

extend into the adjacent Post Oak Belt (Leon County) and the Marsh and Salt Grass Region (Liberty County) [See Map I]. *Natrix rigida* clearly is not endemic to any one vegetation region in Texas.

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MAP I. RECORDED LOCATION OF NATRIX RIGIDA IN TEXAS. Hatched area is Pine Belt (after Carter, 1931.) Circles represent previous records from the literature; triangles represent records cited in this paper.

## Notes on Texas Compositae — VII

Lloyd H. Shinnners<sup>1</sup>

ELEPHANTOPUS NUDATUS Gray. This species may be recorded for the first time as occurring in Texas. JEFFERSON Co.: 16 miles southwest of Beaumont, *Shinnners 7704*, May 15, 1945. The two species previously known from the state are both much more widespread: *E. tomentosus* L., west and north to Harris and Wood counties; *E. carolinianus* Raeschel, commonest of the three, to Galveston, Brazos, Johnson, and Denton counties.

LIATRIS PYCNOSTACHYA Michx. var. *lasiophylla* Shinnners, var. nov. Tardiflora, foliis utrinque villosulis pilis patentibus. Late-flowering (August-early October, instead of June-August as in the species itself), the leaves rather villous with spreading hairs on both surfaces. TYPE: 3 miles east of Sour Lake, Hardin Co., Texas, *V. L. Cory 54953*, Sept. 29, 1948. Though stem pubescence is rather generally variable, leaf pubescence shows geographic localization. The very hairy-leaved, late-flowering race of the East Texas Pine Region warrants varietal recognition. It has appeared frequently in the herbarium as *L. Langloisii* (Greene) Cory, which was not originally described as hairy-leaved (by Greene, under *Lacinaria*, in *Pittonia* 5: 58, 1902; type from Louisiana), nor does the type specimen in the Greene Herbarium show this peculiarity.

<sup>1</sup>Director, Southern Methodist University Herbarium.

Seven additional collections of var. *lasiophylla* may be cited. HARDIN Co.: 5½ miles west of Silsbee, *Cory 49931*, Oct. 2, 1945. Two and one-half miles northwest of Kountze, *Cory 50045*, Oct. 4, 1945. HENDERSON Co.: 9½ miles southeast of Athens, *Cory 54625*, July 16, 1948 ("just beginning to bloom"). NEWTON Co.: 5 miles east of Kirbyville, *Cory 49812*, Sept. 30, 1945. SMITH Co.: western edge of Tyler, *Cory 56849*, Aug. 17, 1949; same locality, *Cory 56889*, Sept. 5, 1949. TYLER Co.: 2½ miles south of Warren, *Cory 54903*, Sept. 28, 1948.

LIATRIS MUCRONATA DC., Prodr. 5: 129. 1836. "In Mexicanae provinciae Texas distr. (Cammancherias) orientalibus legit cl. Berlandier," the southeastern part of the Edwards Plateau, north and northwest of San Antonio. *Laciniaria angustifolia* Bush, Amer. Midl. Nat. 12: 315. 1931. (Type from Fort Worth, Tarrant Co.) *Liatris angustifolia* (Bush) Gaiser, Rhodora 48: 368. 1946. Very common in north-central Texas in the wild, on a variety of soils (but commonest on limestone and chalk outcrops and calcareous prairies); frequently cultivated. After observing and collecting the plants for five years, I fail to recognize two species as distinguished by Dr. Gaiser (l.c., p. 346): "Leaves 1.5-5 mm. wide, punctate, stiff; phyllaries mucronate-tipped; heads numerous or rarely few and distant" for *L. mucronata*; and "Leaves 1-3 mm. wide, almost epunctate, soft; phyllaries acuminate; heads numerous" for *L. angustifolia*. In west-central Texas occurs an ambiguous plant with the numerous slender leaves and elongate inflorescence of *L. mucronata*, but a more or less elongate rootstock, as in *L. punctata* Hook.; and a very similar plant occurs near the Gulf Coast from Galveston southward. Whether these are of hybrid origin might be conjectured; if so, they are of remarkably frequent and widespread occurrence, and are found in areas from which the presumable parents are absent. Undoubtedly some introgressive hybridization has taken place between *L. punctata* or allied forms and *L. mucronata*. Though only the last species occurs from the West Cross Timbers eastward, rarely a plant may be found as far east as McLennan County with broad leaves like those of *L. punctata*, or with corm noticeably pointed at bottom instead of flat or rounded. The complexities of this group of plants has not yet been adequately elucidated (though considerably adumbrated); to do so would require prolonged and intensive field observations, coupled with cytogenetic studies. The geography assigned to *L. mucronata* var. *interrupta* Gaiser (l.c., p. 365) is extraordinary. Said to occur in "Tamaulipas, San Luis Potosi, and northeastern

