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CATALOG OF FOSSILS FROM THE MIDDLE AND UPPER ORDOVICIAN OF OKLAHOMA

BY

THOMAS W. AMSDEN

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This catalog attempts to record all of the fossils which have been described and/or illustrated from the Middle and Upper Ordovician strata of Oklahoma. In the Arbuckle Mountain region it records the species from those formations between the Arbuckle group and the Hunton group; in the Ouachita Mountain region the formations between the Mazarn shale and the Missouri Mountain shale; in the Ozark region the formations between the Cotter dolomite and the St. Clair limestone. The formations whose known fossils are covered in this catalog are listed below (in italics):

ARBUCKLE MOUNTAIN REGION

Chimneyhill limestone (Silurian)
- *Sylvan shale*
- *"Fernvale" limestone*
- *Viola limestone*
  - *Bromide formation*
    - *Pooleville member*
    - *Mountain Lake member*
  - *Simpson group*
    - *Tulip Creek formation*
    - *McLish formation*
    - *Oil Creek formation*
    - *Joins formation*

Arbuckle group (Canadian)

OUACHITA MOUNTAIN REGION*

Missouri Mountain shale (Silurian)
- *Polk Creek shale*
- *Bigfork chert*
- *Womble shale* (=Stringtown shale)

Mazarn shale ** (Canadian?)

OZARK REGION

St. Clair limestone (Silurian)
- *Sylvan shale*
- *"Fernvale" limestone*
- *Fite limestone*
- *Tyner shale*
- *Burgen sandstone*

Cotter dolomite (Canadian)

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*The Talihina chert of Taft and other early investigations=the Arkansas novaculite (Dev.-Miss.?), Missouri Mountain shale (Sil.), Polk Creek shale and Bigfork chert.

**See Pitt, 1955, pp. 22-24.

Some comments are needed on the subdivisions of the Simpson group in the Arbuckle Mountain region. The formations of this group as given above are those of Decker and Merritt (1931) and are the names in general usage at the present time. Past investigators, notably E. O. Ulrich, have employed a different terminology and thus many of the older publications dealing with the paleontology and stratigraphy of this group present a set of names that is confusing to the uninitiated. The nomenclatorial history of the Simpson group has been ably covered by A. R. Loeblich (1942, pp. 413-417) and therefore only the major changes are here summarized.

Ulrich variously subdivided the Simpson group, but in 1933 he apparently reached his maximum, recognizing the following 8 formations:

Bromide
Criner
Cool Creek
Tulip Creek
McLish
Falls
Oil Creek
Joins

Of these names, the Falls formation is now included within the McLish (Decker and Merritt 1931, p. 28); the Criner formation within the Bromide formation (Decker and Merritt 1931, pp. 12, 40); the name Cool Creek has been dropped from the Simpson group (Decker 1933B, pp. 55-56) and is now used for a unit in the Arbuckle group.

The only additional information that need be cited is that given by G. A. Cooper in 1956 (pp. 120-122). This author proposes to subdivide the Bromide into two members, a lower Mountain Lake member and an upper Pooleville member, the latter said to be equivalent to Ulrich's Criner formation.

There have been differences of opinion on the age to be assigned these various formations, a situation which can be considered as more or less normal. No attempt is here made to record all of these different ideas, and only a few of the latest attempts are reviewed. In 1952 Decker (1952B, p. 135) classified the Arbuckle Mountain section, primarily on the basis of graptolites. He placed the Sylvan and "Fernvale" in the Richmondian, the Viola and Bromide in the Trentonian, the Tulip Creek in the Blackriverian, and the other Simpson formations in the Chazyan. One of the latest attempts at a classification is that of the Ordovician subcommittee of the National Research Council. These authors (Twenhofel et al., 1954) correlate the Sylvan, "Fernvale" and Polk Creek with the Richmondian. The upper part of the Viola and the Bigfork are placed in the Trentonian, and the lower part of the Viola and upper part of the Bromide in the Blackriverian with the older Simpson formations referred to the Chazyan. The Womble

shale is believed to range in age from Trentonian through Blackriverian and Chazyan, into the upper Canadian. This subcommittee did not consider the Ozark section of Oklahoma, but according to Huffman (1953, p. 4) the Fite and upper Tyner are Mohawkian, the lower Tyner and Burgen are Chazyan.

In 1956 G. A. Cooper published his monumental work on "Chazyan and Related Brachiopods". This publication presents a revised classification of a portion of the Middle Ordovician and makes some changes in the age assigned to some of the Oklahoma formations (Chart 1). The Viola is placed in the Trenton and Wilderness stages (Trentonian and Bolarian of Kay); the Bromide in the Wilderness and Porterfield (Bolarian of Kay); the Tulip Creek in the Ashby (Chazyan of Kay); the McLish in the Marmor (Chazyan of Kay); and the Oil Creek and Joins in the Whiterock.

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 identification 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 such faunal lists have been published, but reference is given to only a few of these. In 1908 Ruedemann (pp. 24-25) identified several graptolites from the Talihina formation of the Ouachita Mountains. This name has since been dropped and the strata assigned to a number of different formations (see footnote above). R. W. Harris recorded many of the Simpson ostracods in a field guide book issued in 1936, and at the present time this author has a major publication in press describing the ostracods of this group. In 1936 C. E. Decker (pp. 301-311) listed a number of Oklahoma graptolites, and some years later he (Decker, 1952C, table 3, pp. 99-102) gave additional lists of graptolites, including those from the "Stringtown" shale (Womble shale), Bromide formation and Viola limestone.

