

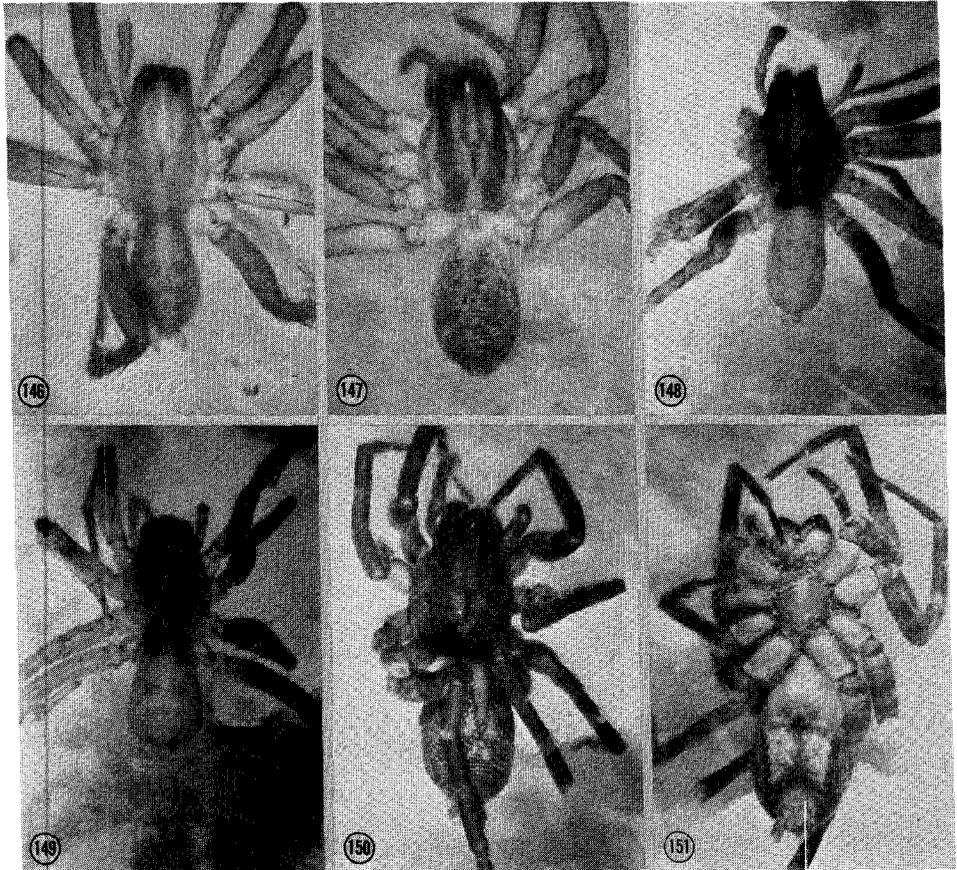
Figs. 140-142.—*P. zelotes*, n. sp.: 140, holotype male, Michigan, E. S. George Reserve; 141, allotype female, Michigan, E. S. George Reserve; 142, palp, Illinois, Volo, V-16-36.
 Fig. 143.—*P. sedentarius*: Male, Cuba, Trinidad Mts., Buenos Aires, 9 May 36.
 Fig. 144.—*P. wacondana*: Type female (= *P. sedentarius*), eyes, Kansas, Wacondana.
 Fig. 145.—*P. zelotes*, n. sp.: Epigynum, Illinois, Lake Co., V-8-41.

Variation.—*Pirata sedentarius* usually has a pattern which, although difficult to put into words, is characteristic for that species; it probably will take a lot of study before one can recognize it from that of other *Pirata*. In Texas this species sometimes has no pattern as a result of lack of pigment.

There is also considerable variation in size but this appears to be a local rather than regional phenomenon. The smallest male measured, from Arkansas, had a carapace 1.7 mm long, the largest from Texas, 3.2 mm long. Females from Arkansas varied in carapace length from 1.7 mm to 3.2 mm. The largest from Mexico, measured 3.3 mm. Females from Virginia ranged from 2.5 to 2.9 mm in carapace length.

Distribution.—Southern Canada, United States, Mexico, Cuba, Haiti.

Specimens examined.—Canada: *Manitoba*: Daphin, June 17, 1963, T.B.K., female (ROM); *Ontario*: York Co., Elmhurst Beach N9 W7, July 15, 1931, T.K., female (ROM); Aug. 15, 1931, T.K., female, egg sac (ROM 526); Toronto, June 4, 1934, E.O., female, egg sac (ROM 4529); *Saskatchewan*: nr. Val Marie, Bank Frenchman River, June 14, 1969, D.J.B., female (D.J.B.); Moose Mtn. Creek, 3W OXBOW, 4 July 1968, D.J.B., 3



Figs. 146-149.—*P. sedentarius*: 146, male, Texas, Austin, 30 July 68, B. Vogel; 147, female, Michigan, Kalamazoo Co., 11-18 Aug 65; 148, Type male, Texas, Austin; 149, Type female, Texas, Austin.

