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CATALOG OF FOSSILS FROM THE HUNTON GROUP, OKLAHOMA

By

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Norman
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The Hunton group, which crops out in the Arbuckle region of south central Oklahoma, carries a large fauna of well preserved Silurian and Devonian fossils. These strata were first named by J. A. Taff (1902, 1904) who stated that they included representatives of the Clinton (Ohio), Niagaran and the Helderberg. In 1911 C. A. Reeds summarized the results of an extensive stratigraphic and faunal study on the Hunton and proposed the following subdivisions:

Bois d'Arc limestone	
Haragan shale	Helderbergian
Henryhouse shale	Niagaran
Chimneyhill limestone	
Pink-crinoidal member	Alexandrian
Glaucinitic member	
Oolitic member	

Some years later Reeds (1926) recognized another formation, the Frisco limestone (assigned to the Oriskanian), at the top of the Hunton, but other than this the stratigraphic nomenclature has remained essentially unchanged.¹

For many years the Hunton group has been noted for its excellent fossils and even before Taff named the group some collections had been made and species described. The first paper pertaining to the paleontology of these rocks was published by G. H. Girty in 1899. Following Girty a number of descriptive papers have been published, but with a few exceptions none has systematically treated the fossils, either by stratigraphic or by biologic categories. Altogether a good many species have been described, with some of these descriptions appearing in short articles describing only one or two forms. Since the literature covering this fauna is scattered through a number of papers published in several different journals it seems desirable to bring all the pertinent data together in one list.

In the catalog which follows, the writer has tried to summarize the important information on those Hunton species which have been described and/or illustrated. (Specific names appearing only in

¹ In 1936 R. A. Maxwell published a brief summary of his doctor's dissertation in which he proposed some stratigraphic changes. Later investigators have not followed his suggested revisions and therefore it is not considered here.

faunal lists are not included; see discussion below). The author and date of the original description are given for all species; a bibliographic reference is also included, however, this applies only to the publication describing specimens from the Hunton of Oklahoma. The name is preceded by an asterisk if the original description was based upon specimens from Oklahoma; species whose types are from other areas are unmarked, although for many the type locality is noted (in brackets). The locality and stratigraphic data given by the author are quoted in full, a method which has the disadvantage of making the catalog long, but with the advantage of permitting the reader to see at a glance the information available. A specific name is preceded by a question mark if considerable uncertainty exists concerning its stratigraphic position, but it should be emphasized that only those which are obviously questionable are so marked. The repository and catalog number are listed for all type specimens where such data are available. The writer has tried to obtain complete information for these types, and in all cases it has been possible to determine at least the location of such specimens. The institutions storing these type specimens have been abbreviated as follows:

OU—Museum of Invertebrate Paleontology, University of Oklahoma.

USNM—United States National Museum.

Yale—Peabody Museum of Natural History, Yale University.

UC—Walker Museum, University of Chicago.

AMNH—American Museum of Natural History.

The catalog is organized as follows: (1) species are first listed by formation, e. g. Chimneyhill, Henryhouse, Haragan (none described from strata younger than Haragan); (2) under each formation the species are further subdivided into their major biologic groups, e. g. Foraminifera, Brachiopoda; (3) under the biologic heading they are listed alphabetically, first by genus and then by species.

A summary of the information in this catalog shows a total of 229 species described by the following authors:

Amsden, T. W.

Cloud, P. E.

Coryell, H. N. and Cuskley, V. A.

Decker, C. E.

Delo, D. M.

Girty, G. H.

Ireland, H. A.

Moreman, W. L.

Richardson, E. S.

Roth, R.

Ruedemann, R.

Schuchert, C.

Schuchert, C., and Cooper, G. A.

Springer, F.

Strimple, H. L.

Williams, A.

Of the 229 species listed², 52 are from the Chimneyhill formation, 72 from the Henryhouse formation, and 105 from the Haragan formation (none from the Bois d'Arc and Frisco formations). These species are biologically distributed as follows:

Chimneyhill formation

Foraminifera—52 species. (The only stratigraphic information given for any of these species is the formation name: in no case is the member indicated).

Henryhouse formation

Foraminifera—2 species (One Chimneyhill species is also listed from the Henryhouse).

Graptolithina—16 species

Brachiopoda—41 species

Trilobita—1 species (may be a Haragan species).

Ostracoda— ? (None has been described, but some of the species assigned to the Haragan are probably from the Henryhouse).

Crustacea—3 species

Crinoidea—9 species (One or two of the species assigned to the Haragan may belong here).

Haragan formation

Foraminifera—7 species (One of these is also recorded from the Henryhouse).

Porifera—1 species

Anthozoa—3 species

Graptolithina—4 species

Brachiopoda—22 species

Trilobita—10 species (The species assigned to the Henryhouse may belong here).

Ostracoda—48 species (Some of these are probably Henryhouse).

Gastropoda—3 species

Pelecypoda—2 species

Cephalopoda—1 species

Crinoidea—4 species (One or two of these may be Henryhouse species).

Species recorded only by name are not included in the catalog. Such faunal lists have some value, but are here excluded because in most instances it is impossible to check the identifications satisfactorily. Moreover, it is commonly difficult to determine whether an identification was made by the author citing the species or was merely copied from an earlier publication. A number of these faunal lists have been published, dating back to Taff (1904, pp. 29-31), but the most comprehensive faunal summary for the entire Hunton was that of Reeds in 1911 (pp. 261-267). He presented lists of fossils for each of his stratigraphic subdivisions and gave a table showing the range of those species which he believed to be present in more than one member or formation. In 1926 Reeds (pp. 10, 13; see

² 160 of the species recorded in the catalog are based upon types from the Hunton group of Oklahoma. The remaining 69 are species based upon specimens from other areas.

also Schuchert 1922, p. 667) made a slight revision of this earlier work, removing some of the species from the Bois d'Arc formation and placing them in his newly established Frisco formation, which he stated was of Oriskany age. His faunal lists have been repeated, entirely or in part, in many publications of the Oklahoma Geological Survey and elsewhere. There seems to be little point in citing references to these different papers since the pertinent data can be obtained by an examination of the original information supplied by Reeds.

Since Reeds made his study some faunal lists have been published covering biologic groups which he did not consider. A large fauna of Foraminifera has been described and illustrated by W. L. Moreman (1930, 1933) and by H. A. Ireland (1939), the latter including a check list of 55 species of Hunton Foraminifera (the present catalog records 60 species from the publications of these two authors). In 1935 Croneis, Dunn, and Hunter gave a list of Chimneyhill species based on the work of Moreman, and discussed the correlation potential of these arenaceous types. Some years later Dunn (1942) published a paper describing a large number of species of Foraminifera from the Silurian of Missouri and Illinois and included a list of those Chimneyhill species which are present in that area. He proposed a tentative correlation table for Silurian strata in the Mississippi basin on the basis of these Foraminifera.

The first ostracods to be recorded from the Hunton group were the Haragan species described by Roth in 1929. This was followed by Coryell and Cuskley's paper (1934) on some additional ostracods from the same strata (ostracods from both papers are recorded in the present catalog). In this same year Bassler and Kellett's *Bibliographic Index of Paleozoic Ostracoda* (1934, p. 75) appeared and it included a list of Haragan ostracods based upon the earlier work of Roth.

C. E. Decker described and illustrated 20 species of graptolites from the Henryhouse and Haragan formations in a series of papers published during the years 1935 to 1955 (all recorded in the present catalog). These Oklahoma graptolite faunas were listed and briefly discussed by Ruedemann in 1947 (pp. 97-98; also included in the systematic descriptions of this memoir).

ILLUSTRATED AND/OR DESCRIBED SPECIES
FROM THE HUNTON GROUP

- * Indicates species based upon type specimen(s) from the Hunton group, Oklahoma.
- # Indicates species that are genotypes.
- ? Indicates much uncertainty as to stratigraphic and/or geographic position.

CHIMNEYHILL FORMATION
PROTOZOA
FORAMINIFERA

- * AMMODISCUS ABBREVIATUS Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla.; Lick Creek, Okla.; and well groups F, G, and H". Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 200, figs. B-32, 33.
- AMMODISCUS EXSERTUS Cushman 1910. Figured and described specimens: "*Chimneyhill limestone*, near the Burrows-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Type specimens at USNM.
Moreman, W. L., 1930, pp. 58-59, pl. 7, figs. 4, 8.
- * AMMODISCUS EXSERTUS MINUTUS Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone* at depth of 5,740 feet in Sinclair-Kennedy well No. 1, sec. 4, T. 13 N., R. 1 W., Oklahoma". Figured specimens, UC [holotype not indicated].
Ireland, H. A. 1939, p. 200, figs. B-20, 21.
- * AMMODISCUS? FURCA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Type specimens at USNM [holotype not indicated].
Moreman, W. L., 1930, p. 59, pl. 7, figs. 9, 10.
- AMMODISCUS INCERTUS (d'Orbigny) 1839. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Figured specimens, USNM.
Moreman, W. L., 1930, p. 58, pl. 7, fig. 7.

- * BATHYSIPHON CURVUS Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Type specimens, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 45, pl. 5, figs. 9, 10.
- * BATHYSIPHON CURVUS GRACILIS Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, figured specimens from depth of 3405 feet in Homaokla-Caldwell No. 1, sec. 16, T. 5 N., R. 3 E., Oklahoma". Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 192, figs. A-13, 14.
- * BATHYSIPHON DEMINUTIONIS Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Type specimens, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 46, pl. 5, fig. 6.
- * # BIFURCAMMINA BIFURCA Ireland 1930. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, pp. 201-202, figs. B-38, 39. [The genus *Bifurcammina* proposed in this paper; *B. bifurca* designated the genotype.]
- * BIFURCAMMINA CONJUNCTA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, pp. 201-202, fig. B-36.
- * BIFURCAMMINA PARALLELA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic], *limestone*, Dougherty, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 202, fig. B-37.
- * COLONAMMINA CONEA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Type specimens, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 56, pl. 7, figs. 1, 2.

- * # COLONAMMINA VERRUCA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Type specimens USNM [holotype not indicated].
Moreman, W. L., 1930, p. 56, pl. 7, fig. 3. [The genus *Colonammina* proposed in this paper; *C. verruca* designated the genotype].
- * CRITHIONINA RARA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Type specimens USNM; [holotype not indicated].
Moreman, W. L., 1930, p. 45, pl. 5, figs. 7, 11.
- * GLOMOSPIRA SILURIANA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla.; also in well groups F and H." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 201, figs. B-27, 28.
- * GLOMOSPIRA WESTGATEI Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 200, figs. B-25, 26.
- * HYPERAMMINA HARRISI Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 200, fig. A-26.
- * HYPERAMMINA HASTULA Moreman 1933. Figured and described specimens: "*Chimney Hill* [sic] *formation*, near Burrow-Bromide road, north of Bromide, Oklahoma." Type specimens, USNM; [locality given for holotype but the author does not state that it is the specimen illustrated].
Moreman, W. L. 1933, pp. 396-397, pl. 47, fig. 2.
- * LAGENAMMINA CUCURBITA Moreman 1933. Figured and described specimens: "*Chimney Hill* [sic] *formation*, on east side of U. S. Highway 77, 2.8 miles north of Springer, Okla." Type specimens, USNM; [locality given for holotype but the author does not state that it is the specimen illustrated].
Moreman, W. L., 1933, p. 395, pl. 47, fig. 5.

- * *LAGENAMMINA DISTORTA* Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla., and on Lick Creek, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 196, figs. A-20, 21.
- * *LAGENAMMINA SPHAERICA* Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Type specimens, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 51, pl. 5, fig. 15.
- * *LAGENAMMINA STILLA* Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Type specimens, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 51, pl. 6, fig. 9.
- * *LITUOTUBA EXSERTA* Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Type specimens, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 59, pl. 7, figs. 5, 6.
- * *LITUOTUBA INFLATA* Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone* at depth of 4072 feet in Westheimer and Daube Fried No. 3, sec. 24, T. 7 N., R. 4 E., Oklahoma; also at Dougherty and Franks." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 201, figs. B-34, 35.
- * *PSAMMOSPHERA ANGULARIS* Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone* on Lick Creek." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 192, 194, figs. A-8, 9.
- * *PSAMMOSPHERA CAVA* Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Type specimens, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 48, pl. 6, fig. 12.

? SACAMMINA? [sic] sp. Figured and described specimens: "Silurian, depth 4072 feet in Westheimer and Daube Fried well No. 3, sec. 24, T. 7 N., R. 4 E., Oklahoma." Figured specimens, UC [No other stratigraphic information given; presumably from either the *Chimneyhill* or *Henryhouse* formations. The generic spelling is a typographical error; in the plate legend and elsewhere in the text it is given as *Saccammina*].

Ireland, H. A., 1939, p. 196, figs. A-18, 19.

* SACCAMMINA BIOSCULATA Moreman 1933. Figured and described specimens: "*Chimney Hill* [sic] formation, on east side of U. S. Highway 77, 2.8 miles north of Springer, Oklahoma." Type specimens, USNM [locality given for holotype, but the author does not state that it is the specimen illustrated]. Moreman, W. L., 1933, p. 395, pl. 47, fig. 6.

* SACCAMMINA MOREMANI Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] limestone, on Tulip Creek, Okla." Figured specimens, UC [holotype not indicated]. Ireland, H. A., 1939, pl. 196, fig. A-12.

* SOROSPHAERA TRICELLA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Type specimens, USNM [holotype not indicated]. Moreman, W. L., 1930, p. 49, pl. 5, figs. 12, 14.

* # STEGNAMMINA CYLINDRICA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Type specimens, USNM [holotype not indicated].