In this catalog the writer has tried to summarize the information on those species that have been described from the Middle and Upper Ordovician of Oklahoma. The author and date of the original description are given for all species, and a bibliographic reference is also included; however, this applies only to the publication describing specimens from the Ordovician of Oklahoma. The name is preceded by an asterisk if the original description was based upon specimens from Oklahoma, names of species with types from other areas being unmarked. The repository and catalog number are listed for all type specimens where such data are available. The writer has tried to obtain information on these types, and in most cases it has been possible to determine at least the location of such specimens. The names of institutions storing these 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.

HA—Museum of Comparative Zoology, Harvard University.

MO—University of Missouri.

The catalog is organized as follows: (1) species are first listed by formation, e. g. Bromide, Viola, Joins; (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.

There are a total of 359 entries* in this catalog, but a number of these represent duplicates since the same species may be recorded from more than one formation. These may be broken down by formations as follows:

JOINS FORMATION (total, 8 species)	
Graptolithina	2 species
Brachiopoda	3
Ostracoda	3
OIL CREEK FORMATION (total, 12)	
Brachiopoda	5
Trilobita	1
Ostracoda	4
Gastropoda	1
Conodontophoridia	1
McLISH FORMATION (total, 29)	
Anthozoa	2
Brachiopoda	6
Ostracoda	1
Gastropoda	2
Cystoidea	2
Conodontophoridia	16
TULIP CREEK FORMATION (total, 22)	
Brachiopoda	8
Bryozoa	1
Ostracoda	11
Conodontophoridia	2
BROMIDE FORMATION (total, 191)	
Porifera	1
Anthozoa	3
Graptolithina	4
Brachiopoda	83
Bryozoa	31
Trilobita	3
Ostracoda	16

*202 of the species recorded in the catalog are based upon types from the Middle and Upper Ordovician of Oklahoma. The remaining species are based upon type specimens from other areas.

Edrioasteroidea	1
Cystoidea	20
Crinoidea	6
Conodontophoridia	23
VIOLA LIMESTONE (total, 80)	
Foraminifera	8 species
Graptolithina	54
Chitinozoa	1
Brachiopoda	1
Trilobita	5
Ostracoda	2
Cephalopoda	1
Conodontophoridia	8
"FERNVALE" LIMESTONE (total, 2)	
Brachiopoda	1
Cephalopoda	1
SYLVAN SHALE (total, 8)	
Graptolithina	7
Brachiopoda	1
WOMBLE FORMATION (total, 5)	
Graptolithina	3
Brachiopoda	2
POLK CREEK SHALE (total, 1)	
Graptolithina	1
FITE LIMESTONE (total, 1)	
Anthozoa	1

CATALOG

* Indicates species based upon type specimen(s) from the Ordovician of Oklahoma.

\# Indicates species that are genotypes.

ARBUCKLE MOUNTAIN REGION

JOINS FORMATION

GRAPTOLITHINA

DIDYMOGRAPTUS ARTUS Elles and Wood 1901. (Decker 1935B, p. 240, 242, pl. 1, figs. 8-9a; Decker 1944, p. 379, figs. 26-28 [two of the illustrated specimens are from the Joins formation, Arbuckle Mts.; the third from a well-core, Oklahoma City field]; Decker 1951, pp. 1673-1674, fig. 1 [illustrated specimen from a well-core, 4767-4768 ft., Carter Co., Okla.]; Decker and Merritt 1931, pl. 16, figs. D, E; Ruedemann 1947, pp. 326-327, pl. 54, figs. 3-7 [plate legend, pl. 54, he states this species is also present in the top of the Arbuckle limestone]). Decker's figured specimens OU, 515, 516, 585, 652 (old Nos. B2308, B2308a, A2049).

DIDYMOGRAPTUS BIFIDUS Hall 1865. (Decker 1944, p. 382, figs. 29-32; Decker 1952, pp. 409-411, figs. 1A-1B [well-core, Oklahoma Co., Okla.]). Decker's figured specimens OU, 514, 556, 601 (old Nos. B2309, B2309a).

BRACHIOPODA

*DESMORTHIS COSTATA Cooper 1956. (p. 446, pl. 50, J, figs. 42-46). USNM, 110813a.

DESMORTHIS NEVADENSIS Ulrich and Cooper 1938. (Cooper 1956, p. 447, pl. 50, H, figs. 35-39; pl. 83, fig. 5). USNM, 110817a, 110806a [Holotype from the Pogonip formation, Roberts Mt. Quadrangle, Nevada].

ORTHIS COSTALIS Hall 1847. (Decker and Merritt 1931, p. 15, pl. 2, fig. C) [The specimen illustrated is probably conspecific with *Desmorthis costata* Cooper 1956; see above].

OSTRACODA

ISOCHILINA BULBOSA Harris (See under OIL CREEK FORMATION).

*LEPERDITELLA BROOKINGI Harris 1931 (p. 88, pl. 3, figs. 2a. b. c). HA.

*LEPERDITELLA COOPERI Harris 1931 (p. 88, pl. 3, figs. 1a, b, c). HA.