Fig. 150.—*P. maculatus*: Type female (= *P. sedentarius*), Maine, Moosehead Lake.

Fig. 151.—*P. maculatus*: Type female, ventral view.

females, egg sacs (D.J.B.). *Cuba*: Trinidad Mts., Buenos Aires, 9 May 36, 2500-3500 ft., P. J. Darlington, male (M.C.Z.); Soledad, June 29, P. J. Darlington, female (M.C.Z.). *Haiti*: Petion, Wm. M. Mann, female (M.C.Z.); Etangha Chaux, 27 Oct. 34, P. J. Darlington, female (M.C.Z.). *Mexico*: *Coahuila*: Arroya de la Cruz, 18 Dec. 41, H.K.W. 1147, 2 females (H.K.W.); *Nuevo León*: Horsetail Falls, 31 Aug. 68, J.E.C. 347, female (J.E.C.); *Tamaulipas*: Rancho Santa Ana, 24 Dec. 41, H.K.W. 1156, 2 males, 3 females (H.K.W.); *Hidalgo*: 10 mi NE Cardonal, Grutas de Tonoltongo, 1 Aug. 47, J. Reddell, J. Fish, 3 males, 13 females, imm. (A.M.N.H.). *United States*: *Alabama*: Clarke, Lowndes, Mobile, Russell, Tuscaloosa Counties; *Arizona*: Cochise County, White Mts., Virgin Narrows; *Arkansas*: Bradley, Carroll, Conway, Craighead, Franklin, Hempstead, Madison, Perry, Washington Counties; *California*: Inyo, San Bernardino, San Diego Counties; *Colorado*: Douglas, Larimer Counties; *Connecticut*: Fairfield, Litchfield, Middlesex Counties; *Florida*: Alachua, Dade, Henry, Highlands, Lake, Levy, Liberty, Marion, Pinellas, St. Johns Counties; *Georgia*: Baker, Macon, Thomas Counties; *Idaho*: 10 mi. S. Swan Valley, 7-6-35, W.I., female (A.M.N.H.); *Illinois*: Cook, Jackson, Jo Davies, Lee, Livingston, Macoupin, Morgan, Peoria, Pope, Union Counties; *Indiana*: Turkey Run, 28 May 32, D.C.L., male, female (D.C.L.); *Iowa*: Cerro Gordo, Washington Counties; De Witt, 26 June 10, R.V.C., 3 females (A.M.N.H.); *Kansas*: Riley County; *Kentucky*: Brewthitt, Edmonson, Powell Counties; *Maine*: Moosehead Lake, 7-VIII-1904, J.H.E., immatures (M.C.Z.); *Massachusetts*: Franklin, Middlesex, Nantucket Counties; *Michigan*: Genesee, Ingham, Kalamazoo Counties; *Mississippi*: Hinds County; *Missouri*: Boone, Crawford, Dent, Jefferson, Johnson, Osage, Phelps, Saint Genevieve, Saline Counties; *Nebraska*: Burwell, Cheyenne, Dawson, Hall Counties; *Nevada*: Clark County; *New Hampshire*: Francoria County; *New Jersey*: Burlington, Morris Counties; *New York*: Columbia, Delaware, Nassau, Ontario, Rensselaer, Tompkins Counties; *North Carolina*: Buncombe, Cartaret, Durham, Macon, Swain, Transylvania, Wake Counties; *North Dakota*: Divide County; *Ohio*: Erie, Wayne Counties; *Oklahoma*: Delaware, Marshall, Wayne Counties; *Oregon*: Baker County; *Pennsylvania*: Adams, Allegheny, Fayette, Potter Counties; *Rhode Island*: Washington County; *South Dakota*: Camp Judson; *Tennessee*: Roane, White Counties; *Texas*: Dallas, Hays, Hidalgo, Kerr, McClennan, Travis, Uvalde Counties; *Utah*: Cache, Grand, Millard, Salt Lake, Utah Counties; *Vermont*: Mt. Mansfield; *Virginia*: Giles, Powell, Rappahannock, Shenandoah, Smyth Counties; *Washington*: Pierce County; *West Virginia*: Ohio, Pocahontas, Summers Counties; *Wisconsin*: Eau Claire, Rock Counties.

