

Some First Records of Plant Species Collected in Texas

V. L. Cory

During twenty-five years' travel and plant-collecting in Texas, I have made a number of first collections in the state. Several of these, found in 1944, were briefly reported in *Madrono* (vol. 9, no. 2, April, 1947). It seems desirable to enlarge upon the brief statements of that paper, and to add notes on a few species found since 1944. The reports are listed in systematic order. Collections made prior to September, 1945, are deposited in the Tracy Herbarium of Texas A. & M. College; those made later are in the Herbarium of Southern Methodist University.

1. *Polygonum argyrocoleon* Steud.—On May 11, 1944, at Rankin, Upton County (on the west side of the street-crossing of the railway, just west of the depot, and along a freight siding), I came upon a colony of some forty plants of an annual *Polygonum* different from *P. ramosissimum* Michx., a species more or less common farther east. I left a few plants to perpetuate the species; 30 others were sent to Dr. J. F. Brenckle of Mellette, South Dakota, for inclusion in his distribution-sets of the genus. He identified the plant as *P. argyrocoleon* Steud., a species of central Asia, now naturalized in California and Arizona. My No. 44176 is the first record of this species in Texas. In 1944 I thought it unlikely that it was aggressive enough to maintain itself in this locality or to extend its distribution in the state. This belief was confirmed when later (April 24, 1947) I could not find any trace of this plant at the spot where I had collected it three years earlier.

2. *Xanthorhiza simplicissima* March.—This was sent to me by Mr. H. B. Parks, and came to him from a rural mail carrier, Mr. J. H. Griffin, Route 3, Jasper. Mr. Griffin states (*in litt.*) that he has been familiar with the plant for sixty years; that he knows it from along creeks in Jasper County, and suspects that it also grows along creeks in Newton County. His single specimen came from along Hog Creek, about ten miles northwest of Jasper, Oct. 2, 1946.

3. *Sanguinaria canadensis* L.—Dr. M. C. Leavenworth in 1845 recorded the occurrence of bloodroot at present Fort

Towson, Oklahoma, on a bluff near Gates Creek, eastern Choctaw County, about six miles north of the Red River, not very far from Texas. Dr. Rogers McVaugh collected the plant there early in 1947¹. In his subsequent travel in Texas, Mr. McVaugh could not find this species nor any evidence of its ever having been reported in Texas; hence he justifiably concluded that the Gates Creek locality in Oklahoma was the southwestern limit of distribution of *Sanguinaria canadensis*. Other botanists in addition to McVaugh sought it in Texas, but before my collection No. 52650, April 6, 1947, no success was reported. This collection was from higher ground near Cow Creek 2.6 miles south of Newton, Newton County. It had been rumored that the species occurred in this area, but on the preceding day (April 5) a group of six or seven botanists failed to find it. I must confess that my wife found the plant for me; but she wasn't looking for it at the time. Ample material in fruit was taken and specimens have been distributed to various herbaria. In Small's *Manual* this plant is reported from northern Florida to Arkansas, northward into Canada. Mr. Parks writes me that several years ago he saw a blood-root a few miles east of Nacogdoches, but took only a fragmentary specimen, and now has nothing to prove his discovery. The present report is thus the first definite one for the occurrence of *Sanguinaria canadensis* in Texas.

4. *Diploaxis muralis* DC.—On May 28, 1947, a strange crucifer was found at Hico, Hamilton County. It grew on a road leading east from the highway up a gently sloping hill and past the north end of the high school grounds at Hico. There were several plants, the larger ones 5.5 dm. tall and in both flower and fruit. The flowers were yellow and the pods were linear, compressed, about 2.5 cm. long; and the seeds were in two rows. This plant did not fit the description of any crucifer known to grow in Texas. Later my colleague, Dr. Lloyd H. Shinnars, determined my No. 53779 as *Diploaxis muralis* DC. A month earlier (April 27) a student of Dr. Shinnars made the first collection of this plant in Texas. This collection is *Bob F. Perkins No. 18*, 4 miles north of Midlothian, Ellis County, consisting of young plants in bloom. Five months later (September 27) Dr.