OIL CREEK FORMATION

BRACHIOPODA

*ANOMALORTHIS OKLAHOMENSIS Ulrich and Cooper 1936 (p. 622; 1938, p. 128, pl. 22A, figs. 1-6; Cooper 1956, p. 392, pl. 78C, figs. 13-20). USNM, 92854a, 92854b, 92855, 110182.

LINGULELLA sp. 2 Cooper 1956 (p. 206, pl. 5, B, fig. 6). USNM, 116771.

*ORTHAMBONITES DINORTHOIDES Cooper 1956 (p. 301, pl. 33, E. figs. 20-27). USNM, 109823b, 109821a, b, 109823a, c, d.

*ORTHAMBONITES SUBCONVEXUS Cooper 1956 (p. 312, pl. 34, E, figs. 21-26). USNM, 109844a, 109844b.

ORTHIS ACUTIPLICATA Raymond 1905. (Decker and Merritt 1931, pl. 4, fig. B). [This may be the species Cooper described as *Orthambonites dinorthoides*].

TRILOBITA

PLIOMEROPS NEVADENSIS Walcott 1884. (Decker and Merritt 1931, pl. 4, fig. C).

OSTRACODA

*APARCHITES PERFORATUS Harris 1931 (p. 87, pl. 5, figs. 4a, b; Harris 1932, p. 57, pl. 3, fig. 3). HA.

*BROMIDELLA RETICULATA Harris 1931 (See under BROMIDE FORMATION).

*ERIDOCONCHA MAGNA Harris 1931 (p. 91, pl. 5. figs. 3a, b; Harris 1932, p. 57, pl. 2, figs. 2a, b). HA [Type specimen from the Oil Creek formation; also recorded from the Bromide and Tulip Creek formations].

*ISOCHILINA BULBOSA Harris 1931 (p. 87, pl. 5, figs. 2a, b; Harris 1932, p. 57, pl. 3, fig. 3). HA [Type specimen from the Oil Creek; also recorded from the Joins formation].

GASTROPODA

MACLUREA or MACLURITES Decker and Merritt 1931 (pl. 4, fig. F).

CONODONTOPHORIDIA

DREPANODUS ARCUATUS Pander 1956. (Harris 1931, p. 95, pl. 5, figs. 1a, 1b). [This species also recorded from the Tulip Creek formation].

McLISH FORMATION

ANTHOZOA

*LICENARIA cf. L. CARTERENSIS (Safford) 1869. (Decker and Merritt 1931, pl. 9, figs. A, B, C). [In 1950 Bassler made this a new genus and species, *Saffordophyllum deckeri*; according to Bassler this came from the Bromide formation; see under BROMIDE FORMATION].

*#SAFFORDOPHYLLUM DECKERI Bassler 1950 (see under BROMIDE FORMATION).

BRACHIOPODA

*ANCISTRORHYNCHA? PERPLEXA Cooper 1956 (p. 625, pl. 127, C, figs. 14-19). USNM, 111297.

*#DORYTRETA BELLA Cooper 1956 (p. 667, pl. 124, G, figs. 39-43). USNM, 117191a. [Genus *Dorytreta* proposed in this paper, *D. bella* designated the genotype].

GLYPTORTHIS sp. 4 Cooper 1956 (p. 383, pl. 46, G, figs. 41, 42). USNM, 116995a.

*ORTHAMBONITES MINUTUS Cooper 1956 (p. 305, pl. 42,, A, figs. 1-9). USNM, 116883c, 116883a, b, d, e.

*PTYCHOPLEURELLA OKLAHOMENSIS Cooper 1956 (p. 388, pl. 42, G, figs. 40-44). USNM, 110095b, 110095a.

*SPHENOTRETA SULCATA Cooper 1956 (p. 666, pl. 124, C, figs. 18-23). USNM, 117190a, b.

OSTRACODA

LEPERDITIA FABULITES (Conrad) 1843. (Harris 1931, p. 87, pl. 10, figs. 1, 2; Harris 1932, p. 57, pl. 2, fig. 9).

GASTROPODA

MACLURITES MAGNA [sic] Lesueur 1818. (Decker and Merritt 1931, pl. 8, figs. A, B. C).

RAPHISTOMA STAMINEUM Hall 1847. (Decker and Merritt 1931, pl. 9, fig. E).

CYSTOIDEA

*CARYOCYSTITES TAPPANI Bassler 1943 (p. 699, pl. 1, figs. 16-18) USNM, 113104. [Bassler gives the formation as "Ordovician (Falls formation)"; Decker and Merritt (1931, p. 12, 98) state that the Falls formation = McLish formation].

PALEOCYSTITES [sic] TENUIRADIATUS (Hall) 1847. (Decker and Merritt 1931, pl. 8, figs. D, E).

CONODONTOPHORIDIA

CORDYLODUS PLATTINENSIS? Branson and Mehl 1933. (Branson and Mehl 1943, p. 381, pl. 63, fig. 7). MO.

CORDYLODUS PRIMUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 381, pl. 63, fig. 6). MO.

CURTOGNATHUS sp. Branson and Mehl 1943 (p. 381, pl. 63, fig. 3). MO.

ERISMODUS sp. Branson and Mehl 1943 (p. 380, pl. 63, figs. 1, 10). MO.