Coahuila, Mexico, and some of the bordering counties of Texas," the type is from San Patricio County, six counties up the coast from the Mexican border; and collections are cited from Oldham and Randall counties near the top of the Panhandle — about as far from Mexico as it is possible to go and still be in Texas.

**LIATRIS GLABRATA** Rydb. var. **alabamensis** (Alexander) Shinnery, comb. nov. *Laciniaria squarrosa alabamensis* Alexander in Small, Man. S.E. Fl. 1333. 1933. *Liatris squarrosa* var. *alabamensis* (Alexander) Gaiser, Rhodora 48: 398. 1946. This transfer is made with some hesitation, for the varieties of *L. squarrosa* as treated by Dr. Gaiser are certainly closely related, and could well be grouped under subspecies of *L. squarrosa*. Those occurring in Texas, with flowering heads 1.5-2 cm. long (including corollas), instead of 1.8-2.5 cm. as in *L. squarrosa* and its var. *gracilentata*, are conveniently treated as *L. hirsuta* Rydb., *L. glabrata* Rydb., and *L. glabrata* var. *alabamensis*, distinguished as follows:

Stems pubescent with widely spreading hairs; middle and lower phyllaries with recurved-spreading tips; Pine Belt in northeast Texas, southwest to Smith County.....*L. hirsuta*

Stems pubescent with closely ascending or subappressed hairs, or glabrous; middle and lower phyllaries with long, foliaceous, abruptly spreading but not recurved tips

Stems glabrous; sandy clay soils, Red River counties, west to Montague County, south to Dallas and Tarrant counties

—*L. glabrata*

Stems finely pubescent; sandy or sandy clay soils, Pine and Oak Belts, southeast Texas, west and north to Washington, Freestone, and Smith counties (west to Fayette County, *vide* Gaiser)

—*L. glabrata* var. *alabamensis*

**LIATRIS HIRSUTA** Rydb. *L. squarrosa* var. *hirsuta* (Rydb.) Gaiser, Rhodora 48: 399. 1946. The following two collections extend the range of this plant into Texas, from which it has not previously been reported. HARRISON Co.:  $\frac{3}{4}$  mile east of Scottsville, *Cory* 57823, Aug. 10, 1950. SMITH Co.: western Tyler, *Cory* 56339, June 25, 1949.

*Liatris glabrata* Rydb. is cited by Dr. Gaiser from Walker County; I have not seen specimens from so far south, but a number of Texas plants show just such a broken distribution.

**XANTHOCEPHALUM DRACUNCULOIDES** (DC.) Shinnery, Field & Lab. 18: 28. 1950. Originally from "territorio Arkansano," most probably present Oklahoma, and common in that State as well as in much of Texas. In the latter State there are found two additional plants with the same two types of

pappus found in *X. dracunculoides* (disk florets with white, flattened, bristle-like slender scales, expanded and more or less united at base; ray florets with a minute, erose, scaly crown), distinguishable as follows:

Involucre 2.4-3.2 mm. high in flower, rarely to 3.8 mm. in fruit; rays 2-3.5 mm. long, 1-2 mm. wide; heads usually very numerous, crowded in a dense corymbose inflorescence, some of them very short-pedicelled or sessile even during and after flowering; common weed from the Panhandle and Red River southward (absent from the Rio Grande Plain, rare near the Coast), and from Hopkins County westward as far (rarely) as Reeves County

—*X. dracunculoides*

Involucre 3.5-5 mm. high; rays 3-7 mm. long, 1.8-3 mm. wide; heads fewer and more scattered, all long-pedicelled by the time the flowers have opened

Rays 4-7 mm. long; disk florets 20-32; plants of limestone areas, Edwards Plateau and Grand Prairie.....*X. amoenum*

Rays 3-4 mm. long; disk florets 9-22; plants of sandy, sandy-clay, or silty soils in or near coastal Central Texas