¹McVaugh, Rogers. "The Travels and Botanical Collections of Dr. Melines Conkling Leavenworth." *Field & Laboratory*, Vol. 15, No. 2, June, 1947.

Shinners also collected the plant at Perkins' locality, this time in fruit. Thus there are now three sheets of this species in our herbarium. The plant is adventive from Europe, and has been reported by Rydberg (*Flora of the Prairies and Plains*) from waste places in Nova Scotia, Pennsylvania, and South Dakota. The occurrence of the species in Texas, so far south of the previous reports of it in this country, suggests that other weeds long established in the northeast may in time turn up in Texas also.

5. *Erysimum repandum* L.—I encountered this crucifer in the dry, gravelly bed of Four Mile Draw (a tributary of the Pecos River, 16 airline miles northwest of Sheffield), in northeastern Pecos County, on April 6, 1944. The plants were present in some abundance, but only in bloom. On May 10 I took the plant in fruit. Examination of the ample material showed it to be the plant described by Wootton and Standley as *Cheirinia desertorum*. The authors of that species listed it only from the type locality. This site, a gravelly wash south of Hachita, Hidalgo County, New Mexico, is 110 airline miles from El Paso, Texas. A line projected east-southeast 270 miles from Hachita through El Paso would reach the site where we found it growing. The two stations are 380 miles apart; but the habitat in both places is similar. The plant is now known to be *Erysimum repandum* L. (ours may be a form thereof), a species previously introduced into the western United States from Europe.

For such an introduced species, its presence in this somewhat isolated locality, so far from its occurrence elsewhere, is remarkable. Dr. Omer E. Sperry, in "Plants of Brewster County, Texas," (*Sul Ross Teachers College Bulletin*, vol. 22, no. 1, March, 1941), cites "*Erysimum* sp., n. comb. (*Cheirinia desertorum* Woot. & Standl.)." I sent Dr. Sperry a detailed description of my material, and he replied that his plant was quite different. Thus it appears that my No. 44094 (in flower) and No. 44172 (in fruit) are the first definite reports of this species in Texas. On May 24, 1946, and again on April 27, 1947, I visited the original locality, but found no trace of the *Erysimum* in either year. Nevertheless in 1944 it was well established and fruited heavily, and it may appear again when conditions are favorable.

6. *Swainsona salsula* (Pall.) Taub.—On July 14, 1944, while making my first visit to the then new Texas Agricultural Experiment Substation No. 17 (five miles south-east of Ysleta, El Paso County), we were detained by road construction at a crossroad four miles southeast of Ysleta. As we stopped, I was astonished to see a dense, practically pure stand of an unfamiliar legume about three feet tall, growing in and along an irrigation ditch extending across the southwest end of a cultivated field of some acres. The plant was densely leafy and bore numerous papery, inflated pods about 1.5 cm. \times 2.5 cm. in size. I found only a few plants in bloom, as the season was late and the flowers were inconspicuous, and largely hidden by the foliage. The corolla was purplish or dark red and fully 1 cm. long. Since this plant did not fit any of the described species of *Astragalus*, material was sent to the Gray Herbarium. Our plant was identified as *Swainsona salsula* (Pall.) Taub., an Asiatic species introduced into the western states. The recorded station closest to Texas is near Holbrook, Arizona, some 60 miles west of the New Mexico line.

On October 19, 1944, I revisited the spot where the plant had been found three months earlier. I found then that it has a robust rootstock as much as a foot or more beneath the soil surface. My collection in July, No. 45017, appears to be the first record of the species in Texas. I visited the locality again on May 12, 1946, and found a new colony fully a quarter-mile northwest of the first one. This was on the opposite (southwestern) side of the highway, along a lateral irrigation ditch at an angle with the highway. It consisted of a narrow belt of pure-stand *Swainsona* in and on both sides of the ditch for a distance of 300 feet or more. As the two colonies were distinct, even though in the same neighborhood, a collection (No. 52538) was made at the new locality. The plant persists at the original site, but in less abundance than we found it two years earlier.