*LEPTOCHIROGNATHUS ERECTA Branson and Mehl 1943 (p. 377, pl. 63, fig. 18). MO, C528-5.

*LEPTOCHIROGNATHUS GRACILIS Branson and Mehl 1943 (p. 377, pl. 63, figs. 39, 40). MO, C530-3.

*LEPTOCHIROGNATHUS OBESA Branson and Mehl 1943 (p. 377, pl. 63, figs. 36-38). MO. C531-4.

*LEPTOCHIROGNATHUS PRIMA Branson and Mehl 1943 (p. 378, pl. 63, figs. 29-35). MO, C529-2.

*#LEPTOCHIROGNATHUS QUADRATA Branson and Mehl 1943 (p. 378, pl. 63, figs. 23-28). MO, C530-2. [The genus

Leptochirognathus proposed in this paper, *L. quadrata* designated the genotype.

*LEPTOCHIROGNATHUS SEMIFLOREALIS Branson and Mehl 1943 (p. 379, pl. 63, figs. 11-16). MO, C530-5.

*LEPTOCHIROGNATHUS TRIDACTYLA Branson and Mehl 1943 (p. 380, pl. 63, figs. 17, 19-22). MO, C531-3.

LEPTOCHIROGNATHUS? sp. Branson and Mehl 1943 (p. 380, pl. 63, fig. 5). MO, C527-3.

OISTODUS? sp. Branson and Mehl 1943 (p. 381, pl. 63, fig. 9). MO.

PHRAGMODUS PRIMUS? Branson and Mehl 1933 (Branson and Mehl 1943, p. 381, pl. 63, fig. 7). MO.

PTEROCONUS? sp. Branson and Mehl 1943 (p. 380, pl. 63, fig. 2). MO.

TRICHOGNATHUS? sp. Branson and Mehl 1943 (p. 381, pl. 63, fig. 4). MO.

TULIP CREEK FORMATION

BRACHIOPODA

*ATELELASMA SULCATUM Cooper 1956 (p. 524, pl. 81, B, figs. 7-13). USNM, 117013.

*HESPERORTHIS MATUTINA Cooper 1956 (p. 353, pl. 54, A, figs. 1-4). USNM, 109975b, 109975a, c, e.

MIMELLA sp. 2 Cooper 1956 (p. 490, pl. 91, figs. 29-34). USNM, 117057.

MURINELLA sp. 2 Cooper 1956 (p. 851, pl. 217, A, fig. 1). USNM, 117648a.

*ORTHAMBONITES MINUS Cooper 1956 (p. 304, pl. 34, D, figs. 16-20). USNM, 116882.

*PLECTORTHIS PUNCTATA Cooper 1956 (p. 452, pl. 84, D, figs. 19-23; pl. 84, F, figs. 33-35). USNM, 110836a, 117023b, 117024.

*VALCOUREA DECKERI Cooper 1956 (p. 407, pl. 74, A, figs. 1-14). USNM, 110208a, 110208b, c, e, 110211b, c, 110212a, b.

*VALCOUREA TENUIS Cooper 1956 (p. 412, pl. 76, D, figs. 18-29). USNM, 116970e, 116970a, b, f, g, h, i, j.

BRYOZOA

CORYNOTRYPA sp. (Harris 1936, fig. 33).

OSTRACODA

APARCHITES ELLIPTICUS (see under BROMIDE FORMATION].

APARCHITES MINUTISSIMUS TRENTONENSIS [see under BROMIDE FORMATION].

BYTHOCYPRIS CYLINDRICA (see under BROMIDE FORMATION].

BROMIDELLA RETICULATA Harris 1931 (p. 93, pl. 14, figs. 6a, b; Harris 1936, fig. 31). [see under BROMIDE FORMATION].

DICRANELLA MACROCARINATA [see under BROMIDE FORMATION].

ERIDOCONCHA MAGNUS [see under OIL CREEK FORMATION].

PRIMITIOPSIS BASSLERI [see under BROMIDE FORMATION].

SCHMIDTELLA cf. S. AFFINIS Ulrich 1892. (Harris 1931, pp. 89-90, pl. 11, figs. 4a, b).

SCHMIDTELLA CRASSIMARGINATA (see under BROMIDE FORMATION].

SCHMIDTELLA UMBONATA Ulrich 1894. (Harris 1936, fig. 30).

CONODONTOPHORIDIA

DREPANODUS ARCUATUS Pander 1956. [see under OIL CREEK FORMATION].

PRIONIODUS ACULEATUS Stauffer 1930. (Harris 1931, pp. 94-95, pl. 9, fig. 3; Harris 1936, fig. 34).

BROMIDE FORMATION

PORIFERA

ISCHADITES IOWENSIS (Owen) 1852. (Decker and Merritt 1931, pl. 13, fig. C).

ANTHOZOA

*#SAFFORDOPHYLLUM DECKERI Bassler 1950 (p. 267, pl. 14, figs. 4-6). USNM, 90998. [The genus *Saffordophyllum* proposed in this paper, *S. deckeri* designated the genotype; according to Bassler this is the species which Decker (and Merritt 1931, pl. 9, figs. A, B, C) identified as *Lichenaria carterensis*; (actually as *L.* cf. *L. carterensis*) according to Decker and

Merritt this species came from the McLish formation, but Bassler records it only from the Bromide formation].