Moreman, W. L., 1930, p. 49, pl. 7, fig. 12 [The genus *Stegnammina* proposed in this paper; *S. cylindrica* designated the genotype].

* STEGNAMMINA HEBESTA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Type specimens, USNM [holotype not indicated].

Moreman, W. L., 1930, p. 50, pl. 7, fig. 13.

- * STEGNAMMINA TRIANGULARIS Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Types, USNM [holotype not indicated].

Moreman, W. L., 1930, p. 49, pl. 7, fig. 11.

- * THOLOSINA CONVEXA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Types, USNM [holotype not indicated].

Moreman, W. L., 1930, p. 55, pl. 5, fig. 17.

- * THOLOSINA SEDENTATA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone* at depth of 3,405 feet in Homaokla-Caldwell No. 1, sec. 26, T. 5 N., R. 3 E., Oklahoma." Figured specimens, UC [holotype not indicated].

Ireland, H.A., 1939, p. 198, 200, figs. B-16, 17.

- * THURAMMINA ARCUATA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide Oklahoma, T. 1 S., R. 8 E." Types, USNM [holotype not indicated].

Moreman, W. L., 1930, p. 54, pl. 6, figs. 2, 3.

- * THURAMMINA DELICATA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla. (fig. A-28); *Chimney Hill* [sic] *limestone* at depth of 4,100 feet in Phillips-Weldfeldt well No. 1, sec. 26, T. 8 N., R. 4 E. (fig. A-29); also found on Tulip Creek in the Arbuckle Mountains." Figured specimens, UC [holotype not indicated].

Ireland, H. A., 1939, p. 196, figs. A-28, 29.

- * THURAMMINA ELLIPTICA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Types, USNM [holotype not indicated].

Moreman, W. L., 1930, p. 54, pl. 5, figs. 2, 4.

- * THURAMMINA GLOBOSA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone* on Lick Creek and Tulip Creek, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 196-197, figs. B-5, 6.
- * THURAMMINA IRREGULARIS Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Types, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 52, pl. 6, figs. 1, 5.
- THURAMMINA PAPILLATA Brady 1879. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Figured specimen, USNM.
Moreman, W. L., 1930, p. 51, pl. 5, fig. 13.
- * THURAMMINA PAPILLATA MONTICULIFERA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla., and along Tulip Creek, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 197, figs. A-35.
- * THURAMMINA PHASELA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Types, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 54, pl. 5, figs. 3, 5.
- * THURAMMINA POLYGONA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone* on Tulip Creek, Okla." Figured specimens, UC [holotype not indicated].
Ireland H. A., 1939, p. 197, figs. B-1, 2.
- * THURAMMINA SPHAERICA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone* from Lick Creek and Tulip Creek, Okla., and Dougherty, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 197, figs. A-33, 34.

- * THURAMMINA SUBPAPILLATA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla., and on Lick Creek, Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 197, fig. A-36.
- * THURAMMINA SUBSPHAERICA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Types, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 52, pl. 5, fig. 16.
- * THURAMMINA TRANSVERSALIS Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, Dougherty, Okla. Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 197, fig. B-3.
- * THURAMMINA TRIANGULARIS Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near the Burrow-Bromide road, north of Bromide, Oklahoma, T. 1 S., R. 8 E." Types, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 54, pl. 6, figs. 6, 10.
- * THURAMMINA TUBULATA Moreman 1930. Figured and described specimens: "*Chimneyhill limestone*, near U. S. Highway 77, between Davis and Ardmore, Oklahoma, T. 2 S., R. 1 E., Carter Co., Okla." Types, USNM [holotype not indicated].
Moreman, W. L., 1930, p. 52, pl. 5, fig. 8.
- * WEBBINELLA CORONATA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone*, near Franks, Oklahoma." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 198, fig. B-11.
- * WEBBINELLA GIBBOSA Ireland 1939. Figured and described specimens: "*Chimney Hill* [sic] *limestone* at depth of 3,405 feet in Homaokla-Caldwell No. 1, sec. 16, T. 5 N., R. 3 E., Okla." Figured specimens, UC [holotype not indicated].
Ireland, H. A., 1939, p. 198, figs. B-23, 24.

HENRYHOUSE FORMATION

PROTOZOA FORAMINIFERA

- * BATHYSIPHON RUGOSUS Ireland 1939. Figured and described specimens: "*Henryhouse shale* at depth of 5,730 feet in Sinclair-Kennedy well No. 1, sec. 4, T. 13 N., R. 1 W. (fig. A-2); *Henryhouse shale* at Dougherty, Okla. (fig. A-3); also found in *Haragan limestone* at Dougherty, Oklahoma, and from well groups F, G, and H." Figured specimens, UC [The holotype is not indicated, but both of the figured specimens are from the *Henryhouse* and presumably one of these would be selected].

Ireland, H. A., 1939, p. 192, figs. A-2, 3.

- * PSAMMOSPHERA GRACILIS Ireland 1939. Figured and described specimens: "*Henryhouse shale* at Franks, Okla.; *St. Clair limestone* at Cookson, Okla.; also from well group H." Figured specimen, UC [The holotype is not indicated, nor does the author state whether the figured specimen is from the *Henryhouse* or from the *St. Clair*].

Ireland, H. A., 1939, p. 194, figs. A-10, 11.

SACAMMINA [sic] sp. [Ireland 1939]. See under CHIMNEY-HILL FORMATION, Foraminifera.

GRAPTOLITHINA

- * ASCOGRAPTUS sp. Figured and described specimens: "Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma," Figured specimens, OU, Cat. Nos. A2431, A2432 [new Cat. No. 537].
- * CYRTOGRAPTUS SPARSUS Decker 1935. Figured and described specimens: "Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma." Figured specimens (syntypes), OU, Cat. Nos. A2466-A2468 [holotype not indicated; New Cat. No. 533].

Decker, C. E., 1935A, p. 445, figs. 15-17; Ruedemann, R., 1947, p. 495, pl. 88, figs. 15-20.

MASTIGOGRAPTUS sp. Figured and described specimens: "Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma." Figured specimens, OU, Cat. Nos. A2433-A2435 [new Cat. No. 534].

Decker, C. E., 1935A, p. 437, figs. 5-7.

* **MASTIGOGRAPTUS BEACHI** Decker 1935. Figured and described specimens: "Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma." Holotype, OU, Cat. No. A2436 [new Cat. No. 531].

Decker, C. E., 1935A, p. 437, figs. 8-11; Ruedemann, R., 1947, p. 262, pl. 37, figs. 22-25 [as *Mastigograptus* (?) *beachi* Decker].

MONOGRAPTUS BOHEMICUS (Barrande) 1850. Figured and described specimens: "(1) Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma. (2) Shale, 17 feet above the base of the *Henryhouse shale*, on Honey Creek, Murray County, Oklahoma. (3) Shale, 5 feet above the base of the *Henryhouse shale*, on Falls Creek, sec. 33, T. 1 S., R. 2 E., Murray County, Oklahoma." Figured specimens, OU, Cat. Nos. A2438-A2441 [new Cat. Nos. 447, 530, 543, 623].

Decker, C. E., 1935A, pp. 438, 440, figs. 20-24; Ruedemann, R., 1947, p. 474, pl. 84, figs. 2-5. [On pl. 84, fig. 8, Ruedemann transfers to *M. falciformis* Shrock (with question) the specimen which Decker (fig. 24) identified as *M. bohemicus*].

* **MONOGRAPTUS CRINITUS EXILIS** Decker 1935. Figured and described specimens: "(1) Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma. (2) Shale, 17 feet above the base of the *Henryhouse shale*, on Honey Creek, Murray County, Oklahoma. (3) Shale, 5 feet above the base of the *Henryhouse*

shale, on Falls Creek, sec. 33, T. 1 S., R. 2 E., Murray County, Oklahoma." Figured specimens (syntypes), OU, Cat. Nos. A2443, A2444 [holotype not indicated; new Cat. No. 535].

Decker, C. E., 1935A, p. 440, figs. 13, 14; Ruedemann, R., 1947, p. 478, pl. 88, figs. 25-29 [fig. 29 illustrates a specimen from the Blaylock sandstone of Arkansas].

MONOGRAPTUS DUBIUS (Suess) 1851. Figured and described specimens: "Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma." Figured specimens, OU, Cat. Nos. A2445, A2446 [new Cat. No. 532].

Decker, C. E., 1935A, pp. 440, 442, figs. 18, 19; Ruedemann, R., 1947, p. 479, pl. 84, figs. 19-21.

MONOGRAPTUS FALCIFORMIS ? Shrock 1928. Figured and described specimens: "Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma." Figured specimen, OU.

Decker, C. E., 1935A, p. 438, fig. 24 [as *Monograptus bohemicus*]; Ruedemann, R., 1947, p. 480, pl. 84, fig. 8 [Ruedemann here transfers to *M. falciformis* Shrock (with question) the specimen which Decker (fig. 24) identified as *M. bohemicus*].

MONOGRAPTUS NILSSONI (Barrande) 1850. Figured and described specimens: "(1) Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma. (2) Shale, 17 feet above the base of the *Henryhouse shale*, on Honey Creek, Murray County, Oklahoma. (3) Shale, 5 feet above the base of the *Henryhouse shale*, Falls Creek, sec. 33, T. 1 S., R. 2 E., Murray County, Oklahoma." Figured specimens, OU, Cat. Nos. A2447, A2448 [new Cat. No. 542].

Decker, C. E., 1935A, p. 442, figs. 26, 27; Ruedemann, R., 1947, p. 482, pl. 84, figs. 9-12.

* **MONOGRAPTUS (LINOGRAPTUS) PHILLIPSI** Decker 1935. Figured and described specimens: "Gray calcareous shale, 8

feet above the base of the *Henryhouse shale*, on the south side Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma." Holotype, OU, Cat. No. A2457 [new Cat. No. 538]; paratypes, Cat. Nos. A2458-A2463 [new Cat. No. 539].

Decker, C. E., 1935A, p. 444-445, figs. 35-41; Ruedemann, R., 1947, p. 491, pl. 90, figs. 1-6 [as *Linograptus phillipsi* (Decker)].

- * MONOGRAPTUS (LINOGRAPTUS) PHILLIPSI MULTIRAMOSUS Decker 1935. Figured and described specimens: "Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma; *Henryhouse shale* (Silurian), NE corner sec. 1, T. 3 S., R. 2 E., Carter County, Oklahoma." Figured specimens (syntypes and hypotypes), OU, Cat. Nos. A2464-A2465, A2473-A2478 [holotype not indicated; new Cat. Nos. 563-566].

Decker, C. E., 1935A, p. 445, figs. 42, 43; Decker, C. E., 1939, pp. 49-51, figs. 1-6; Ruedemann, R., 1947, p. 492, pl. 90, figs. 7-9 [as *Linograptus phillipsi* (Decker) *multiramosus* (Decker)].

- MONOGRAPTUS SCANICUS Tullberg 1882. Figured and described specimens: "(1) Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma; (2) Shale, 17 feet above the base of the *Henryhouse shale*, on Honey Creek, Murray County, Oklahoma." Figured specimens, OU, Cat. Nos. A2450-A2452.

Decker, C. E., 1935A, p. 443, figs. 28-30; Ruedemann, R., 1947, p. 487, pl. 86, figs. 22-24.

- MONOGRAPTUS TUMESCENS Wood 1900. Figured and described specimens: "Shale, 17 feet above the base of the *Henryhouse shale*, on Honey Creek, Murray County, Oklahoma. Figured specimen, OU, Cat. No. A2453 [new Cat. No. 536].

Decker, C. E., 1935A, p. 443, fig. 31; Ruedemann, R., 1947, p. 488, pl. 84, fig. 34.

MONOGRAPTUS cf. M. ULTIMUS Perner 1899. Figured and described specimens: "(1) Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma; (2) Shale, 17 feet above the base of the *Henryhouse shale*, on Honey Creek, Murray County, Oklahoma." Figured specimen, OU, Cat. No. A2449 [new Cat. No. 540].

Decker, C. E., 1935A, p. 443, fig. 25; Ruedemann, R., 1947, p. 488, pl. 84, fig. 35.

MONOGRAPTUS VULGARIS Wood 1900. Figured and described specimens: "Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma; (2) Shale, 17 feet above the base of the *Henryhouse shale*, on Honey Creek, Murray County, Oklahoma; (3) Shale, 5 feet above the base of the *Henryhouse shale*, on Falls Creek, sec. 33, T. 1 S., R. 2 E., Murray County, Oklahoma." Figured specimens, OU, Cat. Nos. A2454-A2456 [from above localities (1) and (2); new Cat. No. 528].

Decker, C. E., 1935A, pp. 443-444, figs. 32-34; Ruedemann, R., 1947, p. 490, pl. 84, figs. 22-24.

* THALLOGRAPTUS PHYLLOIDES Decker 1935. Figured and described specimens: "Gray calcareous shale, 8 feet above the base of the *Henryhouse shale*, on the south side of Cool Creek, in the southwest corner of sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma." Holotype, OU, Cat. No. A2437 [new Cat. No. 541].

Decker, C. E., 1935A, pp. 437-438, fig. 12; Ruedemann, R., 1947, p. 235, pl. 28, figs. 6, 7.

BRACHIOPODA

* ANASTROPHIA DELICATA Amsden 1951. Figured and described specimens: "1. *Henryhouse formation*, about center of sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, 8 miles south of Ada, Oklahoma," [Only localities for figured

specimens given. This species is common in the *Henryhouse* and has been found at many other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115289; [locality 1, above]; figured specimen, No. 115290 [locality 2, above].

Amsden, T. W., 1951, p. 79, pl. 16, figs. 24-28. [Reeds, 1911, recorded this species as *Anastrophia* cf. *A. internascens*].