Life history.—The data on the collection of adults appears to reflect the monthly activity of collectors rather than the life history of this species. We have recorded males and females from Mexico only in August and December. In Florida it looks like two broods a year. We have adult males and females from January through June with egg sacs in April and young in June. July, August and September are a blank. In October we have adult males and females with egg sacs.

Most of the collections in the southeastern United States are from June, July and August, but we have females from every month but November, December and February and males from February through September. We have examined egg sacs from April through August.

Maturity appears to occur a little later in the northeastern United States. We have one male from March, Males from May through August and one in November, females from May through November. We have egg cases from June through October.

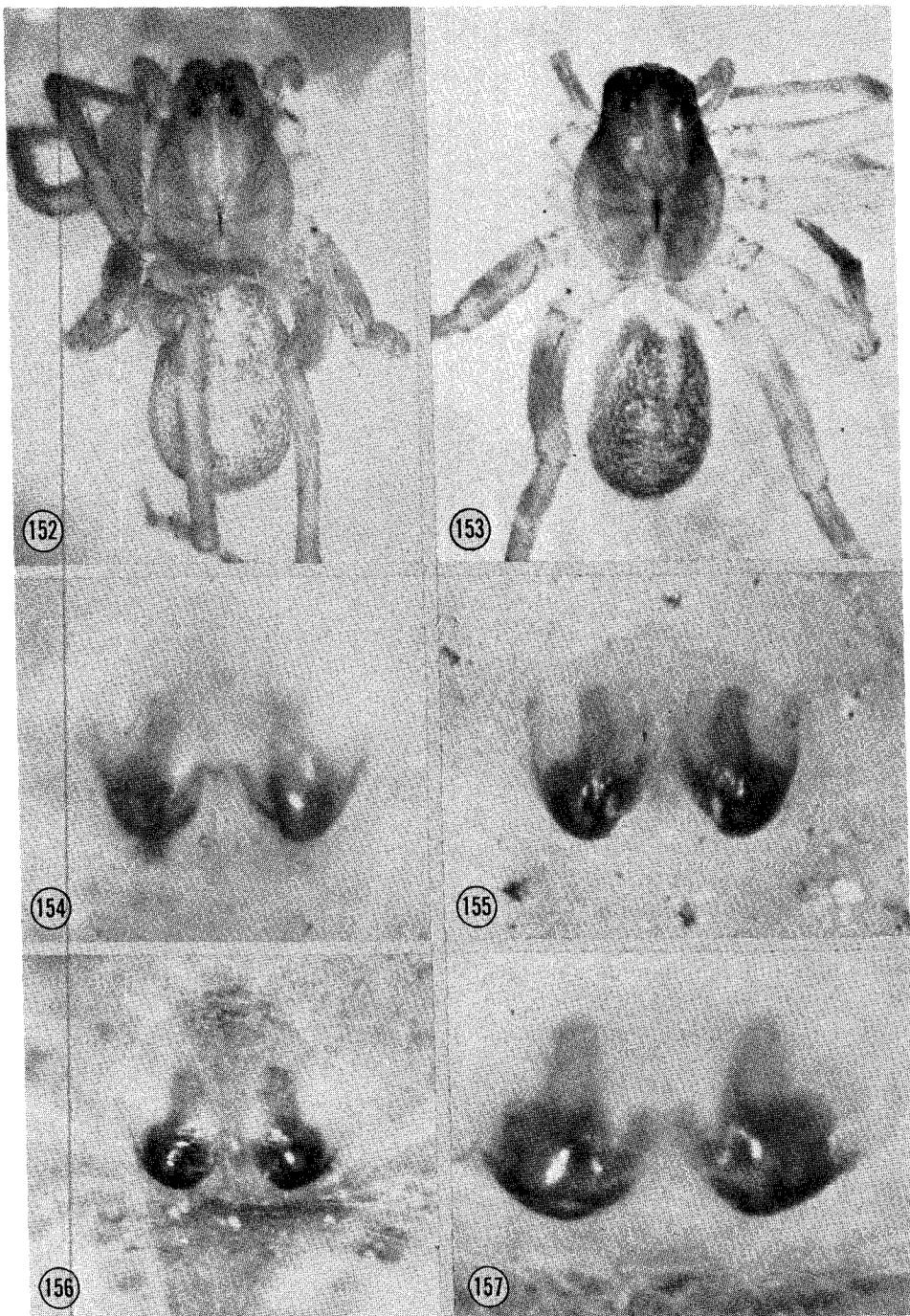


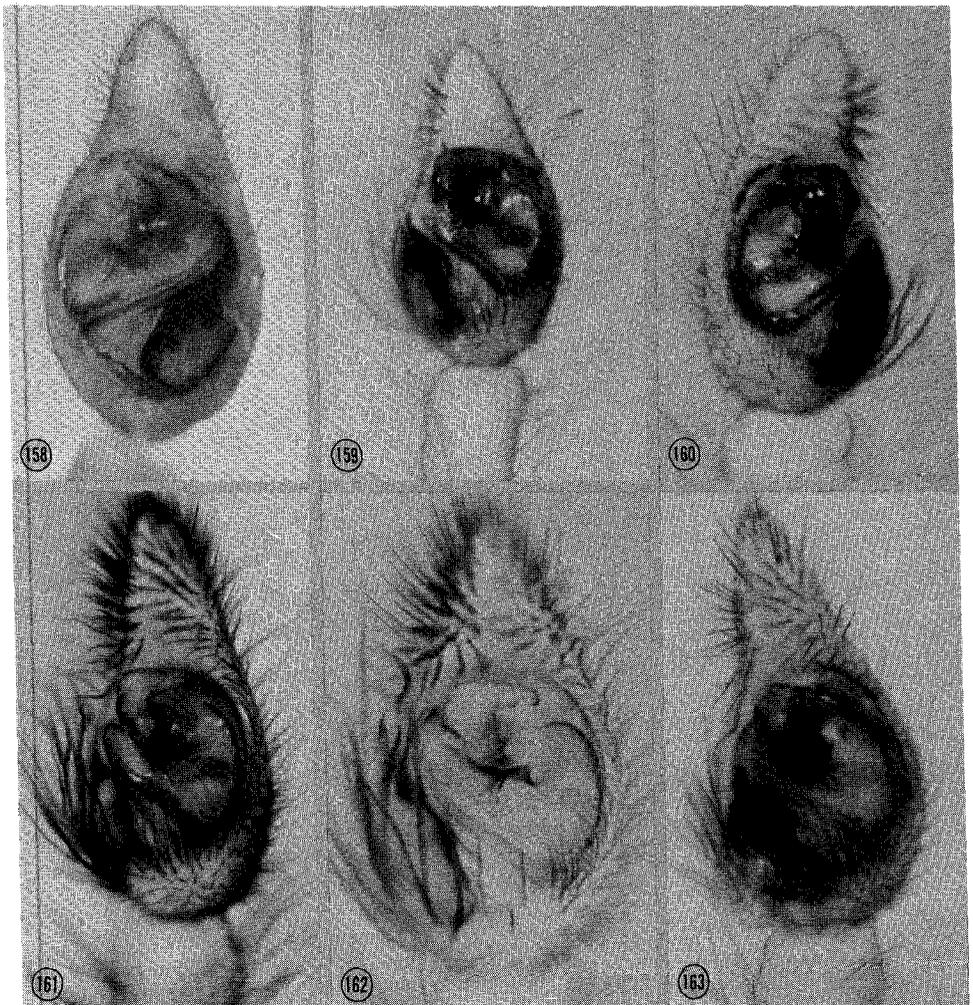
Fig. 152.—*P. wacondana*: Type female (= *P. sedentarius*).
 Figs. 153-155.—*P. sedentarius*: 153, female, Hayti, Petion; 154, epigynum, Arkansas, Washington Co.; 155, type female, epigynum, Texas, Austin.
 Fig. 156.—*P. maculatus*: Type female (= *P. sedentarius*), epigynum.
 Fig. 157.—*P. wacondana*: Type female (= *P. sedentarius*), epigynum.

The data from the western United States are very similar to the southeast. Males are recorded from March through September and females from March through November and one in January. Egg cases occur from April through August.

The data from Canada are scanty. We have females with egg sacs from June, July and August, but no males.

Ecology.—*Pirata sedentarius* is collected usually in the vicinity of water. Wallace collected it in Mexico under rocks in a dry stream bed. Other collectors have also recorded it from similar situations. In Florida it is usually found in hyacinth mats, around cypress bays in flatwoods, and around ponds. It has also been recorded from *Neofiber* burrows.

In Arkansas it has been collected near a grassy lake, under rocks, near streams, and at night on Odell Mountain in an open oak-hickory woods. In Georgia it was collected on the surface film of a mossy pond; in Illinois from a rocky stream bank; from a salt marsh



Figs. 158-162.—*P. sedentarius*: 158, type male, palpus, Texas, Austin; 159, palp, Georgia, Baker Co.; 160, palpus, Cuba, Trinidad Mts.; 161, palpus, Arkansas, Washington Co.; 162, palpus, Tennessee, Kingston.