*TETRADIUM OKLAHOMENSE Bassler 1950 (p. 281, pl. 1, figs. 5, 13). USNM, 95678, 113619.

*TETRADIUM SPICULATUM Bassler 1950 (p. 289, pl. 2, fig. 9; pl. 4, figs. 15-17; pl. 5, fig. 4). USNM, 95670.

GRAPTOLITHINA

DICELLOGRAPTUS GURLEYI Lapworth 1896 (Decker 1943, pp. 1391-1392, pl. 1, figs. 3, 3a, 4, 5, 5a, 6). Decker's figured specimens, OU, 586-588 [old Nos., A2064-A2064C; see under VIOLA FORMATION].

*DICTYONEMA FRANCESIAE Decker 1943 (p. 1389, pl. 1, fig. 1). OU, 546 [old No., A2062].

*DICTYONEMA ROCKCROSSINGENSIS [sic] Decker 1943 (pp. 1389-1391, pl. 1, fig. 2). OU, 545 old No. A2063].

*DIPLOGRAPTUS (AMPLEXOGRAPTUS) MAXWELLI Decker 1935B (pp. 242-243, pl. 1, figs. 1-7, 1a-6a; Ruedemann 1947, p. 413, pl. 70, figs. 33-38). OU, 653-659. [This species also recorded from the Viola formation].

BRACHIOPODA

*ACANTHOCRANIA ERECTA Cooper 1956 (p. 284, pl. 26, G, figs. 16, 17). USNM, 109789. ["Mountain Lake member?"].

*ACANTHOCRANIA OKLAHOMENSIS Cooper 1956 (p. 285, pl. 27, H, figs. 18-20). USNM, 116837a-d. ["Pooleville member —bed 2"].

*ACANTHOCRANIA SUBQUADRATA Cooper 1956 (p. 286, pl. 26, I, figs. 20-25; pl. 27, B, figs. 4-7). USNM, 109759b, 10975c, d, 109793, 116836. ["Mountain Lake member"].

*ANCISTRORHYNCHA GLOBULARIS Cooper 1956 (p. 624, pl. 128, B, figs. 6-9). USNM, 111278a. ["Pooleville member"].

*ATELELASMA OKLAHOMENSE Cooper 1956 (p. 521, pl. 80, C, figs. 12-19). USNM, 110124, 110125, ["Mountain Lake member"].

*BELLIMURINA COMPRESSA Cooper 1956 (p. 855, pl. 221, D, figs. 23-28). USNM, 117653. ["Mountain Lake member"].

*BELLIMURINA SUBQUADRATA Cooper 1956 (p. 857, pl. 222, H, figs. 15-18). USNM, 117655a-d. ["Mountain Lake member"].

*CAMERELLA ANTEROPLICATA Cooper 1956 (p. 562, pl. 111, F, figs. 46-54; pl. 111, G, figs. 55-63). USNM, 117129, 11341. ["Pooleville member"].

*CAMERELLA OKLAHOMENSIS Cooper 1956 (p. 574, pl. 71, F, figs. 27-35). USNM, 117993. ["Pooleville member"].

*CHAULISTOMELLA CRASSA Cooper 1956 (p. 434, pl. 71, B, figs. 5-9A). USNM, 116996a, b. ["Mountain Lake member"].

*CHAULISTOMELLA MAGNA (Schuchert and Cooper) 1932 (p. 98, pl. 10, figs. 16, 20, 27-29 [as *Valcourea magna*]; Cooper 1956, p. 438, pl. 70, B, figs. 11-23; Decker and Merritt 1931, pp. 42, 46, pl. 13, fig. G, identified this species as *Dinorthis subquadrata* [not Hall 1847]). YALE, 5779 [holotype]; figured specimens, USNM, 110539c, 110543a, 110545, 116999b. ["Pooleville member"].

*CHAULISTOMELLA MIRA Cooper 1956 (p. 439, pl. 61, D, figs. 16-22). USNM, 117001a, 117001c, d. ["Mountain Lake member—cystid bed"].

*CHAULISTOMELLA MUNDULA Cooper 1956 (p. 440, pl. 67, D, figs. 24-29; pl. 76, C, figs. 15-16). USNM, 11700a, 110442a, b, 117000e. ["Mountain Lake member"].

*CHAULISTOMELLA NITENS Cooper 1956 (p. 441, pl. 67, C, figs. 17-23). USNM, 117003a, 117003c. ["Mountain Lake member"].

*CHAULISTOMELLA OBESA Cooper 1956 (p. 441, pl. 67, B, figs. 8-16). USNM, 110562a, 110561a, 117991a. ["Mountain Lake member"].

CLIFTONIA GOULDI Decker and Merritt 1931 (pl. 13, fig. H); [Nomen nudum; see *Oxoplecia gouldi*].

CLIFTONIA OCCIDENTALIS Butts 1926 (see under *Oxoplecia occidentalis*).

*CRANIOPS TENUIS Cooper 1956 (p. 240, pl. 22, figs. 3-5). USNM, 109752a. ["Pooleville member — *Oxoplecia gouldi* zone"].

*CYCLOSPIRA PARVA Cooper 1956 (p. 694, pl. 142, K, figs. 49-53). USNM, 111391a. ["Pooleville member—*Oxoplecia gouldi* zone"].