ATRYPA ARCTOSTRIATA Foerste 1903. Figured and described specimens: "16. *Henryhouse formation* (upper coral beds), N $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 20. *Henryhouse formation* (upper), road cut, NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 32, T. 3 N., R. 6 E., Pontotoc County, Okla.; 26. *Henryhouse formation* (marly beds), NW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., Pontotoc County, Okla." Figured specimen, USNM, Cat. No. 115314 [locality 16, above].

Amsden, T. W., 1951, p. 87-88, pl. 17, fig. 29. [Foerste's specimens from the *Brownsport formation*, western Tenn.].

ATRYPA TENNESSEENSIS Amsden 1949. Figured and described specimens: "2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, 8 miles south of Ada, Okla.; 7. *Henryhouse formation*, 114 to 159.8 feet above the base of measured section (base of *Henryhouse formation* not exposed). Same geographic location as Collection 2.; 16. *Henryhouse formation*, (upper), SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., Pontotoc County, Okla.; 18. *Henryhouse formation*, Cedar Hill bluffs on north bank of South Fork of Jackfork Creek, S $\frac{1}{2}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Oklahoma." [Only localities for figured specimens given. This is a common species in the *Henryhouse* and has been found at many other localities; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115315-115320.

Amsden, T. W., 1951, p. 87, pl. 17, figs. 30-36. [The holotype of this species is from the *Brownsport formation* of western Tenn. Reeds, 1911, recorded this species as *A. reticularis* and cf. *A. nodostriata*].

* **BRACHYPRION ATTENUATA** Amsden 1951. Figured and described specimens: "2. *Henryhouse formation*, collection

from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, 8 miles south of Ada, Okla." [Only the locality of the figured specimens is given. This species has been found at a number of other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115376; figured specimens, Cat. Nos. 115375, 115377, 115378.

Amsden, T. W., 1951, p. 82, pl. 20, figs. 13-20.

- * CAMAROTOECHIA ALTISULCATA Amsden 1951. Figured and described specimens: "1. *Henryhouse formation*, about center of sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 3. *Henryhouse formation*, east side of road in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 17. *Henryhouse formation* (lower), south side of road, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only localities for figured specimens given. This species has been found at 6 other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115322 [locality 3, above]; figured specimens, Cat. Nos. 115323-115324.

Amsden, T. W., 1951, p. 86, pl. 18, figs. 6-13.

- CAMAROTOECHIA CARMELENSIS Amsden 1951. [=CAMAROTOECHIA ACUTIPLICATA Amsden 1949, not Hall 1859]. Figured and described specimens: "17. *Henryhouse formation* (lower), south side of road, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only localities for described specimens given; this species has been found at 8 other localities; see Amsden 1951]. Figured specimen, USNM, Cat. No. 115325.

Amsden, T. W., 1951, pp. 85-86, pl. 18, figs. 14-18. [This species first described by Amsden (Peabody Mus., Yale Univ. Bull. 5, 1949), as *C. acutiplicata* and was based upon specimens from the *Brownsport formation* of western Tenn.; in 1951 this homonym was replaced by *C. carmelensis*].

- * CAMAROTOECHIA FILISTRIATA Amsden 1951. Figured and described specimens: "3. *Henryhouse formation*, east side of road in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 13. *Henryhouse formation*, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 2 N., R. 6 E., Pontotoc County,

Oklahoma." [Only localities for figured specimens given. This species has been found at 10 other localities; see Amsden, 1951]. Holotype, USNM, Cat. No. 115365 [locality 13, above]; figured specimens, Cat. Nos. 115366-115367.

Amsden, T. W., 1951, p. 87, pl. 19, figs. 39-44. [This may be the species which Reeds identified as *C. whitei*].

- * CAMAROTOECHIA OKLAHOMENSIS Amsden 1951. Figured and described specimens: "*Henryhouse formation*, east side of road in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the locality of the figured specimen (holotype) is given. This species has been found at 2 other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115321.

Amsden, T. W., 1951, pp. 86-87, pl. 18, figs. 1-5.

- COELOSPIRA SAFFORDI (Foerste) 1903. Figured and described specimens: "2. *Henryhouse formation*, collected from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center of NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County; 14. *Henryhouse formation*, 40-60 feet above the base of the *Henryhouse*, Rock Crossing of Hickory Creek in Criner Hills, 2,500 feet west, 2,000 feet north of SE cor. sec. 35, T. 5 S., R. 1 E., Carter County, Oklahoma; 29. *Henryhouse formation*, 190 feet below the *Bois d'Arc limestone*, Chimneyhill Creek, center E $\frac{1}{2}$ SE $\frac{1}{4}$ sec. 5, and NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities of the figured specimens are given. This is a rather common species and has been found at 12 other localities; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115358-115359.

Amsden, T. W., 1951, p. 90, pl. 19, figs. 25-31. [Foerste's specimens from the *Brownsport formation* of western Tenn. Reeds, 1911, recorded this species as *Anoplothea saffordi*].

- * DELTHYRIS KOZLOWSKII Amsden 1951. Figured and described specimens: "2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County; 16. *Henryhouse formation* (upper coral beds), N $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc

County, Okla.” [Only the localities for the figured specimens given. This species has been found at a number of other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115331; locality 16, above]; figured specimens, Cat. Nos. 115332-115334.

Amsden, T. W., 1951, pp. 91-92, pl. 18, figs. 32-38 [This is probably the species Reeds, 1911, recorded as *D. perlamellosus* and *Spirifer saffordi*].

- * DICAELOSIA [sic] OKLAHOMENSIS Amsden 1951. [DICOELOSIA=BILOBITES of authors]. Figured and described specimens: *Henryhouse formation*, 40-60 feet above the base of the *Henryhouse*, Rock Crossing of Hickory Creek in Criner Hills 2,500 feet west, 2,000 feet north of SE cor. sec. 35, T. 5 S., R. 1 E., Carter County, Okla.” [Only the locality of the figured specimens given. This is a common species in the *Henryhouse* and has been found at a number of other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115251; figured specimens, Cat. Nos. 115267-115269.

Amsden, T. W., 1951, p. 77, pl. 15, figs. 1-7. [Two spellings have been given for this generic name: *Dicaelosia* and *Dicoelosia*; both spellings appeared in the original description by King in 1850. Sinclair (Jour. Paleont. vol. 25, p. 230, 1951) presents evidence to show that *Dicaelosia* was a typographical error for *Dicoelosia*. This may be the species Reeds, 1911, recorded as *Bilobites saffordi*].

- DICTYONELLA GIBBOSA (Hall) 1867. Figured and described specimens: “2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 3. *Henryhouse formation*, east side of road in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec., 4, T. 2 N., R. 6 E., Pontotoc County, Okla.” [Only the localities of the figured specimens given. This species has been found at 10 other localities; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115372-115374.

Amsden, T. W., 1951, p. 78, pl. 20, figs. 7-12. [Hall's specimens from the *Brownsport formation* of western Tenn. Reeds, 1911, recorded this species under this name].

FARDENIA sp. Figured and described specimen: "*Henryhouse formation*, NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla." Figured specimen, USNM, Cat. No. 115313.

Amsden, T. W., 1951, p. 85, pl. 17, fig. 28.

- * FARDENIA ATTENUATA Amsden 1951. Figured and described specimens: "10. *Henryhouse formation*, NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Oklahoma; 13. *Henryhouse formation*, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities of the figured specimens given. This species has been found at 4 other localities; see Amsden 1951.] Holotype, USNM, Cat. No. 115305 [locality 10, above]; figured specimens, Cat. Nos. 115304, 115306-115308.

Amsden, T. W., 1951, pp. 84-85, pl. 17, figs. 9-14.

- * FARDENIA REEDSI Amsden 1951. Figured and described specimens: "9. *Henryhouse formation*, 94 to 114 feet above the base of the measured section (base not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 10. *Henryhouse formation*, NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities of the figured specimens given. This is a common species in the *Henryhouse* and has been found at a number of other localities; see Amsden 1951]. Holotype, USNM, Cat. No., 115302 [locality 10, above]; figured specimens, Nos. 115299-115301, 115303.

Amsden, T. W., 1951, p. 84, pl. 17, figs. 1-8. [This is probably the species Reeds, 1911, recorded as *Schuchertella subplanus roemeri*].

- * HOMOEOSPIRA FOERSTEI Amsden, 1951. Figured and described specimens: "17. *Henryhouse formation* (lower), south side of road, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 6 E., Pontotoc County, Oklahoma; 22. *Henryhouse formation* (upper), road cut, NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 32, T. 3 N., R. 6 E., Pontotoc County, Okla." [Only the locality of the figured specimens given. This species has been found at a number of other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115329 [locality 17 above]; figured specimens, Cat. Nos. 115328,

115330.

Amsden, T. W., 1951, p. 94, pl. 18, figs. 25-31.

- * HOMOEOSPIRA SUBGIBBOSA Amsden 1951. Figured and described specimens: "10. *Henryhouse formation*, NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 16. *Henryhouse formation* (upper coral beds), N $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 7 E., Pontotoc County, Okla.; 18. *Henryhouse formation*, Cedar Hill bluffs on north bank of South Fork of Jackfork, S $\frac{1}{2}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla. [Only the localities of the figured specimens given. This species has been found at 7 other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115326 [locality 10, above]; figured specimens, Cat. Nos. 115327, 115392.

Amsden, T. W., 1951, p. 95, pl. 18, figs. 19-24. [This is probably the species Reeds, 1911, listed as *Rhynchospira globosa*].

- * HOWELLELLA HENRYHOUSENSIS Amsden 1951. Figured and described specimens: "9. *Henryhouse formation*, 94 to 114 feet above the base of the measured section (base of formation not exposed), NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 17. *Henryhouse formation* (lower), south side of road, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities of the figured specimens given. This species has been found at 6 other localities, see Amsden 1951].

Amsden, T. W., 1951, p. 92, pl. 18, figs. 39-44. [This is probably the species which Reeds, 1911, recorded as *Spirifer crispus*].

- ISORTHIS ARCUARIA (Hall and Clarke) 1892. Figured and described specimens: "2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 12. *Henryhouse formation*, SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 2 N., R. 6 E., 1.8 miles west of Oklahoma Highway 99, Pontotoc County, Okla.; 18. *Henryhouse formation*, Cedar Hill bluffs on north bank of South Fork of Jackfork Creek, S $\frac{1}{2}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities of the figured specimens given. This is a common species in the *Henryhouse*;

see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115272-115275.

Amsden, T. W., 1951, p. 76, pl. 15, figs. 39-44 [Hall and Clarke's specimens from the *Brownsport formation*, western Tenn.]

- * *LEPTAENA OKLAHOMENSIS* Amsden 1951. Figured and described specimens: "2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 10. *Henryhouse formation*, NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 13. *Henryhouse formation*, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 2 N., R. 6 E., Pontotoc County, Okla.; 16. *Henryhouse formation* (upper coral beds), N $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only localities for the figured specimens given. This is a common and widely distributed species in the *Henryhouse*; see Amsden 1951]. Holotype, USNM, Cat. No. 115293 [locality 13, above]; figured specimens, Cat. Nos. 115291-115292, 115294-115295.

Amsden, T. W., 1951, p. 85, pl. 16, figs. 29-35. [This species was listed by Reeds, 1911, as *Leptaena rhomboidalis* and *Leptaena* sp. (European type)].

- * *LEPTAENISCA IRREGULARIS* Amsden 1951. Figured and described specimens: "2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 17. *Henryhouse formation* (lower), south side of road, SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only localities for the figured specimens given. This species has been found at 4 other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115386 [locality 2, above]; figured specimens, Cat. Nos. 115383-115385.

Amsden, T. W., 1951, p. 82, pl. 20, figs. 30-35. [This is probably the species Reeds, 1911, listed as *Leptaenisca adnascens*].

- LISSATRYPA DECATURENSIS* Amsden 1949. Figured and described specimens: "*Henryhouse formation*, 45 to 54 feet above

the base of the measured section (base not exposed), SE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 30, T. 1 S., R. 2 E., Murray County, Okla." [Only the locality of the figured specimens is given. This species has been found at 4 other localities; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115353-115356.

Amsden, T. W., 1951, p. 88, pl. 19, figs. 10-16 [The holotype of this species is from the *Brownsport formation* of western Tenn.].

- * LISSATRYPA HENRYHOUSENSIS Amsden 1951. Figured and described specimens: "10. *Henryhouse formation*, NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla." 12. *Henryhouse formation*, SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 2 N., R. 6 E., Pontotoc County, Okla." [This species has also been reported from one other locality; see Amsden 1951]. Holotype, USNM, Cat. No. 115362 [locality 12, above]; figured specimens, Cat. Nos. 115363-115364.

Amsden, T. W., 1951, p. 89, pl. 19, figs. 32-38.

- * # LISSOSTROPHIA COOPERI Amsden 1949. Figured and described specimens: "2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 13. *Henryhouse formation*, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 2 N., R. 6 E., Pontotoc County, Okla.; 17. *Henryhouse formation* (lower), south side of road, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only localities for figured specimens given. This is a common species and has been found at many other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115194 [locality 2, above]; figured specimens, Cat. Nos. 115379-115382.

Amsden, T. W., 1949, pp. 202-203; Amsden T. W., 1951, p. 83, pl. 20, figs. 21-29 [The genus *Lissostrophia* proposed by Amsden in 1949; *L. cooperi* designated the genotype]; Williams, A., 1953, p. 37, pl. 8, figs. 10-12 [as *Lissostrophia* (*Lissostrophia*) *cooperi* Amsden]. [Reeds, 1911, recorded this species as *Pholidostrophia* sp.].