Fig. 163.—*P. spiniger*: Palpus, Florida, Alachua Co.

in Massachusetts; in the vicinity of a spring in Missouri; near a river in Nebraska; on the shore of Utah Lake.

Remarks.—The relative length of the palpal tibia has been cited as distinguishing *P. sedentarius* from *P. maculatus*, being twice as long as thick in the latter and only one and one-half times as long in the former. *P. maculatus* is usually considered to occur in the northeastern U.S. and *P. sedentarius* in the south. These two cannot be distinguished by this character in the specimens I have examined.

The palpal tibia is more than twice as long as thick in every female that I have measured from Vermont to Mexico and every male measured from Georgia, Florida, Alabama, Texas, Oklahoma and Mexico have palpal tibia at least twice as long as thick. Males from Arkansas vary in this character, most being slightly less than twice as long as thick. This condition also varies in males from Pennsylvania; in one vial I found two males with the proportions 31/19 and 40/20. Two other males from Pennsylvania had proportions of 32/19 and 35/22.

The only population we have found with palpal tibia consistently shorter than twice the thickness is from Giles Co., Virginia, where every male measured (9) had palpal tibiae less than twice as long as thick.

We have never found a male with palpal tibia as short as one and one-half times its thickness.

Preserved *P. sedentarius* that we have examined vary in coloration from lightly pigmented specimens with no pattern and unbanded legs through specimens with a typical *Pirata* pattern and banded legs to specimens with a black carapace. Also, the marginal pigment is not continuous so that the animal appears to have a wide marginal light band with flecks of pigment near the rim of the carapace.

Pirata spiniger (Simon)

Figs. 163-168

Sosilaua spiniger Simon, 1898, Histoire naturelle des Araignees, 2(2):350, fig. 340; Chamberlin, 1908, Proc. Acad. Nat. Sci. Philadelphia, 60:298, pl. 12, figs. 5-6; Comstock, 1912, The spider book, New York, p. 649; Hubbell and Goff, 1939, Proc. Florida Acad. Sci., 4:152.

Description of male.—From Melbourne, Florida, 1/9/55. Einem: Carapace 2.20 mm long, 1.57 mm wide, without markings. Legs and carapace from above amber in color, dorsum of abdomen light yellow, almost white in color. Ventrally there is no pattern, the sternum and venter slightly lighter in color than the legs. The muscles in the cephalothorax are faintly visible from above giving the carapace a faint striated appearance.

The anterior eye row is wider than the posterior median row, and is straight. The anterior median eyes are twice as large as the anterior laterals and the same size as the posterior laterals; and are closer to each other than to the laterals. The clypeus height equals the diameter of an anterior median eye. Lower margin of the furrow of the chelicerae with three, almost equally spaced teeth, the median tooth the largest, the other two similar in size.

Legs 4123, unbanded. Tibia I with twelve long, overlapping ventrolateral, two prolateral, and retrolateral spines. Metatarsus I with nine ventrolateral and lateral spines, the distal pair far removed from the apical position. Tibia II with 12 long overlapping,

ventrolateral, two prolateral, and two retrolateral spines. Metatarsus II with nine ventrolateral and lateral spines. Palpus very similar to that of *P. sedentarius*.

Description of female.—With same data as male. Carapace 2.25 mm long, 1.68 mm wide, immaculate. Female resembles the male in lacking pigmented pattern, in coloration, in eye arrangement, and cheliceral dentition. The epigynum appears to be identical with that of *P. sedentarius* (Fig. 168).

Legs 4123. Tibia I with 11 ventrolateral, three prolateral, one retrolateral, and one dorsal spine. The ventrolateral spines are long and overlapping. Tibia II with ten long, overlapping ventrolateral spines; and two prolateral, two retrolateral and one dorsal spine.

Variation.—*P. spiniger* does not vary much in size and usually is quite light in color with no pigment. However, freshly collected specimens may show traces of pigmentation.

C. C. Goff near Dade City, Florida, collected four adult specimens from the same *Geomys* tunnel in which all of the eyes were the same size as the anterior laterals.

Distribution.—Southeastern United States.