—*X. amoenum* var. *intermedium*

**XANTHOCEPHALUM amoenum** Shinnery, sp. nov. *X. dracunculoideo* affinis, differt praecipue capitulis paucioribus grandioribus; involucri (fl.) 3.5-5 mm. altis, floribus disci plus numerosis (20-32), ligulis 4-7 mm. longis, 2-3 mm. latis. Erect, freely corymbose branched annual, smaller and with fewer, more scattered heads than in *X. dracunculoides*, but the heads markedly larger and with longer rays, the plant somewhat showy; pappus as in *X. dracunculoides*. Not common; restricted to limestone soils of the Grand Prairie and eastern Edwards Plateau. TYPE: rocky prairies of the Guadalupe, north of New Braunfels, Comal Co., Texas, *Lindheimer 422* (Fl. Tex. Exs. Fasc. III, 1846). (Duplicates widely distributed, but since several field numbers were commonly combined under one exsiccatae number, there is a strong possibility that other collections bearing this number are actually *X. dracunculoides*, as named.)

The following collections are all from Texas. BOSQUE Co.: 7 miles east-southeast of Meridian, *Shinnery 12089*, Oct. 23, 1949. COMANCHE Co.: 6¼ miles east by south of De Leon, *Cory 58130*, Sept. 26, 1950. DENTON Co.: 15½ miles west of Denton, *Shinnery 11890*, Oct. 9, 1949. ERATH Co.: 2 miles southeast of Clairette, *Cory 58062*, Sept. 26, 1950. HOOD Co.: 3 miles east of Granbury, *Eula Whitehouse 20639*, Oct. 7, 1948. Comanche Peak, *J. Reverchon 3997*, Sept. 6, 1903. PARKER Co.: 6½ miles south-southeast of Weatherford, *Cory 58467*, Sept. 30, 1950. TOM GREEN Co.: south of San Angelo, *H. C. Ragsdale*, Oct. 12, 1947.

**XANTHOCEPHALUM AMOENUM** var. *intermedium* Shinnery, var. nov. Ad *X. dracunculoideum* accedens ligulis paulum minoribus (3-4 mm. longis), floribus disci paucioribus (9-21); cum *X. amoeno* capitulis paucioribus majoribus

(involucris 3.5-5 mm. altis) *conveniens*. Approaching *X. dracunculoides* in length of rays and numbers of disk florets, but plainly belonging with *X. amoenum* in having fewer heads with larger involucre. TYPE: San Jacinto River bottoms east of Channelview, Harris Co., Texas, *Cory* 50745, Nov. 12, 1945. The following collections have been seen, all from the outer Coastal Plain of Texas. ARANSAS Co.: Aransas Refuge, along north road, *Cory* 51185, Nov. 25, 1945. MATA-GORDA Co.: east water front of Palacios, *Cory* 51114, Nov. 23, 1945. SAN PATRICIO Co.: Aransas Pass, *Cory* 51240, Nov. 27, 1945. WALKER Co.: 11 $\frac{2}{3}$  miles southwest of Huntsville, *Cory* 50641, Nov. 9, 1945.

GRINDELIA LANCEOLATA Nutt. var. *texana* (Scheele) Shinners, comb. nov. *G. texana* Scheele, *Linnaea* 21: 601. 1848. Species and variety have the same habitat preferences and very small morphological differences (looking more distinct in print than in nature; the following distinctions are given by Steyermark, *Ann. Mo. Bot. Gard.* 21: 443, 1934: "Outer involucre bracts about equalling the height of the disk, the bracts appearing subequal; upper leaves mostly lance-linear to lanceolate-oblong" for *G. lanceolata*, "Outer bracts less than  $\frac{1}{2}$  the height of the disk, the bracts appearing more graduated; upper leaves ovate-lanceolate to ovate, conspicuously spinulose-serrate" for *G. texana*).