- * MERISTA OKLAHOMENSIS Amsden 1951. Figured and described specimens: "3. *Henryhouse formation*, east side of road

in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 10. *Henryhouse formation*, NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities for the figured specimens are given. This species has been found at a number of other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115311 [locality 3, above]; figured specimen, Cat. Nos. 115311.

Amsden, T. W., 1951, p. 93, pl. 17, figs. 21-27. [Reeds, 1911, listed this species as *Merista tennesseensis*].

MERISTINA ROEMERI Foerste 1909. Figured and described specimens: "3. *Henryhouse formation*, east side of road in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 18. *Henryhouse formation*, Cedar Hill bluffs on north bank of South Fork of Jackfork Creek, S $\frac{1}{2}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities of the figured specimens given. This species is also present at 2 other localities; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115309-115310.

Amsden, T. W., 1951, p. 94, pl. 17, figs. 21-27 [Foerste's specimens from the *Brownsport formation* of western Tenn. This is probably the species Reed, 1911, listed as *Meristella atoka*].

* # NANOSPIRA PARVULA Amsden 1949. Figured and described specimens: "2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 17. *Henryhouse formation* (lower), south side of road, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 6 E., Pontotoc County, Okla.; 29. *Henryhouse formation*, 190 feet below the *Bois d'Arc limestone*, Chimney-hill Creek, center E $\frac{1}{2}$ SE $\frac{1}{4}$ sec. 5, and NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities of the figured specimens given. This is a common species in the *Henryhouse* and is found at many other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115195 [locality 29, above]; figured specimens, Cat. Nos. 115346-115348.

Amsden, T. W., 1949, pp. 202-203; Amsden, T. W., 1951, p. 91, pl. 19, figs. 1-9. [The genus *Nanospira* proposed by

Amsden in 1949; *N. parvula* designated the genotype].

NUCLEOSPIRA CONCENTRICA Hall 1859. Figured and described specimens: "17. *Henryhouse formation* (lower), south side of road, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 6 E., Pontotoc County, Okla.; 27. *Henryhouse formation*, 100 to 110 feet below the contact of the *Henryhouse* and *Bois d'Arc*, Chimneyhill Creek, center E $\frac{1}{2}$ SE $\frac{1}{4}$ sec. 5, and NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Oklahoma." [Only the localities for the figured specimens given. This species has been found at 8 other localities; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115350-115352, 115357.

Amsden, T. W., 1951, p. 89, pl. 19, figs. 17-24 [Hall's specimens from the *Brownsport formation* of western Tenn. Reeds, 1911, listed this species as *Nucleospira* cf. *N. lentiformis*].

ORTHOSTROPHIA cf. **O. BROWNSPORTENSIS** Amsden 1949. Figured and described specimens: "*Henryhouse formation*, east side of road in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [This species has been reported from 1 other locality; see Amsden 1951]. Figured specimen, USNM, Cat. No. 115271.

Amsden, T. W., 1951, p. 78, pl. 15, fig. 31 [The holotype of *Orthostrophia brownsportensis* is from the *Brownsport formation* of western Tenn.].

PARMORTHIS BROWNSPORTENSIS Amsden 1949. Figured and described specimens: "3. *Henryhouse formation*, east side of road in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 15. *Henryhouse formation* (upper) SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., Pontotoc County, Okla.; 16. *Henryhouse formation* (upper coral beds), N $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities for the figured specimens given. This is a common species with a widespread distribution; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115285-115288.

Amsden, T. W., 1951, p. 74, pl. 16, figs. 17-23 [The holotype of this species is from the *Brownsport formation* of western Tenn.].

PTYCHOPLEURELLA RUGIPLICATA (Hall and Whitfield) 1872. Figured specimens: "1. *Henryhouse formation*, about center of sec. 10, T. 2 N., R. 2 E., Pontotoc County, Okla.; 2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 21. *Henryhouse formation*, 400 feet east of center of sec. 29, T. 3 N., R. 6 E., Pontotoc County, Okla.; 13. *Henryhouse formation*, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities for the figured specimens given. This is a common species and has been found at many other localities; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115280-115284.

Amsden, T. W., 1951, p. 78, pl. 16, figs. 9-16 [Hall and Whitfield's specimens from the Louisville formation of Kentucky; it is also present in the *Brownsport formation* of western Tenn.].

- * RHIPIDOMELLA ACUTISULCATA Amsden 1951. Figured and described specimens: *Henryhouse formation*, SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 2 N., R. 6 E., 1.8 miles W. of Okla. Hwy. 99, Pontotoc County, Okla." [Only the locality for the figured specimens given. This species has been found at 8 other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115265; figured specimens, Cat. Nos. 115263-115264, 115266.

Amsden, T. W., 1951, p. 75, pl. 15, figs. 22-29.

- * RHIPIDOMELLA HENRYHOUSENSIS Amsden 1951. Figured and described specimens: "13. *Henryhouse formation*, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 2 N., R. 6 E., Pontotoc County, Okla.; 18. *Henryhouse formation*, Cedar Hill bluffs on north bank of South Fork of Jackfork Creek, S $\frac{1}{2}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." Holotype, USNM, Cat. No. 115259 [locality 18, above]; figured specimens, Cat. Nos. 115260-115262.

Amsden, T. W., 1951, pp. 74-75, pl. 15, figs. 14-21. [This is probably the species Reeds, 1911, recorded as *R. oblata*].

- * RHIPIDOMELLA OKLAHOMENSIS Amsden 1951. Figured and described specimens: "3. *Henryhouse formation*, east side of road in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R.

6 E., Pontotoc County, Okla.; 12. *Henryhouse formation*, SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 2 N., R. 6 E., 1.8 miles W. of Okla. Hwy. 99, Pontotoc County, Okla.; 16. *Henryhouse formation* (upper coral beds), N $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 17. *Henryhouse formation* (lower), south side of road, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 6 E., Pontotoc County, Okla. [Only the localities of the figured specimens given. This is a common species in the *Henryhouse* and has been found at many other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115270 [locality 3, above]; figured specimens, Cat. Nos. 115267-115269.

Amsden, T. W., 1951, p. 76, pl. 15, figs. 30, 32-38.

- * RHIPIDOMELLA SUBTRIANGULARIS Amsden 1951. Figured and described specimens "11. *Henryhouse formation* NE $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 16. *Henryhouse formation* (upper coral beds), N $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 18. *Henryhouse formation*, Cedar Hill bluffs on north bank of South Fork of Jackfork Creek, S $\frac{1}{2}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities for the figured specimens given. This species has been found at 5 other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115255 [locality 11, above]; figured specimens, Cat. Nos. 115256-115258.

Amsden, T. W., 1951, p. 75, pl. 15, figs. 8-13. [This is probably the species Reeds, 1911, listed as *R. emarginata*].

- * SCHIZORAMMA HAMI Amsden 1951. Figured and described specimens: "2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 13. *Henryhouse formation*, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities for the figured specimens given. This species has been found at 12 other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115276 [locality 2, above]; figured specimens, Cat. Nos. 115277-115279.

Amsden, T. W., 1951, pp. 77-78, pl. 16, figs. 1-8 [Reeds, 1911, identified this species as *Hebertella fissiplica*].

SIEBERELLA ROEMERI Hall and Clarke 1892. Figured and described specimens: "1. *Henryhouse formation*, about center of sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 10. *Henryhouse formation* NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 13. *Henryhouse formation*, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities for the figured specimens given. This is a common species in the *Henryhouse formation* and has been found at many other localities; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115296-115298.

Amsden, T. W., 1951, p. 79, pl. 16, figs. 36-40. [Reeds, 1911, identified this species as *Gypidula roemeri*.]

- * STROPHONELLA ALTERNIRADIATA Amsden 1951. Figured and described specimens: "2. *Henryhouse formation*, collection from a zone 44 to 94 feet above the base of measured section (base of formation not exposed), center of NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 7. *Henryhouse formation* 114 to 159.8 feet above the base of the measured section (base of formation not exposed), center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 16. *Henryhouse formation*, (upper coral beds), N $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 22. *Henryhouse formation* (upper), road cut, NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 32, T. 3 N., R. 6 E., Pontotoc County, Okla." [Only the localities for the figured specimens given. This is not a common species in the *Henryhouse formation* but has been found at 3 other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115340 [locality 7, above]; figured specimens, Cat. Nos. 115338-115339, 115341.

Amsden, T. W., 1951, pp. 80-81, pl. 18, figs. 45-51.

STROPHONELLA LAXIPLICATA Foerste 1903. Figured and described specimens: "3. *Henryhouse formation*, east side of road in bluff for $\frac{1}{2}$ mile, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 5. *Henryhouse formation*, SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 10. *Henryhouse formation*, NE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 12. *Henryhouse formation*, SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 2 N., R. 6 E., 1.8 miles W. of

Oklahoma Hwy. 99, Pontotoc County, Okla." [Only the localities for the figured specimens given. This species has been found at 8 other localities; see Amsden 1951]. Figured specimens, USNM. Cat. Nos. 115368-115371.

Amsden, T. W., 1951, p. 81, pl. 20, figs. 1-6 [Foerste's specimens from the *Brownsport formation* of western Tenn. Reeds, 1911, recorded this species under the same name].

- * STROPHONELLA LOEBLICHII Amsden 1951. Figured and described specimens: "7. *Henryhouse formation*, 114 to 159.8 feet above the base of the measured section (base of *Henryhouse* not exposed), center of NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla.; 15. *Henryhouse formation* (upper), SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., Pontotoc County, Okla.; 18. *Henryhouse formation*, Cedar Hill bluffs on north bank of South Fork of Jackfork Creek, S $\frac{1}{2}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, Okla.; 22. *Henryhouse formation* (upper), road cut, NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 22, T. 3 N., R. 6 E., Pontotoc County, Okla." [Only the localities for the figured specimens given. This species has been found at 6 other localities; see Amsden 1951]. Holotype, USNM, Cat. No. 115390 locality 18, above]; figured specimens, Cat. Nos. 115387-115389, 115381.

Amsden, T. W., 1951, pp. 81-82, pl. 20, figs. 36-41.

STROPHONELLA PROLONGATA Foerste 1903. Figured and described specimens: "*Henryhouse formation*, collection from a zone 44 to 94 feet above the base of measured section (base of formation not exposed), center of NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, Okla." [Only the localities for the figured specimens given. This species has been found at 17 other localities; see Amsden 1951]. Figured specimens, USNM, Cat. Nos. 115342-115345.

Amsden, T. W., 1951, pp. 79-80, pl. 18, figs. 52-57. [Foerste's specimens from the *Brownsport formation* of western Tenn. Reeds, 1911, listed this species under this name. *S. prolongata*, as well as some of the other *Henryhouse* species herein listed under the genus *Strophonella*, probably should be referred to the genus *Amphistrophia*].

ARTHROPODA

TRILOBITA

- * ? DALMANITES OKLAHOMAE Richardson 1949. Figured and described specimen: "Probably Silurian, probably *Henryhouse shale*. Collected at Bromide, Coal County, Oklahoma." Holotype, Chicago Nat. Hist. Mus., Cat. No. P10435.

Richardson, E. S., Jr., 1949, pp. 43-45, figs. 14, 15. [The holotype and only known specimen of this species is a fragment of a cephalon. Richardson was uncertain as to its proper generic position, stating that "The lack of hypostoma prevents an accurate generic assignment." He was also in doubt as to its proper stratigraphic position; the matrix adhering to the specimen was described as a "tan, dense, earthy limestone" which Richardson interpreted as indicating either *Henryhouse* or *Haragan*, however, he was unable to determine which of these formations, and therefore noted that "whether this trilobite is Silurian rather than Devonian must remain uncertain." From the data now at hand it is impossible to place this specimen stratigraphically or geographically with any degree of assurance. According to the latest map of the Arbuckles (Ham 1954) there is no Hunton present at Bromide, the nearest outcrop being a mile or so to the northeast. Ham and Oakes (Econ. Geology, vol. 39, 1944, figs. 1, 3, table II, pp. 417-421) do not record any *Henryhouse* in this belt of outcrop, but there is, of course, no assurance that this fossil came from here. Interpreting the geographic locality to mean "in the vicinity of" Bromide makes it possible to consider the outcrops to the west and south, as well as to the northeast. Perhaps further stratigraphic and faunal studies will help to place this species, however, the fragmentary nature of the type will probably always leave a question].

OSTRACODA

- * ? AMPHISSITES PRIMAEVUS Roth 1929. [See under HARAGAN—OSTRACODA].
- * ? AMPHISSITES RETIFERUS Roth 1929. [See under HARAGAN—OSTRACODA].

- * ? APARCHITES VARIOLATUS HUNTONENSIS Roth 1929.
[See under HARAGAN—OSTRACODA].
- * ? BEYRICHTIA FITTSI Roth 1929. [See under HARAGAN—
OSTRACODA].
- * ? DIZYGOPLEURA LANDESI Roth 1929. [See under HARA-
GAN—OSTRACODA].
- ? OCTONARIA INAEQUALIS Ulrich and Bassler 1913. [See
under HARAGAN—OSTRACODA].
- * ? OCTONARIA PUNCTATA Roth 1929. [See under HARA-
GAN—OSTRACODA].
- * ? PONTOCYPRIS SMITHI MAGNA Roth 1929. [See under
HARAGAN— OSTRACODA].
- * ? THLIPSURA CURVISTRIATA Roth 1929. [See under
HARAGAN—OSTRACODA].
- * ? THLIPSURA PARALLELA Roth 1929. [See under HARA-
GAN—OSTRACODA].
- * ? THLIPSURA PRIMITIVA Roth 1929. [See under HARA-
GAN—OSTRACODA].
- * ? THLIPSURA STRIATOPUNCTATA Roth 1929. [See un-
der HARAGAN—OSTRACODA].