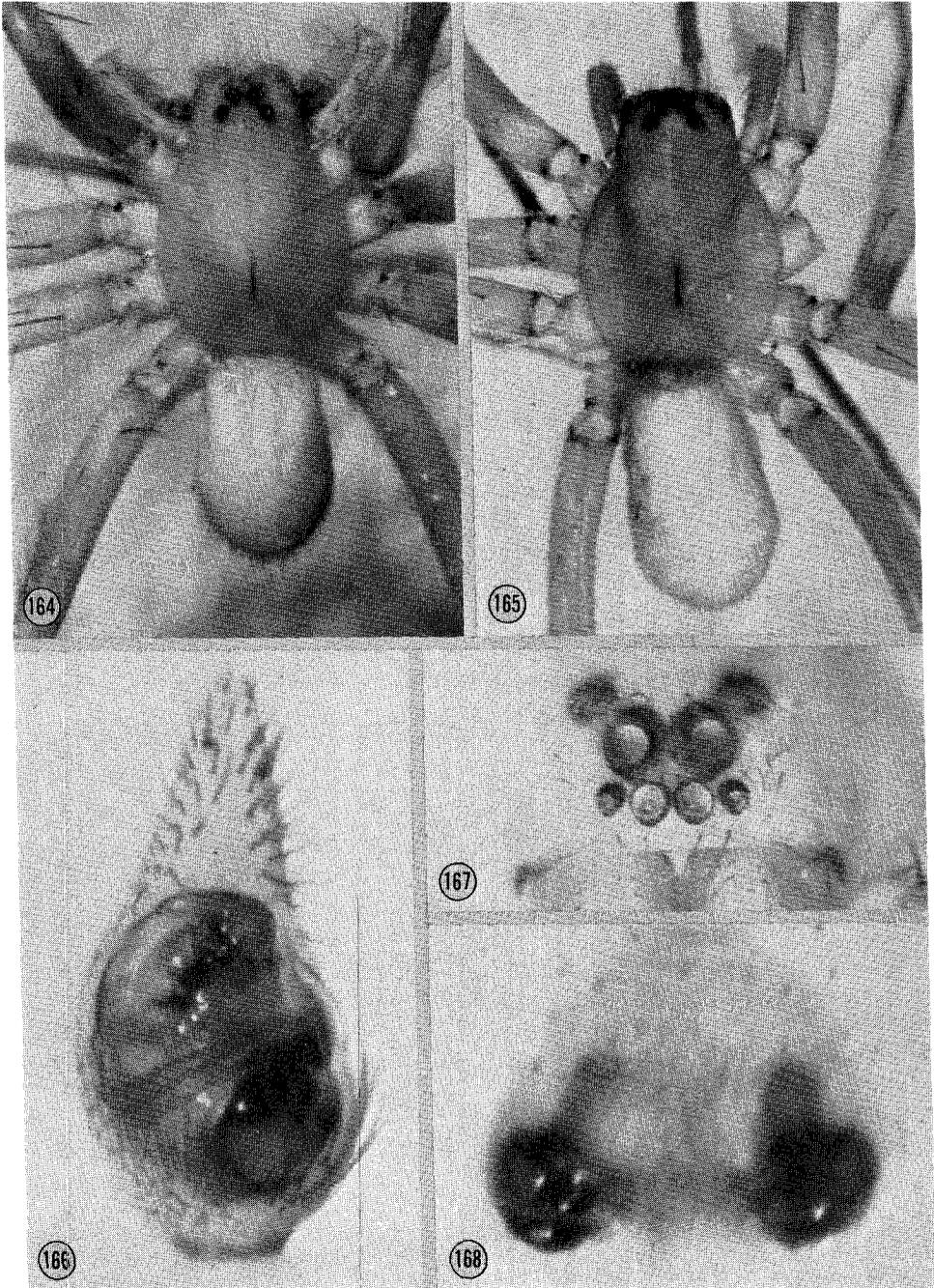
Specimens examined.—*Arkansas*: Craighead Co., Jonesboro, XI.10.66, pitfall, oak woods, Exline, female (Exline); *Florida*: Alachua, Brevard, Hillsborough, Lake, Leon, Nassau, Putnam Counties; *Illinois*: Jackson Co., S. of Carbondale, X.20.68, Union Hills, Adams, male, 2 imms. (J.A.B.); *North Carolina*: Durham Co., VII.16.63, Gate 3 Duke Forest, N. from 751, mixed pine and hardwood, pitfall, Berry, male (J.A.B.); VII.1.63, Chapel Hill Blvd. E. of county line, Russel Farm, broomsedge field, pitfall, Berry, male (J.A.B.).

Life history.—In Florida and Georgia adults of *P. spiniger* will probably be found throughout the year. Most of our records of adults in Florida are from May, June, July and August, but we have both sexes from January and females from September. From Georgia we have records of both sexes from February and April and a female with egg sac from May. All of this data reflects the activity of collectors. John Anderson at the University of Florida had a female that made an egg sac on 21 July, five days after mating. He also had young emerge from an egg sac on 8 August. Data from the other states are too meager to be meaningful.