*DACTYLOGONIA SCULPTURATA Cooper 1956 (p. 835, pl. 218, F, figs. 17-21; pl. 219, D, fig. 10). USNM, 117598b. ["Mountain Lake member"].

*DACTYLOGONIA SUBAEQUICOSTELLATA Cooper 1956 (p. 836, pl. 217, J, figs. 27-31; pl. 219, A, fig. 1; C. figs. 6-9). USNM, 117602, 117601b, c, 117603. ["Mountain Lake member"].

DINORTHIS SUBQUADRATA [see *Chaulistomella magna*].

*DOLEROIDES COMPRESSUS Cooper 1956 (p. 456, pl. 96, B, figs. 22-38). USNM, 110607c, 110596a, 110607a, d-f. ["Mountain Lake member"].

*DOLEROIDES OKLAHOMENSIS Cooper 1956 (p. 461, pl. 92, A, figs. 1-4; pl. 96, A, figs. 1-21). USNM, 110603a, b, 110600a, 110602b, 110613, 117033c, g, h. ["Pooleville member—*Oxoplecia gouldi* zone"].

*ECTENOGLOSSA ? SCULPTA Cooper 1956 (p. 220, pl. 4, C, figs. 9-13). USNM, 109302a, b. ["Pooleville member—*Oxoplecia gouldi* zone"].

*FASCIFERA DALMANELLOIDEA Cooper 1956 (p. 999, pl. 149, A, figs. 1-3; pl. 153, D, figs. 33-47; E, figs. 48-53). USNM, 117305a, b, 117304a, d, e, 117306a, 117307a, b, 117308. ["Mountain Lake member"].

*GLOSSELLA LIUMBONA Cooper 1956 (p. 228, pl. 4, A, figs. 1-4; pl. 9, I, figs. 23-25; pl. 13, E, figs. 7-12). USNM, 116785a, b, 109285, 116786). ["Pooleville member—*Oxoplecia gouldi* zone"].

*GLYPTORTHIS COSTELLATA Cooper 1956 (p. 366, pl. 43, C, fig. 8; pl. 44, D, figs. 20-37). USNM, 110052a, b, 110038a, 110040a, b, 110059a. ["Pooleville member—*Oxoplecia gouldi* zone"].

*GLYPTORTHIS CRENULATA Cooper 1956 (p. 367, pl. 44, C, figs. 11-19). USNM, 116932a, b, 110054. ["Mountain Lake member"].

*GLYPTORTHIS OBESA Cooper 1956 (p. 372, pl. 47, B, figs. 9-12). USNM, 110068a, b, c. ["Mountain Lake member"].

*GLYPTORTHIS UNCINATA Cooper 1956 (p. 377, pl. 43, B, figs. 4-7; pl. 46, B, figs. 5-10; pl. 50, E, figs. 19-23). USNM, 116943a, 116941a, b, 116942. ["Mountain Lake member"].

*HESPERORTHIS CRINERENSIS Cooper 1956 (p. 350, pl. 52, B, figs. 8-15). USNM, 110004a, b. ["Mountain Lake member —middle zone 7 of Decker"].

*HESPERORTHIS SULCATA Cooper 1956 (p. 356, pl. 52, D, figs. 22-37). USNM, 109987b, 109988a-f, 10992a-d, 109994a, c, h, 116922. ["Pooleville member—*Oxoplecia gouldi* zone"].

*LINGULELLA GALBA Cooper 1956 (p. 200, pl. 7, B, figs. 13-16). USNM, 109282b, a. ["Mountain Lake member"].

*LINGULELLA ? GLYPTA Cooper 1956 (p. 200, pl. 1, G, figs. 21-25). USNM, 116760a, 116760b. ["Pooleville member—zone 3"].

*LINGULASMA OKLAHOMENSE Cooper 1956 (p. 233, pl. 12, E, figs. 12-17). USNM, 109353a, b, 109352b, e. ["Pooleville member—*Oxoplecia gouldi* zone"].

*MACROCOELIA BELLA Cooper 1956 (p. 891, pl. 234, B, figs. 6-13). USNM, 117766a, 117764, 117765. ["Mountain Lake member"].

*MIMELLA EXTENSA Cooper 1956 (p. 470, pl. 86, A, figs. 1-21; pl. 90, A, figs. 1-15). USNM, 117037a-j, 110662a, 110669b. ["Mountain Lake member"].

*MIMELLA SUBQUADRATA Cooper 1956 (p. 483, pl. 92, B, figs. 5-9). USNM, 117050a. ["Mountain Lake member—lower *Sowerbyites* zone"].

*MULTICOSTELLA SULCATA Cooper 1956 (p. 428, pl. 71, A, figs. 1-4). USNM, 116993, 110459. ["Mountain Lake member—*Valcourea transversa* zone"].

*MURINELLA PARTITA Cooper 1956 (p. 847, pl. 223, F, figs. 11-17; pl. 227, D, figs. 17-25). USNM, 117639, 117638, 117640. ["Mountain Lake member"].

*ONYCHOPLECIA TENUIS Cooper 1956 (p. 535, pl. 100, K, fig. 50). USNM, 117091. ["Mountain Lake member"].

*ÖPIKINA sp. 2 (Cooper 1956, p. 924). USNM, 117850. ["Pooleville member—zone 2"].

*ÖPIKINA EXPATIATA Cooper 1956 (p. 907, pl. 241, A, figs. 1-8). USNM, 118072c. ["Mountain Lake member"].