CRUSTACEA

CARYOCARIS sp. Figured and described specimen: "*Henryhouse* shale, 8 feet above base, Cool Creek, sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma; Chas. E. Decker, coll. 1934." Figured specimen, OU, Cat. No. A2471.

Ruedemann, R., 1935, p. 448, fig. 4.

- * CARYOCARIS MAGNUS Ruedemann 1935. Figured and de-
scribed specimen: "*Henryhouse formation*, Falls Creek, sec. 33,
T. 1 S., R. 2 E., Murray County, Oklahoma; Chas. E. Decker,
coll. 1934." Holotype, OU. Cat. No. A2469.

Ruedemann, R., 1935, p. 447, fig. 1.

- * CARYOCARIS OKLAHOMENSIS Ruedemann 1935. Figured
and described specimen: "*Henryhouse shale*, 8 feet above base,
Cool Creek, sec. 36, T. 2 S., R. 2 E., Carter County, Oklahoma;
Chas. E. Decker, coll., 1934." Holotype, OU, Cat. Nos. A2470a,
A2470b.

Ruedemann, R., 1935, p. 448, figs. 2, 3.

ECHINODERMATA
CRINOIDEA

- * ALLOCRINUS DIVERGENS Strimple 1952. Figured and described specimens: "NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., south of Ada, Pontotoc County, Okla.; *Henryhouse formation* (upper), Silurian." Holotype, USNM. [Information received from Dr. G. A. Cooper, curator, U. S. Nat. Mus., Nov. 25, 1955].
Strimple, H. L., 1952A, pp. 78-79, figs. 8, 9.
- * BATOCRINITES OKLAHOMAENSIS Strimple 1952. Figured and described specimens: NW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 3N., R. 6 E., south of Ada, Pontotoc County, Okla.; *Henryhouse formation*, Silurian." Holotype, USNM. [Information received from Dr. G. A. Cooper, curator, U. S. Nat. Mus., Nov. 25, 1955].
Strimple, H. L., 1952A, p. 78, figs. 12, 13.
- * ? CAMAROCRINUS ULRICHI Schuchert 1903. [See under HARAGAN—CRINOIDEA].
- * ? CAMAROCRINUS ULRICHI STELLIFER Schuchert 1904. [See under HARAGAN—CRINOIDEA].
- * GNORIMOCRINUS PONTOTOCENSIS Strimple 1952. Figured and described specimens: "SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., Pontotoc County, Okla.; *Henryhouse formation*, Silurian." Holotype, USNM. [Information received from Dr. G. A. Cooper, curator, U. S. Nat. Mus., Nov. 25, 1955].
Strimple, H. L., 1952A, p. 78, figs. 10, 11.
- * HEXACRINITES ADAENSIS Strimple 1952. Figured and described specimens: "SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., south of Ada, Pontotoc County, Okla.; *Henryhouse formation* (upper), Silurian," Holotype, USNM. [Information received from Dr. G. A. Cooper, curator, U. S. Nat. Mus., Nov. 25, 1955].
Strimple, H. L., 1952A, pp. 75-76, figs. 4, 5.

- * **LECANOCRINUS BREVIS** Strimple 1952. Figured and described specimens: "Upper *Henryhouse formation*, Silurian; holotype collected by Richard Alexander, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., paratype SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., two paratypes (crowns) collected by A. R. Loeblich, Jr., and W. E. Ham near the center NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., one paratype collected by Melba Strimple in NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., all in Pontotoc County, south of Ada, Okla." Holotype, USNM. [Information received from Dr. G. A. Cooper, curator, U. S. Nat. Mus., Nov. 25, 1955].

Strimple, H. L., 1952B, p. 319, figs. 13-17.

- * **LECANOCRINUS ERECTUS** Strimple 1952. Figured and described specimens: "Upper *Henryhouse formation*, Silurian; holotype and one paratype collected by Richard Alexander in SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., measured paratype by A. R. Loeblich, Jr., in exposure along east side of road in bluff NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, south of Ada, Oklahoma." Holotype, USNM. [Information received from Dr. G. A. Cooper, curator, U. S. Nat. Mus., Nov. 25, 1955].

Strimple, H. L., 1952B, pp. 319-320, figs. 9, 10.

- * **LECANOCRINUS INVAGINATUS** Strimple 1952. Figured and described specimens: "Upper *Henryhouse formation*, Silurian; holotype and one paratype collected by the author in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 10, T. 2 N., R. 6 E., Pontotoc County, south of Ada, Okla." Holotype, USNM. [Information received from Dr. G. A. Cooper, curator, U. S. Nat. Mus., Nov. 25, 1955].

Strimple, H. L., 1952B, p. 322, figs. 1-4.

- * **LECANOCRINUS PAPILLOSEOUS** Strimple 1954. Figured and described specimens: "Holotype collected by the author in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., Pontotoc County, south of Ada, Okla.; upper *Henryhouse formation*, Silurian." Holotype, USNM. [Information received from Dr. G. A. Cooper, curator, U. S. Nat. Mus., Nov. 25, 1955].

Strimple, H. L., 1954, p. 281, figs. 1-4, 9, 10.

- * **PISOCRINUS SPATULATUS** Strimple 1954. Figured and described specimens: NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 2 N., R. 6 E., Pontotoc County, south of Ada, Okla.; upper *Henryhouse formation*, Silurian." Holotype, USNM. [Information received from Dr. G. A. Cooper, curator, U. S. Nat. Mus., Nov. 25, 1955].
Strimple, H. L., 1954, pp. 281-282, figs. 5-8.
- * **SYNBATHOCRINUS ANTIQUUS** Strimple 1952. Figured and described specimens: "Near center of sec. 4, T. 2 N., R. 6 E., south of Ada, Pontotoc County, Okla., the type locality. Paratypes from SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 2 N., R. 6 E., Pontotoc County; *Henryhouse formation* (upper), Silurian." Holotype, USNM. [Information received from Dr. G. A. Cooper, U. S. Nat. Mus., Nov. 25, 1955].
Strimple, H. L., 1952A, p. 76, figs. 1-3.
- * ? **SCYPHOCRINITES ULRICHI** (Schuchert) 1903. [See *Camarocrinus ulrichi* Schuchert].
- * ? **SCYPHOCRINITES ULRICHI STELLIFER** (Schuchert) 1904. [See *Camarocrinus ulrichi stellifer* Schuchert].
- * **ZOPHOCRINUS ANGULATUS** Strimple 1952. Figured and described specimens: "Center SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 3 N., R. 6 E., south of Ada, Pontotoc County, Okla.; *Henryhouse formation* (upper), Silurian." Holotype, USNM. [Information received from Dr. G. A. Cooper, Curator, U. S. Nat. Mus., Nov. 25, 1955].
Strimple, H. A., 1952A, p. 76, figs. 6, 7.

HARAGAN FORMATION

PROTOZOA

FORAMINIFERA

- * BATHYSIPHON RUGOSUS Ireland 1939. [See under HENRY-HOUSE FORMATION—FORAMINIFERA].
- * CERATAMMINA CORNUCOPIA Ireland 1939. Figured and described specimens: "*Haragan shale*, Dougherty and Franks, Okla." Figured specimens, UC, [holotype not indicated].
Ireland, H. A., 1939, p. 196, figs. A-31, 32.
- * PSAMMONYX MAXWELLI Ireland 1939. Figured and described specimens: "*Haragan limestone*, Dougherty and Franks, Okla." Figured specimen, UC, [holotype not indicated].
Ireland, H. A., 1939, p. 201, fig. B-22.
- * PSAMMOPHAX BIPARTITA Ireland 1939. Figured and described specimens: "*Haragan shale*, Dougherty and Franks, Okla." Figured specimen, UC, [holotype not indicated].
Ireland, H. A., 1939, p. 194, figs. A-24, 25.
- * STEGNAMMINA ELONGATA Ireland 1939. Figured and described specimens: "*Haragan shale*, Franks, Okla." Figured specimen, UC, [holotype not indicated].
Ireland, H. A., 1939, p. 194, fig. A-17.
- * WEBBINELLA BIPARTITA Ireland 1939. Figured and described specimens: "*Haragan limestone* near Franks, Okla." Figured specimen, UC, [holotype not indicated].
Ireland, H. A., 1939, p. 198, figs. B-14, 15.
- * WEBBINELLA QUADRIPARTITA Moreman 1933. Figured and described specimens: "*Haragan formation*, on east side of U. S. Highway 77, 2.75 miles north of Springer, Oklahoma." Type specimen, USNM; [locality given for holotype but the author does not state that it is the specimen illustrated].
Moreman, W. L., 1933, p. 396, pl. 47, figs. 4, 7.

PORIFERA

- ? *HINDIA SPHAERIODALIS* Duncan 1879. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory" [Coal County, Oklahoma].

Girty, G. H., 1899, p. 552.

COELENTERATA

CORALS

ANTHOZOA

- ? *CLADOPORA* sp. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory" [Coal County, Okla.].

Girty, G. H., 1899, p. 561.

- ? *FAVOSITES CONICUS* Hall 1874. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory" [Coal County, Oklahoma].

Girty, G. H., 1899, p. 560 [Hall's specimens from the Helderberg of New York].

- ? *STREPTELASMA WAYNENSE* (Safford) 1869. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory" [Coal County, Oklahoma].

Girty, G. H., 1899, p. 555 [Safford's specimens came from the *Brownsport formation* of western Tenn. This species is now referred to the genus *Enterolasma*].

GRAPTOLITHINA

- * *DICTYONEMA ALEXANDERI* Decker 1955. Figured and described specimens: "Lower Devonian *Haragan formation*, 16 miles southeast of Ada and 1.5 miles southeast of Fittstown, Oklahoma (NE $\frac{1}{4}$ sec. 12, T. 1 N., R. 6 E.)." Holotype, OU, Cat. No. 30 (new system of numbering).

Decker, C. E., 1955, pp. 700-701, figs. 1-3.

- * **DICTYONEMA DELICATISSIMA** [sic] Decker 1941. Figured and described specimens: "Lower Devonian, *Haragan formation* At White Mound [sec. 20, T. 2 S., R. 3 E.], about 3 miles southeast of Dougherty, Oklahoma." Holotype, OU, Cat. No. A-2461 [new Cat. No. 604].
Decker, C. E., 1941, p. 164, fig. 1-A; Ruedemann, R., 1947, pp. 190-191, pl. 12, fig. 4 [as *D. delicatissimum* Decker].
- * **DICTYONEMA SOLLARSI** Decker 1941. Figured and described specimens: "Lower Devonian, *Haragan formation*, At White Mound [sec. 20, T. 2 S., R. 3 E.], about 3 miles southeast of Dougherty, Oklahoma." Holotype, OU, Cat. No. A-2462 [new Cat. No. 603].
Decker, C. E., 1941, pp. 164-165, fig. 1-B; Ruedemann, R., 1947, pp. 192-193, pl. 11, fig. 18.
- * **CHAUNOGRAPTUS GONOTHECATUS** Decker 1941. Figured and described specimens: "Lower Devonian, *Haragan formation* At White Mound [sec. 20, T. 2 S., R. 3 E.], about 3 miles southeast of Dougherty, Oklahoma." "Cotypes", OU, Cat. No. A-2463 [holotype not indicated; new Cat. No. 602].
Decker, C. E., 1941, p. 165, figs. 1-C₁ to C₃; Ruedemann, R., p. 255, pl. 39, fig. 8.

BRACHIOPODA

- ? **ANASTROPHIA VERNEUILI** (Hall) 1857. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory" [Coal County, Okla].
Girty, G. H., 1899, p. 565 [Hall's specimens from the Helderberg of New York].
- # ? **ATRYPA RETICULARIS** (Linnaeus) 1767. Described specimen: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory" [Coal County, Oklahoma].
Girty, G. H., 1899, p. 565 [This species based upon specimens from the Silurian of Europe (? Gotland)].

- # ? DALMANELLA SUBCARINATA (Hall) 1857. Figured and described specimens: "Lower Helderberg period (probably *Haragan formation*). T. 1 S., R. 8 E., Atoka quadrangle, Indian Territory" [Coal County, Okla.]. Repository of figured specimens not indicated.

Girty, G. H., 1899, p. 561, pl. 70, figs. 1a-g [Hall called this species *Orthis subcarinata*, basing his description upon specimens from the Helderberg of New York. In 1931 Schuchert and Cooper designated it the genotype of their genus *Levenea*].

- ? DELTHYRIS PERLAMELLOSUS [sic] (Hall) 1857. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Atoka quadrangle, Indian Territory" [Coal County, Okla.].

Girty, G. H., 1899, p. 565 [Hall called this species *Spirifer perlamellosus*, basing his description on specimens from the Helderberg of New York. Now commonly referred to *Delthyris perlamellosa*].

- ? GYPIDULA GALEATA (Dalman) 1828. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory" [Coal County, Okla.].

Girty, G. H., 1899, p. 565 [The type specimens of this species are from Europe].

- # ? LEPTAENA RHOMBOIDALIS (Wilckens) 1769. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle T. 1 S., R. 8 E., Indian Territory" [Coal County, Okla.].

Girty, G. H., 1899, p. 563. [The original description of this species based upon specimens from the Devonian of Europe].

- ? MERISTELLA ARCUATA (Hall) 1859. Figured and described specimens: "Lower Helderberg period [probably *Haragan formation*]. NW corner sec. 21, T. 1 S., R. 8 E., Indian Territory [Coal County, Okla.]. Repository of figured specimens not indicated.