Ecology.—*P. spiniger* was a very rare spider in collections until C. C. Goff demonstrated that it inhabits pocket gopher tunnels (*Geomys*). It had been taken once or twice in gopher turtle burrows. In recent years it has been collected in pitfalls in various types of plant associations; by sifting leaf litter in high pine turkey oak by W. M. Barrows at Gainesville, Florida, and on the University of Florida Conservation Reserve, Welaka, Florida; by Wallace in pine flatwoods by raking pine needle litter and shining the exposed areas with a head light. The pine needles were interlaced between the blades of wiregrass clumps so thickly that they formed a sort of roof an inch or two above the ground and it appeared to Wallace that this formed a dark, damp environment not unlike that of a pocket gopher tunnel. From the evidence at hand one is encouraged to think that this is a species that evolved from *P. sedentarius* in a cave environment, that the usual habitat is still cave-like, i.e., *Geomys* tunnels or tortoise borrows, but that it occasionally wanders into dark damp situations such as leaf litter, or under stones or boards.

Remarks.—On the basis of the structure of the genitalia *P. spiniger* is more closely related to *P. sedentarius* than *P. sedentarius* is to any other *Pirata* known to us. These two species are very similar in size and when pigment is present in *P. spiniger* its pattern is like that of *P. sedentarius*. The anterior eye row is wider than the posterior median row in *P. spiniger* (narrower in *P. sedentarius*) and the spining of the legs is unique, but to us this species is very closely related to *P. sedentarius*. It appears to be a species developed in

cavernicolous isolation, perhaps during periods of glaciation, where it acquired some of the modifications, i.e., reduced eyes, reduced pigment, spine and sense organ modifications, not unusual in cave-dwelling species.



Figs. 164-168.—*P. spiniger*: 164, male, Florida, Melbourne; 165, female, Florida, Melbourne; 166, palpus, Florida, Leon Co.; 167, male, eyes, Florida, Melbourne; 168, epigynum, Florida, Alachua Co.

SPECIES OF UNCERTAIN RELATIONSHIP

Pirata alachuus Gertsch and Wallace

Figs. 169-174

Pirata alachua Gertsch and Wallace, 1935, Amer. Mus. Nov., 794:9, figs. 34, 36 (types: male, female, Alachua Co., Florida, A.M.N.H., examined).

Etymology.—This species was named for the county in which the type specimens were found.

Description.—A small spider, the carapace usually less than 2.0 mm long in males and less than 2.4 mm in females, with a wide marginal light band on the carapace, otherwise resembling *P. sedentarius* in pattern, and indistinct annulae on legs. Anterior eye row slightly procurved, slightly narrower than posterior median eye row. Epigynum with posteriorly rounded lobes about one-half diameter apart. Median apophysis of palp unique, truncated anteriorly so that it has somewhat the shape of a tomahawk or hatchet. The distal (anterior) end of the median apophysis is sometimes transparent and difficult to see.

