapace is 2.0 mm long, 1.5 mm wide.

Diagnosis.—A small, pale species with a wide marginal light area on the carapace, comparable to *P. minutus* in size, but differing in pattern and genitalia. The male has a long, tapering median apophysis bent at a 110 degree angle and extending beyond the alveolus (Fig. 221). The epigynum is quite distinct (Fig. 222) although it has a shape somewhat like that of *P. minutus*. The lower margin of the furrow of the chelicerae has two teeth and both sexes lack ventral distal spines on tibiae I.

Description of type female no. 1.—Carapace yellow with wide marginal light area, lateral edges clear yellow, without pigment. Tuning-fork mark indistinct and interrupted on head region. Dorsum yellow with grey markings (Fig. 217). Sternum yellow, immaculate. Legs (mostly disarticulated) yellow, indistinctly annulate. Venter yellowish with grayish markings behind the middle.

Anterior eye row narrower than the posterior median row, procurved, anterior eyes equally spaced, the medians a little larger than the laterals. Anterior lateral eyes a radius from the edge of the clypeus. Lower margin of the furrow of the chelicerae with two teeth, the one nearest the fang the largest. Tibiae I with three pairs of ventral spines, third pair nearly lateral, none distal. For epigynum see Fig. 218.

Description of male.—From Cerro Gordo Co., Iowa. Length 3.0 mm, carapace 1.6 mm long, 1.2 mm wide, with a wide marginal light area as in the female. Sternum and mouth parts clear yellow; legs with faint annulae. Venter dirty yellow with median pale gray streak. Lower margin of the furrow of the chelicerae with two teeth.

Legs 4123. Tibiae I with three pairs of long spines as in the female, without distal spines. Eyes as in the female except that the anterior lateral eyes are a little farther from the edge of the clypeus. Palpus short with patella and tibia about equal in length and not much longer than broad. Cymbium 0.52 mm long, 0.27 mm wide; palpal tibia 0.23 mm long, 0.21 mm wide.

Distribution.—Illinois, Iowa, Michigan, New York.

Specimens examined.—*Illinois*: nr Chicago, June 10, 1933, W.J.G., female, egg sac (H.K.W.); *Iowa*: Cerro Gordo Co., nr Clear Lake, 14 June 61, H. Levi, male (M.C.Z.); *Michigan*: Utica, VIII-3-36, M. N. Hatch, 4 females (Exline); *New York*: Ithaca, Banks, 2 females (M.C.Z., types).

Life history.—The only known male is from June; females are from June and August; the only egg sac is from June.

Ecology.—Nothing is known except that the male came from "McIntosh Woods" near Clear Lake, Iowa.

Remarks.—Every specimen examined had two teeth on the lower margin of the furrow of the chelicerae. The females from near Chicago are discolored and so dark that the pattern is not discernable.

Pirata montanus Emerton

Figs. 223-232

Pirata montanus Emerton, 1885, Trans. Connecticut Acad. Sci., 6:493, pl. 48, fig. 9 (three females, New York, M.C.Z., examined; see comments); Chamberlin, 1908, Proc. Acad. Nat. Sci. Philadelphia, 60:306-307, pl. 10, fig. 9, pl. 22, fig. 9; Kaston, 1938, Canadian Entomol., 70:16, fig. 6; Kaston, 1948, Bull. Connecticut Geol. Nat. Hist. Survey, 70:308, pl. 49, fig. 983, pl. 50, fig. 1004, pl. 51, fig. 1009.

Pirata elegans Stone, 1890, Proc. Acad. Nat. Sci. Philadelphia, 42:429, p. 15, figs. 5, 5a (female cotype, York Co., Pennsylvania, A.M.N.H., examined).