HELIOPSIS GRACILIS Nutt., *Trans. Amer. Philos. Soc. n.s.* 7: 353-354. 1840. "Hab. In Georgia. (Dr. Juet.)" *H. laevis* var. *gracilis* (Nutt.) T.&G., *Fl. N.A.* 2: 303. 1842. *H. laevis* var. *b. minor*, *floribus parvis, radiis paucis*, Hook., *Comp. Bot. Mag.* 1: 98. 1835. (*Drummond* 498, from Covington, Louisiana, is cited.) *H. minor* ("Hook.") Mohr, *Plant Life of Alabama* (*Contrib. U.S. Nat. Herb.* 6): 796. 1901. *H. helianthoides* var. *minor* ("Hook.") Farwell, *Preprint Mich. Acad. Sci. Rep.* 19: 262. 1917. (*Fide* Gray *Herb. Index*.) Hooker designated his variety only by Greek letter, not by name. Mohr, following the American Code requirement to adopt the earliest name regardless of rank, and mistaking the first word in Hooker's description for an epithet, incorrectly adopted it. The correct epithet for this plant either as species or variety is *gracilis*.

ACTINOMERIS ALTERNIFOLIA (L.) DC. Not previously reported from Texas. DALLAS Co.: Fish hatchery on White

Rock Lake [northeast side of Dallas], *Whitehouse 23869c*, Sept. 17, 1950.

**HYMENOXYS SCAPOSA** (DC.) Parker, *Madrono* 10: 159. 1950. *Cephalophora scaposa* DC., *Prodr.* 5: 663. 1836. "In Mexicanæ prov. Texas district. orientibus legit cl. Berlandier." (This frequently-mentioned area, as already noted under *Liatris mucronata*, is the southeastern portion of the Edwards Plateau, north and northwest of San Antonio.) *Actinea scaposa* (DC.) Kuntze, *Rev. Gen.* 1: 303. 1891. (I agree with Mrs. Parker that the type species of *Actinea*, from Argentina, does not belong to the genus as treated by North American botanists.) *Actinella scaposa* var. *linearis* Nutt., *Trans. Amer. Philos. Soc. n.s.* 7: 379. 1840. "Hab. Texas. (Professor Riddell.)" (Dr. Riddell visited Austin, at the edge of the Edwards Plateau and within 75 miles of the area visited by Berlandier.) De Candolle described his species as "foliis radicalibus lineari-lanceolatis basi attenuatis, aliis integerrimis, aliis pinnatifidis lobis paucis acutis." Nuttall's variety was distinguished by "leaves narrow-linear, sublanceolate, much attenuated below, all entire." I consider the two to be merely forms of the same species, which is exceedingly common on the Edwards Plateau and in the Grand Prairie on limestone and chalk outcrops, the form with some leaves lobed much less common than the one with leaves all entire. Greene (in *Pittonia* 3: 267, 1898, under *Tetranewis*), not realizing the proximity of the type localities, adopted Nuttall's epithet for the species, and misapplied De Candolle's to a distinctive variant occurring farther west. This more western race may be called

**HYMENOXYS SCAPOSA** var. **villosa** Shinnery, var. nov. *Folia longe denseque villosa*. TYPE: just north of campus of Sul Ross State Teachers College, Alpine, Brewster Co., Texas, *Cory 53129*, May 17, 1946. Apparently fairly common in the extreme western part of the Edwards Plateau and in the Trans-Pecos; one locality in the Rio Grande Plain. The variety tends to have rather larger flowers, and rays very prominently purple-veined beneath, but the differences are not sharply marked.

The following collections are all from Texas: BREWSTER CO.: 4 miles west of Alpine, *Whitehouse 18674*, May 10, 1947. Twenty miles east of Marathon, *Whitehouse 18635*, May 8, 1947. JEFF DAVIS CO.: 10 miles southeast of Fort Davis, *Cory 53569*, April 22, 1947. Twelve and one-third miles northeast of Fort Davis, *Cory 53543*, April 27, 1947. JIM

WELLS Co.: south of George West, near boundary line, *C. L. & Amelia A. Lundell 12812*, April 9, 1944. PECOS Co.: 21 miles northeast of Fort Stockton, *Cory 53495*, April 24, 1947. Twenty one and one-half miles east of Fort Stockton, *Cory 53216*, May 19, 1946. Barrilla Hills, 22½ miles east of Balmorhea, *Cory 52160*, May 7, 1946. Six and one-half miles north of Fort Stockton, *Lundell & Lundell 10240*, April 16, 1941. Seventeen miles south of Fort Stockton, *W. R. & J. P. Moore 25*, March 20, 1941. REAGAN Co.: 3 miles south of Big Lake, *Cory 53427*, April 24, 1947. TERRELL Co.: 2.5 miles west of Dryden, *Rogers McVaugh 7760*, April 2, 1947. VAL VERDE Co.: 3 miles north of Comstock, *Barton H. Warnock & B. L. Turner 704*, May 1, 1949. One short-rayed specimen possibly represents a hybrid of this variety and the following species. IRION Co.: 8 miles west of Mertzon, *Whitehouse 19523*, April 9, 1948.