Girty, G. H., 1899, pl. 71, figs. 2a-c [Hall called this species *Merista arcuata*, basing his description on specimens from the Helderberg of New York].

- * ? MERISTELLA ARCUATA ATOKA Girty 1899. Figured and described specimens: "Lower Helderberg period [probably *Haragan formation*]. T. 1 S., R. 8 E., Atoka quadrangle, Indian Territory" [Coal County, Okla.]. [Dr. G. A. Cooper, curator, U. S. Nat. Mus., informs the writer that the holotype bears USNM, Cat. No. 34120].

Girty, G. H., 1899, p. 567, pl. 71, figs. 1a-f; Cooper, G. A., 1944, in INDEX FOSSILS OF NORTH AMERICA, p. 331, pl. 127, figs. 17-19 [as *Meristella atoka* Girty. Girty described this as a variety of *M. arcuata* (Hall), but in 1911 Reeds (p. 267) elevated it to a species and this has been followed by almost all later investigators].

- ? # ORTHOSTROPHIA STROPHOMENOIDES (Hall) 1857. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.]

Girty, G. H., 1899, p. 561 [Hall described this species as *Orthis strophomenoides*, basing his description upon specimens from the Helderberg of New York; later it was made the genotype of *Orthostrophia*].

- ? ORTHOSTROPHIA aff. O. STROPHOMENOIDES (Hall) 1857. Figured specimen: "Devonian (Hunton) near Crusher, Okla." [probably *Haragan formation*]. Figured specimen, YALE, Cat. No. S322.

Schuchert, C., and Cooper, G. A., 1932, pl. 6, fig. 24.

- ? RHYNCHOSPIRA FORMOSA (Hall) 1857. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 566 [Hall described this as *Waldheimia formosa*, basing his description upon specimens from the Helderberg of New York; this species is now referred to the genus *Rhynchospirina*].

- ? RENSSELAERIA AEQUIRADIATA (Conrad) 1842. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 565 [This is probably the species

which Cloud described as *Rensselaerina haraganana*; see below].

- * RENSSELAERINA HARAGANANA Cloud 1942. Figured and described specimens: "*Haragan shale*, White Mound and bluff just southeast of it, 3 miles west and 0.5 to 0.25 miles northwest of Nebo, Oklahoma." Holotype, YALE, Cat. No. 3345 [some figured specimens are included under this number]; paratypes, Cat. No. 3346.

Cloud, P. E., Jr., 1942, pp. 52-53, pl. 4, figs. 1-17, 17-20 [This is probably the species which Girty, 1899, called *Rensselaeria aequiradiata* (Conrad)].

- ? RHIPIDOMELLA OBLATA (Hall) 1857. Figured and described specimens: "Lower Helderberg period [probably *Haragan formation*]. SW corner sec. 16, T. 1 S., R. 8 E., Atoka quadrangle, Indian Territory [Coal County, Okla.]. Repository of figured specimen not indicated.

Girty, G. H., 1899, p. 562, pl. 70, fig. 3a. [Hall's specimens from the Helderberg of New York].

- ? RHIPIDOMELLA OBLATA EMARGINATA (Hall) 1859. Figured and described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.]. Repository of figured specimens not given.

Girty, G. H., 1899, p. 562, pl. 70, figs. 2a-j. [Hall's specimens from the Helderberg at Cumberland, Maryland].

- ? SPIRIFER CYCLOPTERUS Hall 1857. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 565 [Hall's specimens from the Helderberg of New York].

- STROPHEODONTA (BRACHYPRION) sp. Figured specimens: "*Haragan shale*, White Mound, 3 miles west and 1½ miles northwest of Nebo, Oklahoma." [sec. 20, T. 2 S., R. 3 E., Murray County, Okla.]. Figured specimens, USNM, Cat. Nos. 116367b,c.

Williams, A., 1953, pl. 3, figs. 6-9; pl. 5, figs. 1-5; pl. 7, figs. 5-7.

- ? TREMATOSPIRA HIPPOLYTE ? (Billings) 1863. Figured and described specimens: "Lower Helderberg period [probably *Haragan formation*]. T. 1 S., R. 8 E., Atoka quadrangle, Indian Territory." [Coal County, Okla.; on plate legend location given as T. 2 S., etc]. Repository of figured specimen not indicated.

Girty, G. H., 1899, p. 566, pl. 71, fig. 3a.

- ? UNCINULUS ? ACUTIPLICATUS (Hall) 1857. Described specimen: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 563. [Hall's specimens from the Helderberg of New York.]

- ? UNCINULUS CAMPBELLANUS ? (Hall) 1857. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Atoka quadrangle, Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 564 [Hall's specimens from the Helderberg of New York].

- ? UNCINULUS NUCLEOLATUS (Hall) 1857. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 564 [Hall's specimens from the Helderberg of New York].

- ? UNCINULUS PYRAMIDATUS ? (Hall) 1857. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Oklahoma].

Girty, G. H., 1899, p. 564 [Hall's specimens from the Helderberg of New York].

TRILOBITA

- * DALMANITES HUNTONENSIS Ulrich and Delo 1940. Figured and described specimens: "Devonian. *Haragan formation*, Atoka Quadrangle, Oklahoma." Holotype, USNM, Cat. No. 19036 [No holotype is indicated in the text (p. 42) and two specimens, "cotypes", are included under this number; however, a holotype is designated in the legend for plate 3 (fig. 26).].

Delo, D. M., 1940, pp. 42-43, pl. 3, figs. 26, 28.

- * DALMANITES LINGULIFER Ulrich and Delo 1940. Figured and described specimens: "Devonian. *Haragan formation*, Arbuckle Mountain region, Oklahoma. Holotype from near center sec. 21, T. 1 S., R. 8 E., Atoka quadrangle; paratypes (cephalon) from west side of NW $\frac{1}{4}$ sec. 21, T. 1 S., R. 8 E., (pygidia) near center sec. 8, T. 1 S., R. 8 E." Holotype [?], USNM, Cat. No. 79032 [There is some question concerning the holotype; in the text (p. 45) the holotype is stated to be a pygidial impression, whereas in the plate legend (p. 122) the holotype is said to be a cephalon and is so figured]; paratypes, same Cat. No.

Delo, D. M., 1940, pp. 45-46, pl. 3, figs. 29, 30.

- * ? DALMANITES OKLAHOMAE Richardson 1949. [See, HENRYHOUSE—TRILOBITA].

- ? DALMANITES PLEUROPTYX (Green) 1832. Described specimens: "Lower Helderberg period [probably *Haragan formation*], Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, pp. 569-571 [Green's specimens came from the Helderberg of New York. Delo (1940, p. 82) referred this species to his genus *Synphorides*, and stated, "It is to be emphasized that the "*D. pleuroptyx*" reported by many authors from areas outside the Appalachian region are in all probability entirely different species."].

- * DALMANITES TAFFI Ulrich and Delo, D. M., 1940. Figured and described specimens: "Devonian. About 100 feet below the top of *Hunton formation* (in *Haragan formation*), along

west side of NW $\frac{1}{4}$ sec. 21, T. 1 S., R. 8 E., Atoka Quadrangle, Oklahoma." Holotype, USNM, Cat. No. 79037.

Delo, D. M., 1940, p. 50, pl. 3, fig. 27.

ODONTOCHILE ACUMINATUS Ulrich and Delo 1940. Figured and described specimens: "Devonian. *Helderbergian limestone*, Tishomingo County, Mississippi [holotype]. Paratype (USNM No. 79048), from S. W. corner sec. 16, T. 1 S., R. 8 W. [sic, R. 8 E.]. Atoka quadrangle, Oklahoma." Holotype, USNM, Cat. No. 99225; paratype Hurd. Mus., Knox College, No. 201, paratype, USNM, Cat. No. 79048.

Delo, D. M., 1940, p. 55, pl. 5, fig. 9, 10.

? PHACOPS HUDSONICUS Hall 1859. Figured and described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County or Johnston County, Okla.; in the text (p. 572) Girty gives the location as T. 1 S., but in the plate legend (pl. 71) the location is given as T. 2 S., Delo (1940, p. 18) states that Girty's types are from T. 2 S., R. 8 E., Atoka Quadrangle, Oklahoma]. Girty did not indicate the repository of his specimens, but according to Delo (1940, p. 18) they are at the USNM, Cat. No. 34124.

Girty, G. H., 1899, pp. 571-572, pl. 71, figs. 4a-d; Delo, D. M., 1940, p. 17, 18 [Hall's specimens from the Helderberg of New York. According to Delo Hall's types are lost and "the figures and descriptions of it are insufficient to differentiate it from the material described by Girty."].

? PHACOPS LOGANI Hall 1861. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 571 [Delo (1940, p. 18), records this species from Oklahoma].

* PHACOPS RAYMONDI Delo 1935. Figured and described specimens: "*Haragan formation* (Helderberg) in sec. 20, T. 2 S., R. 3 E., Arbuckle Mountain region, Oklahoma." Holotype, OU, Cat. No. A10304; paratype, Cat. No. A10305.

Delo, D. M., 1935, p. 423, pl. 48, figs. 2, 3; Delo, D. M., 1940, p. 24, pl. 1, figs. 20, 21.

- ? PROETUS PROTUBERANS Hall 1859. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 573 [Hall's specimens from the Helderberg of New York].

- * REEDOPS ? DECKERI Delo 1935. Figured and described specimens: "*Haragan formation* (Helderberg) in sec. 30, T. 2 S., R. 3 E., Oklahoma." Holotype, OU, Cat. No. A10301; paratype, Cat. No. A10302.

Delo, D. M., 1935, pp. 421-422, pl. 48, fig. 1, text fig. 1; Delo, D. M., 1940, p. 25, pl. 1, figs. 26-28 [in his 1940 paper Delo deleted the query].

OSTRACODA

- * AECHMINA GENEAE Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla. "Holotype, USNM, Cat. No. 80648.

Roth, R., 1929, pp. 336, 338, pl. 35, fig. 4a.

- * AECHMINA INEQUALIS Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80647.

Roth, R., 1929, pp. 335-336, pl. 35, figs. 3a-c.

- * AECHMINA LONGISPINA Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.,] of the *Haragan shale*, Murray County, Oklahoma." Holotype, AMNH, Cat. No. 24222.

Coryell, H. N., and Cuskley, V. A., 1934, p. 6, fig. 5.

- * AECHMINA SERRATA Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.,], of the *Haragan shale*, Murray County, Oklahoma." Holotype, AMNH, Cat. No. 24223.

Coryell, H. N., and Cuskley, V. A., 1934, p. 6, fig. 6.

- * AECHMINA TRUNCATA Coryell and Cuskley 1934. Figured and described specimens "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.] of the *Haragan shale*, Murray County,

Okla." Holotype, AMNH, Cat. No. 24221.

Coryell, H. N., and Cuskley, V. A., 1934, pp. 4, 6, fig. 4.

- * ? AMPHISSITES PRIMAEVUS Roth 1929. Figured and described specimens: "Upper *Haragan marl*, sec. 4, T. 2 N., R. 6 E., Pontotoc Co., Okla." Holotype, USNM, Cat. No. 80658.

Roth R., 1929, pp. 346-348, pl. 36, fig. 10a. [These specimens came from outcrops along Chimneyhill Creek (South Fork—Jackfork) in the Lawrence uplift and there is a question whether any of the marlstone in this area is properly placed in the *Haragan formation*. If the *Haragan* is present it is thin and it therefore seems quite possible that this species came from the marlstone of the *Henryhouse formation*].

- * ? AMPHISSITES RETIFERUS Roth 1929. Figured and described specimens: "Upper *Haragan marl*, sec. 4, T. 2 N., R. 6 E., Pontotoc Co., Okla. Lower *Haragan marl*, 'White Mound' sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80659.

Roth, R., 1929, pp. 348-351, pl. 36, fig. 11a [The author cites two localities for this species: (1) along Chimneyhill Creek (South Fork—Jackfork) in the Lawrence uplift, an area in which the *Haragan marl* is thin or absent; (2) at "White Mound" where the *Haragan* is well developed, although there is *Henryhouse* present in this general region. Roth does not give the locality of the holotype, but Dr. G. A. Cooper, curator at the U. S. National Museum, informs the writer that this specimen (No. 80659) is marked on the slide and in the catalog record with both of the two localities mentioned above. *A. retiferus* is said to be closely related to *Primitia concentrica* Ulrich and Bassler from the *Oriskany formation*, *Shriver chert member*, Keyser, W. Va.].

- * ? APARCHITES VARIOLATUS HUNTONENSIS Roth 1929. Figured and described specimens: "Upper *Haragan marl*, sec. 4, T. 2 N., R. 6 E., Pontotoc Co., Okla. Middle *Haragan marl*, SW/NE sec. 28, T. 3 N., R. 6 E., Pontotoc Co., Okla." Holotype, USNM, Cat. No. 80654.

Roth, R., 1929, pp. 332-333, pl. 35, figs. 1a, b. [There is a question whether any of the marlstone in this general area of the Lawrence uplift is properly placed in the *Haragan*. If

the *Haragan marlstone* is present it is very thin and it therefore seems quite possible that this species came from the marlstone of the *Henryhouse formation*. It is interesting and perhaps significant to note that the type specimens for *A. variolatus* Ulrich and Bassler came from the Middle Silurian "*Clinton*" formation (*Rose Hill formation*) of Maryland. Roth, as well as Ulrich and Bassler, expressed doubt as to the correctness of this generic assignment].

- * ? BEYRICHLIA FITTSI Roth 1929. Figured and described specimens: "Middle *Haragan marl*, SW/NE sec. 28, T. 3 N., R. 6 E., Pontotoc Co., Okla." Holotype, USNM, Cat. No. 80655.