*ÖPIKINA EXTENSA Cooper 1956 (p. 908, pl. 243, A, figs. 1-8). USNM, 123268a, b. ["Pooleville member"].

*ÖPIKINA FORMOSA Cooper 1956 (p. 909, pl. 243, B, figs. 9-17; C, figs. 18-28). USNM, 123272a, b. 117808, 123269b, 123270a, 123271a. ["Pooleville member—*Oxoplecia gouldi* zone"].

*ÖPIKINA GREGARIA Cooper 1956 (p. 911, pl. 238, figs. 8-18). USNM, 117814a-e. ["Mountain Lake member"].

*ORBICULOIDEA EXIMIA Cooper 1956 (p. 275, pl. 13, C, fig. 5; pl. 20, D, figs. 11-23). USNM, 109632a-f, 109428a, b, 109634b, 11795a. ["Pooleville member—*Oxoplecia gouldi* zone"].

ORTHIS TRICENARIA Conrad 1843. (Decker and Merritt 1931, pl. 13, fig. f). [Conrad's species is now referred to *Hesperorthis;* in 1956 Cooper recognized two species (both new) of *Hesperorthis* from the Bromide formation].

*OXOPLECIA FILOSA Cooper 1956 (p. 542, pl. 103, A, figs. 1-12). USNM, 117099a, b. ["Mountain Lake member"].

*OXOPLECIA GOULDI Ulrich and Cooper 1936B (p. 338, pl. 50, figs. 8, 15, 18, 19, 23, 28, 32, 36 [as *Cliftonia* (*Oxoplecia*) *gouldi*]; Cooper 1956, p. 545, pl. 103, C, figs. 17-29). USNM, 91897, 91898a, b, 91899, 11086, 118010. [=*Cliftonia gouldi* Decker and Merritt 1931, pl. 13, fig. H, nomen nudum. Ulrich and Cooper gave the formation as Criner, but in 1956 Cooper gave the formation as Bromide, Pooleville member, *Oxoplecia gouldi* zone, stating (p. 121) that this equaled Ulrich and Cooper's Criner formation].

*OXOPLECIA OCCIDENTALIS (Butts) 1926 (p. 126, pl. 31, figs. 21, 22; Cooper 1956, p. 551, pl. 101, C, figs. 16-22). USNM, 71529a (lectotype), 71529b, c, 117116a, b. [Butts gave the formation and locality of this species as Chickamauga limestone, northeast of Gate City, Ala., but according to Cooper this is an error and the types are actually from the Bromide formation of Oklahoma; see discussion given by Cooper 1956 under *Horizon and locality*].

*PACHYGLOSSA BICONVEXA Cooper 1956 (p. 224, pl. 7, A, figs. 1-12). USNM, 109271g, 109269a, 109271f, j, m. ["Pooleville member—*Oxoplecia gouldi* zone"].

*PAURORTHIS MACRODELTOIDEA Cooper 1956 (p. 969, pl. 151, A, figs. 1-6). USNM, 117284a, 117285. ["Pooleville member"].

PETROCRANIA sp. 3 (Cooper 1956, p. 291, pl. 25, G, figs. 20-22). USNM, 109766a, b. ["Mountain Lake member"].

*PETROCRANIA INFLATA Cooper 1956 (p. 288, pl. 25, I, figs. 24, 25; pl. 25, J, figs. 26-35; pl. 26, F, figs. 14, 15). USNM, 109785a, e, 109758, 109767, 109783c. ["Pooleville member—*Oxoplecia gouldi* zone"].

PHILHEDRA ? sp. (Cooper 1956, p. 292, pl. 22, H, fig. 15). USNM, 109761. ["Mountain Lake member"].

*PLATYMENA ? BELLATULA Cooper 1956 (p. 880, pl. 230, B, figs. 11-13). USNM, 117758. ["Pooleville member"].

*PLECTOGLOSSA OKLAHOMENSIS Cooper 1956 (p. 222, pl. 6, C, figs. 7-15). USNM, 116763-116765, 109294. ["Pooleville member—*Oxoplecia gouldi* zone"].

*PROTOZYGA COSTATA Cooper 1956 (p. 676, pl. 142, A, figs. 1-5). USNM, 117239c. ["Mountain Lake member"].

*PROTOZYGA ELONGATA Cooper 1956 (p. 677, pl. 140, E, figs. 27-37; pl. 143, I, figs. 41-46). USNM, 117241a, b, c, 11408a, b. ["Mountain Lake member—*Doleroides* zone=bryozoan zone"].

*PROTOZYGA LOEBLICHI Cooper 1956 (p. 679, pl. 140, C, figs. 17-21). USNM, 111412a. ["Pooleville member—*Oxoplecia gouldi* zone"].

*PROTOZYGA MAGNICOSTATA Cooper 1956 (p. 680, pl. 140, A, figs. 1-9). USNM, 117245a, b. 118040. ["Mountain Lake member"].

RAFINESQUINA MINNESOTENSIS (Winchell) 1881. (Decker and Merritt 1931, pl. 13, fig. E). [This species now placed in the genus *Öpikina*; Cooper 1956 described several species of this genus from the Bromide of Oklahoma, but his list does not include this species].