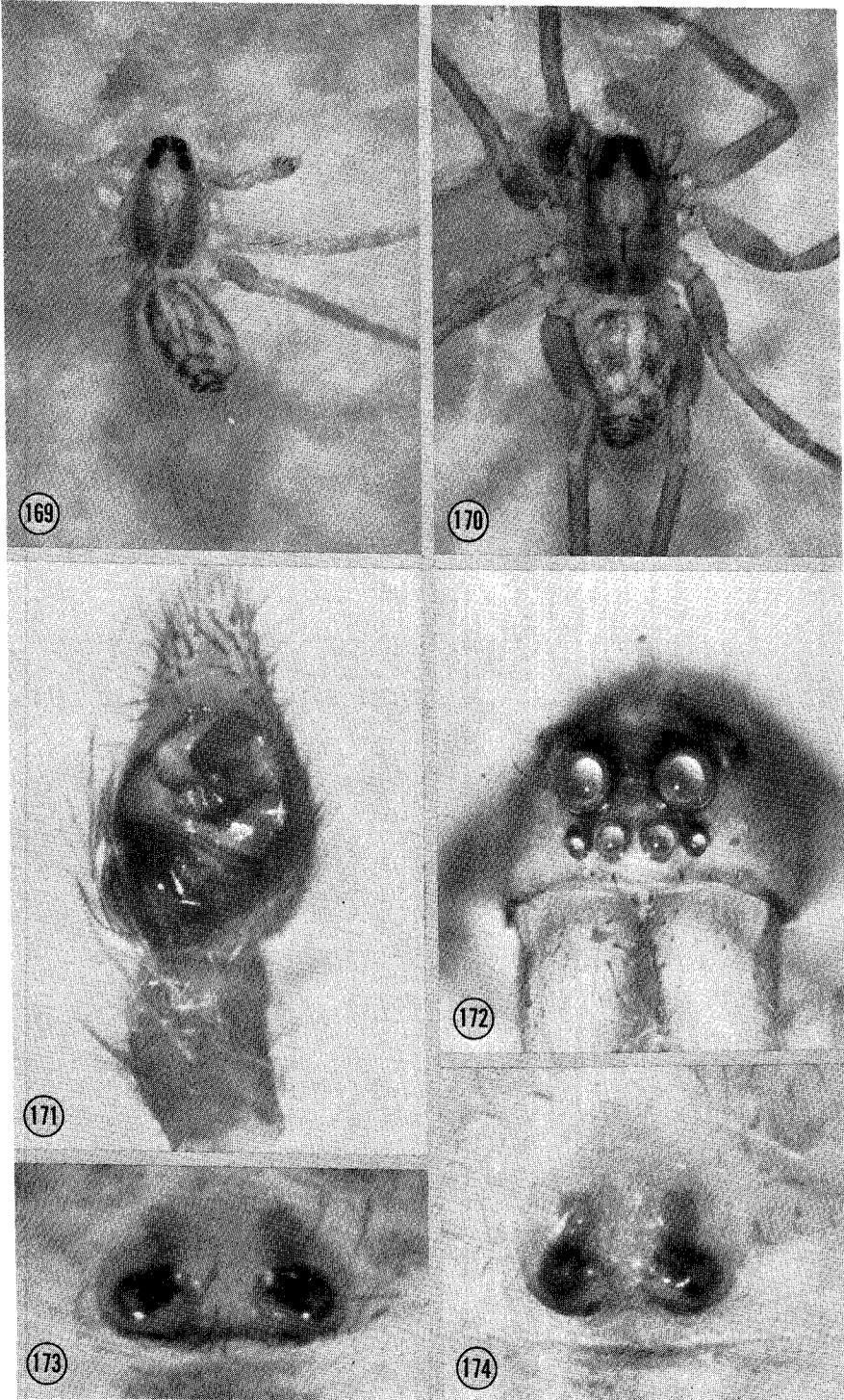
Distribution.—*Alabama*: Blount, Houston, Macon Counties; *Arkansas*: Bradley, Conway, Craighead, Hempstead, Mississippi Counties; *Florida*: Alachua, Columbia, Gadsden, Highland, Jackson, Lake, Leon, Liberty, Marion, Nassau, Orange, Pasco, Putnam, Sumter Counties; *Georgia*: Baker, Burke, Walker, Ware Counties; *Illinois*: Jackson, Pope, Union Counties; *Indiana*: La Porte County, Williamsburg; *Maryland*: Montgomery County; *Mississippi*: Wilkinson County, Camp Shelby; *Missouri*: Crawford, Johnson, Phelps, Ripley, Stoddard Counties; *North Carolina*: Durham, Lincoln Counties; *Ohio*: Warren County; *South Carolina*: Aiken County; *Virginia*: Albermarle, Nasomond, Norfolk Counties.

In addition we have examined females from New Jersey, Tennessee and Texas which resemble *P. alachuus*, but males are needed from these states to confirm them as state records. The female from New Jersey resembles *P. sedentarius* in size and appearance, but the epigynum is very similar to *P. alachuus* from Florida.

Life history.—*P. alachuus* is a summer spider; 95 percent of all specimens collected come from April, May, June and July. In the northeastern part of the U.S. males have not been taken earlier than May or later than July with 90 percent from May and June. In Florida adult males begin to appear in March with the season of maturity moving northward, gradually, with the isotherm. In the southern states males may be taken in August and we have a record of one male from Florida in December. No other adults are known from Florida during September, October, November and January. Three females have been taken in February.

Records of egg sacs.—Florida: April, May, June; United States: May through September with one record in January from the west. Egg sacs measure from 2.0 to 2.8 mm in diameter, and are slightly flattened dorsoventrally when first made, becoming round as the young hatch.

Ecology.—*P. alachuus* is not as riparious as most *Pirata*. It is not confined to the margins of ponds and streams and throughout its range may be found in leaf litter of mesic woods, in cultivated fields or sometimes in exposed areas. In Arkansas it has been taken in pitfall traps in pine-oak woods; in Missouri from traps in open woods, ground litter and along streams and ponds (H. Peck). Specimens from Highlands State Park,



Figs. 169-174.—*P. alachuus*: 169, holotype male, Florida, Alachua Co.; 170, allotype female, Florida, Alachua Co.; 171, palpus, Florida, Pasco Co.; 172, eyes, Florida, Jackson Co.; 173, epigynum, North Carolina, Durham Co.; 174, epigynum, Florida, Alachua Co.