Roth, R., 1929, pp. 340-341, pl. 35, figs. 6a-d. [There is some question whether any of the marlstone in this general area of the Lawrence uplift is properly placed in the *Haragan formation*. If the *Haragan* is present it is thin and therefore it seems quite possible that the "*Middle Haragan marl*" may actually be the *Henryhouse formation*. In this connection it is interesting to note that according to Roth this species is very closely related to *B. veronica* Ulrich and Bassler from the Middle Silurian "*Clinton*" formation (*Drepanellina clarki* zone) of Maryland.].

- * # BICORNELLA TRICORNIS Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 N., R. 3 E.] of the *Haragan shale*, Murray County, Oklahoma," Holotype, AMNH, Cat. No. 24218.

Coryell, H. N., and Cuskley, V. A., 1934, p. 3, fig. 3 [The genus *Bicornella* proposed in this paper; *B. tricornis* designated the genotype].

- * BOLLIA HARAGANENSIS Roth 1929. Figured and described specimens: "Basal portion of *Haragan*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80651.

Roth, R., 1929, pp. 334-335, pl. 35, figs. 2a-d.

- * BYTHOCYPRIS SIMPLEX Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat.

No. 80646.

Roth, R., 1929, p. 366, pl. 38, figs. 25a, b.

- * BYTHOCYPRIS TRANSVERSA Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80652.

Roth, R., 1929, p. 365, pl. 37, figs. 24a-c.

- * CONDRACYPRIS ACUMINATA Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.,] of the *Haragan shale*, Murray County, Okla." Holotype, AMNH, Cat. No. 24227.

Coryell, H. N., and Cuskley, V. A., 1934, p. 10, fig. 11.

- * CONDRACYPRIS ARCUATA Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.,] of the *Haragan shale*, Murray County, Okla." Holotype, AMNH, Cat. No. 24228.

Coryell, H. N., and Cuskley, V. A., 1934, p. 10, fig. 12.

- * # CONDRACYPRIS BINODA Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80667.

Roth, R., 1929, pp. 370-371, pl. 38, figs. 28a-c. [*Condracypris* proposed as a new genus in this paper; two species, *C. binoda* and *C. simplex*, were included in the description, but Roth did not indicate which should be the genotype. Coryell and Cuskley (1934, p. 10) designated *C. binoda* the genotype].

- * CONDRACYPRIS ELONGATA Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.,] of the *Haragan shale*, Murray County, Okla." Holotype, AMNH, Cat. No. 24230.

Coryell, H. N., and Cuskley, V. A., 1934, p. 11, fig. 14.

- * CONDRACYPRIS HEMISPHERICA Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.,] of the *Haragan shale*, Murray County, Okla." Holotype, AMNH, Cat. No. 24231.

Coryell, H. N., and Cuskley, V. A., 1934, pp. 11-12, fig. 15.

- * CONDRACYPRIS PARALLELA Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' sec-

tion [sec. 20, T. 2 S., R. 3 E.] of the *Haragan shale*, Murray Co., Oklahoma." Holotype, AMNH, Cat. No. 24229.

Coryell, H. N., and Cuskley, V. A., 1934, p. 11, fig. 13.

- * CONDRACYPRIS SIMILARIS Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.] of the *Haragan shale*, Murray Co., Oklahoma." Holotype, AMNH, Cat. No. 24232.

Coryell, H. N., and Cuskley, V. A., 1934, p. 12, fig. 16.

- * CONDRACYPRIS SIMPLEX Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80666.

Roth, R., 1929, pp. 371-372, pl. 38, fig. 29a-c [See remarks on *C. binoda*].

- * CRATERELLINA MOOREI Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80650.

Roth, R., 1929, pp. 362-363, pl. 37, figs. 22a, b.

CTENOBOLBINA GRANOSA Ulrich 1900. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.] of the *Haragan shale*, Murray Co., Oklahoma." Figured specimen, AMNH, Cat. No. 24233.

Coryell, H. N., and Cuskley, V. A., 1934, p. 7, fig. 9 [Ulrich's specimens from the Helderberg (New Scotland), Albany County, N. Y. The holotype is at the USNM; Cat. No. 41324].

- * CYTHERELLA QUAESITA Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80644.

Roth, R., 1929, pp. 367-368, pl. 38, figs. 27a-c.

- * ? DIZYGOPLEURA LANDESI Roth 1929. Figured and described specimens: "Middle *Haragan marl*, SW/NE sec. 28, T. 3 N., R. 6 E., Pontotoc Co., Okla. Upper *Haragan marl*, sec. 4, T. 2 N., R. 6 E., Pontotoc Co., Okla." Holotype, USNM, Cat. No. 80645.

Roth, R., 1929, pp. 341-343, pl. 35, figs. 7a-i [There is a

question whether any of the marlstone in this part of the Lawrence uplift is properly placed in the *Haragan formation*. If the Haragan is present it is thin and therefore it seems quite possible that this species came from the marlstone of the *Henryhouse formation*. In this connection it is interesting and perhaps significant to note the authors observation that *D. landesi* is in all respects very closely related to *D. swartzi* Ulrich and Bassler and *D. minuma* Ulrich and Bassler, both from the Middle Silurian strata of Maryland and Pennsylvania].

- * DIZYGOPLEURA OBLIQUA Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80668.

Roth, R., 1929, p. 346, pl. 36, figs. 9a, b.

- * DIZYGOPLEURA RECTA Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80669.

Roth, R., 1929, pp. 344-346, pl. 36, figs. 8a-c.

- * # JANUSELLA BICERATINA Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80665.

Roth, R., 1929, pp. 363-365, pl. 37, figs. 23a-c. [The genus *Janusella* proposed in this paper; *J. biceratina* is the genotype (monotypical)].

- * KIRKBYELLA OBLIQUA Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.,] of the *Haragan shale*, Murray County, Oklahoma." Holotype AMNH, Cat. No. 24217.

Coryell, H. N., and Cuskley, V. A., 1934, p. 2, fig. 2.

- * KIRKBYELLA VERTICALIS Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.] of the *Haragan shale*, Murray County, Oklahoma." Holotype, AMNH, Cat. No. 24216.

Coryell, H. N., and Cuskley, V. A., 1934, p. 2, fig. 1.

- ? OCTONARIA INAEQUALIS Ulrich and Bassler 1913. Described specimen: "Middle *Haragan marl*, SW/NE sec. 28,

T. 3 N., R. 6 E., Pontotoc Co., Okla.”

Roth, R., 1929, p. 352 [If there is any Haragan marlstone present in this part of the Lawrence uplift it is thin, and it therefore seems quite possible that this specimen came from the *Henryhouse formation*. Roth states that only a single, perfectly preserved left valve was found; no further description or illustration given. Ulrich and Bassler's specimens came from the Keyser formation, (Upper Silurian) of Maryland].

- * ? OCTONARIA PUNCTATA Roth 1929. Figured and described specimens: “Upper *Haragan marl*, sec. 4, T. 2 N., R. 6 E., Pontotoc Co., Okla. Middle *Haragan marl*, SW/NE sec. 28, T. 3 N., R. 6 E., Pontotoc Co., Okla.” Holotype, USNM, Cat. No. 80653.

Roth, R., 1929, pp. 351-352, pl. 36, figs. 12a-f. [There is a question whether any of the marlstone in this general area of the Lawrence uplift is properly placed in the *Haragan formation*. If the *Haragan marlstone* is present it is thin and therefore it seems quite possible that this species came from the marlstones of the *Henryhouse formation*. Roth compared this species to *Octonaria inaequalis* Ulrich and Bassler; see discussion under that species].

- * PARAECHMINA AMBIGUA Roth 1929. Figured and described specimens: “Basal *Haragan marl*. ‘White Mound’, NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla.” Holotype, USNM, Cat. No. 80649.

Roth, R., 1929, p. 339, pl. 35, figs. 5a, b.

- * PARAHEALDIA OVATA Coryell and Cuskley 1934. Figured and described specimens: “The ‘White Mound’ section [sec. 20, T. 2 S., R. 3 E.] of the *Haragan shale*, Murray County, Oklahoma.” Holotype, AMNH, Cat. No. 24220.

Coryell, H. N., and Cuskley, V. A., 1934, p. 4, fig. 18.

- * # PARAHEALDIA PECORELLA Coryell and Cuskley 1934. Figured and described specimens: “The ‘White Mound’ section [sec. 20, T. 2 S., R. 3 E.] of the *Haragan shale*, Murray County, Oklahoma.” Holotype, AMNH, Cat. No. 24219.

Coryell, H. N., and Cuskley, V. A., 1934, pp. 3-4, fig. 17. [The genus *Parahealdia* proposed as a new genus in this paper; *P. pecorella* designated the genotype].

- * PHANASSYMETRIA QUADRUPLA Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound' NE/c sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80671.
 Roth, R., 1929, pp. 360, 362, pl. 37, figs, 21a-c.
- * # PHANASSYMETRIA TRISERRATA Roth 1929. Figured and described specimens: "Basal *Haragan marl*, 'White Mound', sec. 20, T. 2 S., R. 3 E., Murray Co., Oklahoma." Holotype, USNM, Cat. No. 80670.
 Roth, R., 1929, pp. 358-360, pl. 37, figs. 20a-c. [The genus *Phanassymetria* proposed in this paper; *P. triserrata* designated the genotype by Bassler and Kellett].
- * ? PONTOCYPRIS SMITHI MAGNA Roth 1929. Figured and described specimens: "Upper *Haragan marl*, sec. 4, T. 2 N., R. 6 E., Pontotoc Co., Okla. Middle *Haragan marl*, SW/NE sec. 28, T. 3 N., R. 6 E., Pontotoc Co., Okla." Holotype, USNM, Cat. No. 80643.
 Roth, R., 1929, pp. 366-367, pl. 38, figs. 26a, b [There is a question whether any of the marlstone in this region of the Lawrence uplift is properly placed in the *Haragan formation*. If the *Haragan* is present it is thin and it therefore seems quite possible that this variety (subspecies) came from the marlstones of the *Henryhouse formation*. The species *P. smithi* Jones is based upon specimens from the Wenlock of Great Britain].
- * ? THLIPSURA CURVISTRIATA Roth 1929. Figured and described specimens: "Upper *Haragan marl*, sec. 4, T. 2 N., R. 6 E., Pontotoc Co., Okla." Holotype, USNM, Cat. No. 80660.
 Roth, R., 1929, pp. 36, figs. 15a, b. [There is a question whether any of the marlstone in this region of the Lawrence uplift is properly placed in the *Haragan formation*. If the *Haragan* is present it is thin and therefore it seems quite possible that this species came from the marlstones of the *Henryhouse*.].
- * THLIPSURA FOSSATA Roth 1929. Figured and described specimens: "*Haragan marl*, 'White Mound' NE sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80663.

Roth, R., 1929, pp. 355-356, pl. 36, figs. 16a-c.

- * *THLIPSURA FURCA* Roth 1929. Figured and described specimen: "Lower *Haragan marl*, 'White Mound', NE sec. 20, T. 2 N., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80664.

Roth, R., 1929, pp. 356-357, pl. 37, figs. 18a-c.

- * *THLIPSURA MURICURVA* Roth 1929. Figured and described specimens: "Base of *Haragan marl*, 'White Mound', NE sec. 20, T. 2 S., R. 3 E., Murray Co., Okla." Holotype, USNM, Cat. No. 80662.

Roth, R., 1929, p. 356, pl. 37, fig. 17a.

- * ? *THLIPSURA PARALLELA* Roth 1929. Figured and described specimens: "Middle *Haragan marl*, SW/NE sec. 28, T. 3 N., R. 6 E., Pontotoc Co., Okla." Holotype, USNM, Cat. No. 80657.

Roth, R., 1929, pp. 353-354, pl. 36, fig. 14a. [There is a question whether any of the marlstone in this region of the Lawrence uplift is properly placed in the *Haragan formation*. If the *Haragan* is present it is thin and it therefore seems quite possible that this species came from the marlstones of the *Henryhouse formation*].

- * ? *THLIPSURA PRIMITIVA* Roth 1929. Figured and described specimens: "Upper *Haragan marl*, sec. 4, T. 2 N., R. 6 E., Pontotoc Co., Okla. Middle *Haragan marl*, SW/NE sec. 28, T. 3 N., R. 6 E., Pontotoc Co., Okla." Holotype, USNM, Cat. No. 80661.

Roth, R., 1929, p. 358, pl. 37, figs. 19a-c [There is a question whether any of the marlstone in this region of the Lawrence uplift is properly placed in the *Haragan formation*. If the *Haragan* is present it is thin and it therefore seems quite possible that this species came from the marlstones of the *Henryhouse formation*].

- * ? *THLIPSURA STRIATOPUNCTATA* Roth 1929. Figured and described specimens: "Middle portion *Haragan marl*, SW/NE sec. 28, T. 3 N., R. 6 E., Pontotoc Co., Okla." Holotype, USNM, Cat. No. 80656.

Roth, R., 1929, pp. 352-353, pl. 36, figs. 13a, b. [There is a question whether any of the marlstone in this region of the

Lawrence uplift is properly placed in the *Haragan formation*. If the *Haragan* is present it is thin and it therefore seems quite possible that this species came from the marlstone of the *Henryhouse formation*.]

- * *THLIPSURELLA PUTEA* Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.] of the *Haragan shale*, Murray County, Oklahoma." Holotype, AMNH, Cat. No. 24226.

Coryell, H. N. and Cuskley, V. A., 1934, p. 8, fig. 10.

- * *ULRICHIA CIRCA* Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.,] of the *Haragan shale*, Murray County, Oklahoma." Holotype, AMNH, Cat. No. 24224.