**HYMENOXYIS glabra** (Nutt.) Shinners; comb. nov. *Actinella glabra* Nutt., Trans. Amer. Philos. Soc. n.s. 7: 379. 1840. "HAB. Missouri (near the Shawnee villages.)" *Tetraneuris fastigiata* Greene, Pittonia 3: 268. 1898. (Type from Coolidge Co., Kansas.) *T. glabriuscula* Rydb., Bull. Torr. Bot. Club 33: 155. 1906. (Based on "*T. glabra* Greene, not *Actinella glabra* Nutt.") *T. stenophylla* Rydb., l.c. (Type from Ford Co., Kansas.) In 1945 I made a number of collections of *Hymenoxys* in the Panhandle. From field observation and from herbarium study since, I am satisfied that a distinct species from *H. scaposa* was represented, though collections of both species were named by Mrs. Parker *H. scaposa* and *H. scaposa* var. *linearis*. I distinguish the two species as follows (narrow-leaved forms of each I do not consider worthy of nomenclatorial recognition):

Scapes 9-35 cm. long in full flower; ligules 8-15 mm. long; involucre 5.5-6.5 mm. high in flower; summit of scape and base of involucre densely silky-villous with silvery gray or white hairs 1.5-2.5 mm. long; plants of Grand Prairie, Edwards Plateau, and Trans-Pecos

.....*H. scaposa*  
Scapes 4-17 cm. long in full flower; ligules 5-9 mm. long; involucre 4.5-5.5 mm. high in flower; summit of scape and base of involucre sparsely to rather densely villous with dingy gray or yellowish white hairs 1-1.5 mm. long; Panhandle south to Mitchell and Taylor counties, and in Guadalupe Mountains, Culberson County  
—*H. glabra*

*H. glabra* is usually glabrous or nearly so, with a considerable portion of exposed stem base below the year's rosette of leaves, covered with the conspicuous whitish bases of old leaves. *H. scaposa* varies from glabrate to thinly villous (densely villous in var. *villosa*), the exposed old portions of stem bases much less prominent. I have not seen the type of *Actinella glabra*, but Nuttall speaks of it as closely related to his *A. scaposa* var. *linearis*, described on the same page. His description, and the distribution of the plant of the Texas

Panhandle (specimens seen from as far north as Kansas), make its identity fairly certain.

*CIRSIUM TEXANUM* Buckley var. *stenolepis* Shinnery, var. nov. Phyllariis mediocribus 0.8-1 mm. solum latis (in specie propria 1.2-1.5 mm.). TYPE: 2¼ miles west of Grand Saline, Van Zandt Co., Texas, *Shinnery 11192*, May 15, 1949. In an earlier note (Field & Laboratory 17: 29-30, 1949), I listed *Cirsium texanum* as a very rare species. Additional material and renewed examination of collections referred to it and to *C. austrinum* (Small) E. D. Schulz lead me to believe that the two are merely minor variations of the same species — the former with upper leaves slightly broader and more noticeably clasping, but scarcely enough to distinguish nomenclatorially. The variety here named, of more slender and delicate appearance than usual in the species, occurs just east of the area of the latter; it is known only from the type collection.

*PYRRHOPAPPUS Geiseri* Shinnery, sp. nov. *P. caroliniano* affinis, differt caule humiliore crispe hirsutulo, foliis paucioribus, supremis pinnatifido-laciniatis. TYPE. Southern Methodist University campus, University Park, Dallas County, Texas, *Shinnery 8499*, May 6, 1946. The two common annual native dandelions of north Texas may be distinguished as follows:

- Stems 8-75 cm. high, loosely pubescent with crisped hairs, with 1-5 leaves below the inflorescence, the uppermost deeply pinnatifid; plant of calcareous clay or silt soils (spreading as a weed along highways and elsewhere in sandy and gravelly soils).....*P. Geiseri*  
 Stems 10-110 cm. high, glabrous, with 3-9 leaves below the inflorescence, the uppermost entire or with a single basal pair of lobes; plant of sandy soils.....*P. carolinianus*