Ysleta is the site of the first settlement and mission in Texas. The valley of the Rio Grande here is several miles wide. Through irrigation, it has become a garden spot; without irrigation it would be somewhat of a desert. Since the colonies of *Swainsona* grow in a vicinity of historical interest, of easy access to visiting botanists and observant travelers, and since there is no previous report of *Swainsona*

there, it is likely that their appearance has been quite recent.

7. *Alhagi camelorum* Fisch.—Mr. Lee S. Stith, Agronomist at Texas Substation No. 17, told me of an infestation of camelthorn near Socorro, only a few miles away, and took me in his car to locate it. As it was evening by that time, we failed to find it. The next day (May 13, 1946) he went back, found the plants, and brought me some specimens. The day following I drove to Socorro by myself and had success. The locality is $1\frac{1}{4}$ miles west of Socorro, along a paved highway which runs between parallel irrigation ditches, with cotton fields beyond the ditches. The area of infestation was 715 feet long and was on both sides of the pavement, extending across both irrigation ditches into adjoining cotton fields for fifty feet or more. On the bank of the south ditch the plants were larger and just coming into bloom; so early in the noon hour collection No. 52990 was made. On returning from Ysleta an hour or so later, I found a laborer in the final stages of cutting down the plants on the banks of the south ditch; as none of the other plants were in bloom, no additional material was taken. In October, 1946, Mr. Stith sent me the largest herbarium specimen I have ever seen. The plant, as an individual specimen, perfectly pressed and dried, of maximum size, and as heavily fruited as any plant well could be, I divided into sixteen herbarium sheets. Mr. Stith also reported some progress toward suppressing this, the only infestation of camelthorn known in Texas.

Camelthorn is a spiny leguminous shrub, intricately branched, up to 1 m. tall and 0.75 m. broad; the leaves are small, reduced to a single leaflet; the flowers are small, numerous, in panicles or racemes, the corolla purplish-pink; the loments are of 1-3 segments which do not separate at maturity. Of one of the plants Mr. Stith brought me, he had excavated the root to a depth of three feet, where it had a diameter of 1 cm. In this locality it is known to have crossed under highway pavement and under irrigation ditches. In the desert regions of Asia the camelthorn is said to be of great value as a forage plant, a favorite browse of camels; but in this country it is a dangerous introduction, extremely difficult to eradicate from cultivated fields.

8. *Perizoma rhomboidea* (Hook.) Small.—In 1946 Mr. H. B. Parks asked me to identify material of two plants he

believed to be new to the flora of Texas. Both were. One was *Xanthorhiza simplicissima* Marsh., already discussed; the other proved to be *Perizoma rhomboidea* (Hook.) Small. The specimen is deposited in the Herbarium of Southern Methodist University. Two weeks later Mr. Parks brought me to the same yard in Bryan in which he had first seen the plant, so I could make a collection. In the meantime the owner had tried to eradicate it, hence only a little material, and that unsatisfactory, was available. Small's *Manual* states that this plant is native of South America, and that it is established in waste places near Jacksonville, Florida. This is the first report of its occurrence in Texas. It is a small-flowered solanaceous plant, introduced into the United States in cultivation as one of the "ice-plants," but it is difficult to eradicate and apparently not very desirable as an ornamental.

9. *Chrysopsis mariana* (L.) Nutt.—This native "golden aster" of the southeastern states, extending according to Small's *Manual* from Florida to Louisiana, Tennessee, and southern New York, also occurs in eastern Texas. It is represented by two collections. The first is No. 49950, from a pitcher plant bog 17 miles south of Woodville and 1/2 mile east of Highway 69, Tyler County, October 2, 1945; the second is No. 50929, from brushy growth of cleared woodland along Highway 62, 2 miles north of Gist, Hardin County, November 17, 1945.

10. *Heliopsis minor* (Hook.) C. Mohr—This species is said by Small to occur from Florida to Arkansas and Georgia. It was found in Texas at two localities by two botanists in the same year, 1945; 7 miles northeast of Clarksville, Red River County, L. H. Shinnery 7900, June 14, 1945; San Jacinto River bottoms east of Channelview, Harris Co., V. L. Cory 50743, November 12, 1945.