Coryell, H. N., and Cuskley, V. A., 1934, pp. 6-7, fig. 7.

- * *ULRICHIA RETICULATA* Coryell and Cuskley 1934. Figured and described specimens: "The 'White Mound' section [sec. 20, T. 2 S., R. 3 E.] of the *Haragan shale*, Murray County, Oklahoma." Holotype, AMNH, Cat. No. 24225.

Coryell, H. N., and Cuskley, V. A., 1934, p. 7, fig. 8.

MOLLUSCA GASTROPODA

- ? *EUOMPHALUS* n. sp. Described specimen: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 568.

- ? *LOXONEMA ATTENUATUM* ? Hall 1859. Described specimen: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 568 [Hall's specimens from the Helderberg of New York].

- ? *PLETHOSPIRA* ? n. sp. Figured and described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Oklahoma]. Repository of figured specimens not given.

Girty, G. H., 1899, p. 568, pl. 70, fig. 4a.

PELECYPODA

- ? MEGAMBONIA LATA Hall 1859. Figured and described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.]. Repository of figured specimen not given.

Girty, G. H., 1899, p. 569, pl. 70, figs. 5a, b [Hall's specimens from the Helderberg of New York].

- ? MEGAMBONIA LATA var. Described specimen: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 569 [Although Girty listed this as a variety of *M. lata* he was uncertain about the generic identification stating, ". . . the generic features are undetermined"].

CEPHALOPODA

- ? ORTHOCERAS RUDE Hall 1859. Described specimens: "Lower Helderberg period [probably *Haragan formation*]. Atoka quadrangle, T. 1 S., R. 8 E., Indian Territory." [Coal County, Okla.].

Girty, G. H., 1899, p. 569 [The name *Orthoceras* was first used for a pelecypod and therefore is not available for a cephalopod. Hall's specimens came from the Helderberg of New York].

ECHINODERMATA
CRINOIDEA

- * ? CAMAROCRINUS ULRICHI Schuchert 1903. [*Scyphocrinites ulrichi* (Schuchert)]. Figured and described specimens: "Very common in the lower portion of the Helderbergian (*Hunton formation*) of Indian Territory where Mr. Ulrich found specimens at many localities for a distance of fifty miles. Some of the best localities are 3 miles north—east and 4 miles south of Daugherty [sic], and 1 1/8 miles and 2 miles south of Franks". Holotype, USNM, Cat. No. 35085; figured specimens, Cat. No. 35084.

Schuchert, C., 1903, pp. 239-240; Schuchert, C., 1904, p. 271, pl. 40, figs. 6-8, pls. 41 to 43; Springer, F., 1917, pp. 54-55, pl. 9, figs. 2a, b [Springer gave the name as *Scyphocrinus ulrichi* (Schuchert). The generic name *Camarocrinus* was applied by Hall in 1879 to the bulb of a crinoid whose calyx was unknown. Later studies, notably that of Springer in 1917, have shown that this is the stem base (bulb) of the crinoid calyx which Zenker described in 1833 as *Scyphocrinites*, and hence *Camarocrinus* is a synonym of that genus. Springer and others incorrectly emended this name to *Scyphocrinus*].

[*S. ulrichi* was named and described by Schuchert in 1903 at which time he did not furnish any illustrations, nor did he indicate a holotype. The stratigraphic and geographic data given were much generalized as noted above. In 1904 Schuchert illustrated several specimens of this species and selected as holotype the bulb shown on plate 42, figure 1, but gave no additional locality data. It should be noted that Schuchert based his description of this crinoid entirely upon the bulb, and makes no mention of the calyx. A few years later Springer (1917) gave additional information on *S. ulrichi*, his description and illustration being based on a calyx from the "*Haragan limestone*, near Dougherty, Oklahoma". Springer designated this calyx as the holotype, but this is incorrect since Schuchert had already selected a bulb as the type. Moreover some doubt naturally arises as to the relationship of this calyx to Schu-

chert's bulb. Springer's remarks on this subject are as follows: "This species is represented by a single calyx, found in the talus beds containing numerous *Camarocrinus* [bulbs], to which Mr. Schuchert has given the above specific name. As many of these are very large, it is assumed that they appertained to individuals of this species [*S. ulrichi*] rather than of the smaller *S. gibbosus*." In view of these uncertainties it would be especially helpful to have more precise locality data on the various specimens involved. Unfortunately such information does not appear to be available because Dr. G. A. Cooper of the U. S. National Museum has informed the writer that Schuchert's holotype is only labelled "*Haragan formation*" and Springer's specimen is marked "*Hunton formation equals Linden*."

At the present time 3 species and subspecies of *Scyphocrinites* have been described from the *Hunton group*: *S. ulrichi*, *S. ulrichi stellifer*, and *S. gibbosus*. The last named species was based upon a calyx, the bulb being unknown. The other two were based upon the bulbs, with only the calyx of *S. ulrichi* being identified with some question. The calyces of *Scyphocrinites* are rare in the *Hunton*, but the bulbs are rather common in the marlstones of this group. Reeds (1911, p. 267) identified the bulbs of *S. ulrichi* from the *Henryhouse*, *Haragan* and *Bois d'Arc* formations. The writer can confirm the presence of *Scyphocrinites* bulbs in the *Henryhouse* and *Haragan*; however, these bulbs probably can not be identified to species. Springer (1917, p. 26) was of the opinion that the shape, proportions and external surface of these bulbous roots was of little diagnostic value].

- * ? CAMAROCRINUS ULRICHI STELLIFER Schuchert 1904. Figured and described specimens: "Found associated with *C. ulrichi*." [See locality information given under CAMAROCRINUS ULRICHI]. Holotype, USNM, Cat. No. 35088; paratypes, Cat. Nos. 35086-35087.

Schuchert, C., 1904, p. 272, pl. 60, fig. 9; pl. 61, fig. 6 [The correct generic name is *Scyphocrinites*. Schuchert based his description of this variety upon the bulb and makes no mention

of the calyx. See discussion under CAMAROCRINUS ULRICHI].

- * LECANOCRINUS HUNTONENSIS Strimple 1952. Figured and described specimens: "Lower portion of the *Haragan formation* (about 15 feet above the *Camarocrinus* zone), Devonian; collected by Mrs. Beverly Graffham near Hunton townsite, west of Clarita, Okla." Holotype, USNM.

Strimple, H. L., 1952B, pp. 322-323, figs. 11-12.

- * ? SCYPHOCRINUS [sic] GIBBOSUS Springer 1917. Figured and described specimens: "Helderbergian; *Haragan limestone*, Franks, Oklahoma, and (?) Hardin County, Tennessee." Holotype, USNM [holotype from "Franks, Okla."]

Springer, F., 1917, p. 55, pl. 9, figs. 3a, b. [The correct spelling of this generic name is *Scyphocrinites*; for a discussion of the *Hunton* species of this genus see under CAMAROCRINUS ULRICHI].

- * ? SCYPHOCRINITES ULRICHI (Schuchert) 1903. [see CAMAROCRINUS ULRICHI].

- * ? SCYPHOCRINITES ULRICHI STELLIFER (Schuchert) 1904. [See CAMAROCRINUS ULRICHI STELLIFER].

REFERENCES

- Amsden, T. W., 1949. Two new genera of brachiopods from the Henryhouse formation (Silurian) of Oklahoma: Washington Acad. Science., Jour., vol. 39, pp. 202-203.
- , 1951. Brachiopods of the Henryhouse formation (Silurian) of Oklahoma: Jour. Paleontology, vol. 25, pp. 69-96, pls. 15-20.
- Bassler, R. S., and Kellett, B., 1934. Bibliographic index of Paleozoic Ostracoda: Geol. Soc. America, Special Paper No. 1, pp. 1-500.
- Cloud, P. E., Jr. 1942. Terebratuloid Brachiopoda of the Silurian and Devonian: Geol. Soc. America, Special Paper No. 38, pp. 1-182, pls. 1-26, text figs.
- Coryell, H. N., and Cuskley, V. A., 1934. Some new ostracodes from the "White Mound" section of the Haragan shale, Murray County, Oklahoma: American Mus. Nat. History, Novitates, No. 748, pp. 1-12, figs. 1-18.
- Croneis, C., Dunn, P. H., and Hunter, D., 1932. Pre-Carboniferous Foraminifera: Science, n. s., vol. 75, pp. 138-139.
- Decker, C. E., 1935A. Graptolites from the Silurian of Oklahoma: Jour. Paleontology, vol. 9, pp. 434-446, figs. 1-43.
- , 1935B. Some tentative correlations on the basis of graptolites of Oklahoma and Arkansas; Amer. Assoc. Petroleum Geologists, Bull., vol. 20, pp. 301-311.
- , 1939. Pneumatocysts on *Monograptus (Lino-graptus) phillipsi multiramosus*: Jour. Paleontology, vol. 13, pp. 49-51, 6 text figs.
- , 1941. Graptolites from the Haragan formation (Lower Devonian) of Oklahoma: Jour. Paleontology, vol. 15, pp. 164-177, text figs. 1A-C.
- , 1955. A new Devonian species of *Dictyonema* from Oklahoma: Jour. Paleontology, vol. 29, pp. 699-701, 3 text figs.
- Delo, D. M., 1935. New Phacopinae from the Devonian of Oklahoma and Iowa: Jour. Paleontology, vol. 9, pp. 421-423, pl. 48.
- , 1940. Phacopid trilobites of North America: Geol. Soc. America, Special Paper No. 29, pp. 1-135, pls. 1-13.
- Dunn, P. H., 1942. Silurian Foraminifera of the Mississippi Basin: Jour. Paleontology, vol. 16, pp. 317-342, pls. 42-44.
- Girty, G. H., 1899. Preliminary report on the Paleozoic invertebrate fossils from the region of the McAlester Coal Field, Indian Territory: U. S. Geol. Survey, 19th Annual Rept., part 3, pp. 539-593, pls. 70-72.
- Ireland, H. A., 1939. Devonian and Silurian Foraminifera from Oklahoma: Jour. Paleontology, vol. 13, pp. 190-202, 75 figs.
- Maxwell, R. A., 1936. The stratigraphy and areal distribution of the "Hunton formation", Oklahoma: Northwestern Univ., Summary of Doctoral Dissertations, vol. 4, pp. 131-136.

- Moreman, W. L., 1930. Arenaceous Foraminifera from Ordovician and Silurian limestones of Oklahoma: Jour. Paleontology, vol. 4, pp. 42-59, pls. 5-7.
- , 1933. Arenaceous Foraminifera from the lower Paleozoic rocks of Oklahoma: Jour. Paleontology, vol. 7, pp. 393-397, pl. 47.
- Reeds, C. A., 1911. The Hunton formation of Oklahoma: American Jour. Sci., vol. 182, pp. 256-268.
- , 1926. The Arbuckle Mountains, Oklahoma: American Mus. Nat. Hist., Jour. vol. 26, pp. 463-474, 11 figs.; Oklahoma Geol. Survey, Circular No. 14, pp. 1-15, 11 figs.
- Richardson, E. S., 1949. A new Silurian trilobite *Dalmanites oklahomae*: Chicago Nat. Hist. Museum, Fieldiana, Geology, vol. 10, pp. 43-45, figs. 14, 15.
- Roth, R., 1929. Some ostracodes from the Haragan marl, Devonian, of Oklahoma: Jour. Paleontology, vol. 3, pp. 327-372, pls. 35-38.
- Ruedemann, R., 1935. Silurian phyllocarid crustaceans from Oklahoma: Jour. Paleontology, vol. 9, pp. 447-448, figs. 1-4.
- , 1947. Graptolites of North America: Geol. Soc. America, Memoir 19, pp. 1-652, pls. 1-92, 1 text fig.
- Schuchert, C., 1903. On new Siluric Cystoidea and a new *Camarocrinus*: American Geol., vol. 32, pp. 230-240.
- , 1904. On Siluric and Devonian Cystidea and *Camarocrinus*: Smithsonian Inst., Miscellaneous Coll., vol. 47, No. 1482, pp. 201-272, pls. 34-44, text figs.
- , 1922. Devonian of Oklahoma, with special reference to the Oriskany and Camden formations: Geol. Soc. America, Bull., vol. 33, pp. 665-670.
- , and Cooper, G. A., 1932. Brachiopod genera of the suborders Orthoidea and Pentameroidea: Peabody Mus. Nat. Hist., Yale Univ., Memoir, vol. 4, pt. 1, pp. 1-270, pls. 1-29, text figs.
- Springer, F., 1917. On the crinoid genus *Scyphocrinus* and its bulbous root *Camarocrinus*: Smithsonian Inst., pp. 1-57, pls. 1-9, text figs.
- Strimple, H. L., 1952A. Some new species of crinoids from the Henryhouse formation of Oklahoma: Washington Acad. Sci., Jour., vol. 42, pp. 75-79, figs. 1-13.
- , 1952B. New species of *Lecanocrinus*: Washington Acad. Sci., Jour., vol. 42, pp. 318-323, figs. 1-17.
- , 1954. Two new crinoid species from the Henryhouse of Oklahoma: Washington Acad. Sci., Jour., 44, pp. 280-283, figs. 1-10.
- Taff, J. A., 1902. Description of the Atoka quadrangle: U. S. Geol. Survey, Geologic Atlas, No. 79, pp. 1-8, maps.
- , 1904. Geology of the Arbuckle and Wichita Mountains in Indian Territory and Oklahoma: U. S. Geol. Survey, Professional Paper No. 31, pp. 1-111, pls. 1-8, text figs.
- Williams, A., 1953. North American and European stropheodontids, their morphology and systematics: Geol. Soc. America, Memoir 56, pp. 1-67, pls. 1-13, text figs.