*P. carolinianus* (Walt.) DC. is a common weed of eastern Texas, west on sandy soils of river terraces and the two belts of Cross Timbers. In the southeastern United States it is part of a species-complex, treatment of which is reserved for a revision of the genus. In northern Texas it apparently hybridizes introgressively with its Blackland Prairie congener, *P. Geiseri*, which occurs from the transition belt bordering the east Texas oak-pine woods westward onto the Edwards Plateau, and from central Oklahoma south to the Gulf. Occasionally plants may be found (chiefly along highways) like *P. Geiseri* but with glabrous stem, or like *P. carolinianus*, but with pubescent stem. Two originally disparate populations



can easily be recognized, however, and on the basis of their relationships with the other Texas species of the genus (especially *P. grandiflorus* Nutt., which without the tuberous root is scarcely distinguishable from *P. Geiseri*; and *P. multicaulis* DC., of the Rio Grande Plain and lower Gulf Coast, with corollas variously lemon yellow, light ochre, or white), it is treated as a species. Additional collections are cited below.

OKLAHOMA. PONTOTOC Co.: eastern edge of East Central State College campus, Ada, *G. Thomas Robbins 2506*, May 21, 1947. TEXAS. BASTROP Co.: 8 miles southeast of Elgin, *Shinners 7263*, April 18, 1945. BURLESON Co.: 13¾ miles northeast of Lyons, *Cory 51635*, April 21, 1946. BURNET Co.: 10 miles southeast of Marble Falls, *Shinners 7238*, April 17, 1945. COOKE Co.: about ½ mile south of Red River on Highway 77, *Whitehouse 15824*, May 24, 1946. DENTON Co.: 10 miles north of Denton, *Cory 57323*, May 12, 1950. ERATH Co.: 5 miles northeast of Stephenville, *Shinners 11067*, May 12, 1950. ERATH Co.: 5 miles northeast of Stephenville, *Shinners 11067*, May 1, 1949. FREESTONE Co.: 11 miles northwest of Fairfield, *Shinners 7772*, May 17, 1945. GALVESTON Co.: Texas City, *B. L. Turner 1766*, April 6, 1950. HAMILTON Co.: Hico, *Cory 53778*, May 28, 1947. HAYS Co.: 2½ miles south of San Marcos, *Cory 55418*, April 3, 1949. HUNT Co.: 3 miles southwest of Caddo Mills, *Shinners 7452*, May 3, 1945. KAUFMAN Co.: 7 miles west of Terrell, *Shinners 7546*, May 4, 1945. KERR Co.: 4 miles southwest of Kerrville, *Cory 51772*, April 28, 1946. MEDINA Co.: 3 miles west of Castroville, *Shinners 7287*, April 19, 1945. NAVARRO Co.: 2 miles southeast of Richland, *Shinners 7778*, May 17, 1945. REAL Co.: 22 miles north of Leakey, *Shinners 7334*, April 20, 1945. ROCKWALL Co.: east side of Rockwall, *Shinners 7450*, May 3, 1945. SOMERVELL Co.: 2.7 miles northeast of Glen Rose, *Shinners 9178*, April 27, 1947. TARRANT Co.: Bluebird Ave., Oakhurst, Fort Worth, *Cory 54395*, May 8, 1948. WISE Co.: 1.5 miles west-southwest of Chico, *Shinners 12326*, April 30, 1950.

## Notes on the Turbellarian, *Procotyla fluviatilis* Leidy<sup>1</sup>

*John Maxwell Anderson*<sup>2</sup>

The observations here briefly presented should help solve a question in the literature, regarding the cocoon of *Procotyla fluviatilis*. The results also indicate that the breeding season of this species may be longer than heretofore reported. A few additional observations on the young worms, and on food habits of the adult are also included.

Last winter, I collected nine mature individuals of *Procotyla* under stones in shallow water at the East Providence (R.I.) reservoir. At that time (Feb. 11, 1950), the air-temperature was approximately -5° C, and the water-temperature near 10° C. The specimens were placed in a dimly-lighted room at about 20° C. One week later I noted that ten

<sup>1</sup>From the Arnold Biological Laboratory, Brown University.

<sup>2</sup>Assistant Professor of Biology, Brown University, Providence, R.I.