11. *Senecio vulgaris* L.—Found March 27, 1944, at the Winter Garden Experiment Station (1 mile northwest of Winter Haven, Dimmit County), in full bloom. It was identified as *Senecio vulgaris* from detailed descriptions sent to correspondents in California and Massachusetts. Careful study of the specimens confirmed these determinations. As I later found no Texas material of this species in the three leading herbaria of the state, and as my correspondents did not cite any material of it from Texas, it is probable that

my No. 43289 is the first recorded collection from Texas.

This common groundsel is an annual introduced from the Old World; it now occurs commonly in both the eastern and western United States, and now has invaded Texas. It differs from the other Texas species of *Senecio* in lacking ray flowers, which are showy in all our other species. Our perennial species of this genus are toxic to livestock, and hence of considerable economic importance; the annual species, on the other hand, are non-toxic, and on the range are regarded as forage plants. Since 1944, the horticulturist at the Winter Garden Experiment Station has sent me other specimens of *Senecio vulgaris*, with the note that it is becoming a pest in the spinach fields there.

12. *Centaurea Picris* Pall.—The Turkestan thistle, an Asiatic species, was first reported from Texas in *Madroño*, vol. 5, no. 6, April, 1940. This report was based on a specimen sent me for determination by Supt. J. J. Bayles of Texas Substation No. 9, near Balmorhea, Reeves County. The name, with available information, was supplied by Mr. Bayles. This plant has become established locally in California, and has been found in alfalfa fields in Montana, North Dakota, and several other states. It is perennial with subterranean rootstock which make it very difficult to eradicate. On September 29, 1939, I had my first opportunity to inspect the situation. I found that the original infestation was at the north end of an alfalfa field along an irrigation ditch two miles north of Balmorhea. The alfalfa had recently been plowed under. The thistle was abundant along the ditch and at the edge of the plowed ground. As the ditch ran also along the west side of the field I followed it around found that the plant had spread southward toward the farm buildings. Four-tenths of a mile south of the north line, an area about 200 by 400 feet in a small cotton field was heavily infested. Specimens in flower and fruit from along the ditch and from the cotton patch (Nos. 33508 and 33509) were shown to the owner. I tried to interest him in preventing the plant's spreading to his neighbors, and in eradicating the plant from his own field. Seven years later (May 5, 1946) I again visited this field. From the northeast corner I followed the ditch along the north and west sides for much of the length of the field ($\frac{1}{2}$ mile) without seeing any *Centaurea*. As I neared the buildings, and was beginning

to hope that this infestation had been conquered, I encountered three small patches of the thistle. Collection No. 52015 was made. The son of the owner (the latter was now well along in his eighties) was interviewed. He reported his success in controlling the weed, and stated that the three patches I had just seen were all that now remained. I shared his confidence that these would soon be wiped out, and added my heartiest commendation.

The second infestation of Turkestan thistle in Texas was encountered in El Paso County on May 12, 1946. A pure stand of possibly a hundred square feet lay across the highway and a short distance west of the discovery-site of *Swainsona*. Here collection No. 52939 was made. The attention of Agronomist Lee S. Stith of Substation No. 17 was called to this infestation, and he visited it with me. It was then that he told me of the presence of camelthorn near Socorro, already described.

The Elementary Dynamics of Terrestrial and Lunar Impacts¹

John D. Boon

Many articles have been written about the origin of lunar craters and also about the origin of certain peculiar structures found in the crust of the earth. Since these craters and structures have at times been referred to the impact of giant meteorites it is well to consider the dynamics of these impacts. No effort will be made to either prove or disprove the meteorite theory. The reader must keep in mind the following laws, principles, and processes:

DYNAMIC FACTORS

- I. Momentum is equal to mass multiplied by velocity. It can neither be created nor destroyed.
- II. Vector quantities have both a numerical value and a directional value. Vectors may take either the positive or the negative sign.
- III. Momentum is a vector quantity. A body taken as a whole may have no momentum, and yet its parts may have relatively large amounts of momentum. This is illustrated by a hot body that is at rest. Heat is random molecular motion, which means that

¹This paper was read at a meeting of the Texas Academy of Science in Austin, December 12, 1947.