ROSTRICELLULA sp. 1 (Cooper 1956, p. 656, pl. 137, G, figs. 47-52). USNM, 117236. ["Pooleville member—bed E of Cooper"].

*ROSTRICELLULA CUNEATA Cooper 1956 (p. 637, pl. 124, H, figs. 44, 45). USNM, 117218a. ["Mountain Lake member"].

*ROSTRICELLULA PARVA Cooper 1956 (p. 643, pl. 134, C, figs. 27-32). USNM, 117223a. ["Pooleville member"].

*ROSTRICELLULA TRANSVERSA Cooper 1956 (p. 651, pl. 132, G, figs. 38-42; pl. 134, E, figs. 47-53; pl. 137, H, figs. 53-60). USNM, 111545a, 117229a, 117230. ["Pooleville member"].

*SCHIZAMBON PERSPINOSUM Cooper 1956 (p. 268, pl. 15, C, figs. 7-17). USNM, 109681a, b, c, 71891a, 109678, 109680. ["Mountain Lake member"].

*SKENIDIOIDES OKLAHOMENSIS Cooper 1956 (p. 498, pl. 97, A, figs. 1-12; pl. 98, E, figs. 24-27). USNM, 117079a, d-f, 118007a-d. ["Mountain Lake member"].

*SKENIDIOIDES PERFECTUS Cooper 1956 (p. 499, pl. 97, E, figs. 49-54, pl. 98, D, figs. 18-23). USNM, 117080. ["Pooleville member—*Oxoplecia gouldi* zone"].

SOWERBYELLA sp. 1 (Cooper 1956, p. 802, pl. 268, A, figs. 1, 2). USNM, 117544a. ["Mountain Lake member"].

*SOWERBYELLA INDISTINCTA Cooper 1956 (p. 782, pl. 202, D, figs. 24-26). USNM, 117493a, b, c. ["Mountain Lake member"].

*SOWERBYELLA PLICATIFERA Cooper 1956 (p. 791, pl. 203, A, figs. 1-15). USNM, 117512a, b, 117511a. ["Mountain Lake member"].

*SOWERBYELLA VARIABILIS Cooper 1956 (p. 798, pl. 197, D, figs. 35-43, pl. 202, E, figs. 27-40). USNM, 117536a, b, 117535b, c, 117538a, 117539a, b. ["Pooleville member—*Oxoplecia gouldi* zone"].

*SOWERBYELLA VULGATA Cooper 1956 (p. 801, pl. 198, A, figs. 1-22, pl. 202, C, figs. 16-23; pl. 206, B, figs. 8-12). USNM, 117543a-d, f, 117540a-d, 117541a, 11754a, b, e. ["Mountain Lake member"].

*SOWERBYITES HAMI Cooper 1956 (pl. 181, C, figs. 19-33). USNM, 117400a-d, f. ["Pooleville member"].

*SOWERBYITES LAMELLOSUS Cooper 1956 (p. 728, pl. 180, C, figs. 17-25; pl. 184, G, figs. 23-27). USNM, 117406c. [The holotype is from the Bromide formation, Mountain Lake member of Oklahoma; also reported from the Eureka group, Nevada, and from the Sevier formation in Tennessee].

*STROPHOMENA COSTELLATA Cooper 1956 (p. 933, pl. 255, A, figs. 1-19). USNM, 117714a-d, 117708, 117712, 117713, 123278. ["Pooleville member—*Oxoplecia gouldi* zone"].

*STROPHOMENA CRINERENSIS Cooper 956 (p. 934, pl. 173, E, figs. 25-30; pl. 260, B, figs. 11-25). USNM, 117718, 117715, 117716a, 117717a, c, 1177719a, c. ["Pooleville member—*Oxoplecia gouldi* zone"].

*STROPHOMENA OKLAHOMENSIS Cooper 1956 (p. 942, pl. 260, A, figs. 1-10). USNM, 117738a, 117739a, b. ["Pooleville member—just above zone with *Multicostella convexa*"].

VALCOUREA MAGNA Schuchert and Cooper 1932 [see *Chaulistomella magna*].

*VALCOUREA TRANSVERSA Cooper 1956 (p. 413, pl. 72, D, figs. 22-31, pl. 76, B, figs. 11-14). USNM, 116971, 116972b, d, 110277b. ["Mountain Lake member"].

BRYOZOA

*ANOLOTICHIA DECKERI Loeblich 1942 (p. 417, pl. 61, figs. 1, 2). UC, USNM.

ANOLOTICHIA IMPOLITA (Ulrich) 1886. (Loeblich 1942, p. 418, pl. 61, figs, 5, 6). Loeblich's figured specimens. UC, USNM.

*ANOLOTICHIA SPINULIFERA Loeblich 1942 (p. 418, pl. 61, figs. 3, 4). UC, USNM.

*ATACTOPORELLA BELLULA Loeblich 1942 (p. 420, pl. 61, figs. 7, 8). UC, USNM.

*BATOSTOMA CHAPPARSI Loeblich 1942 (p. 431, pl. 64, figs. 11-13). UC, USNM.

*BATOSTOMA CUMINGSI Loeblich 1942 (p. 431, pl. 64, figs. 14-16). UC, USNM.

BATOSTOMA WINCHELLI (Ulrich) 1886. (Loeblich 1942, p. 432, pl. 64, figs. 8-10). Loeblich's figured specimens. UC, USNM.

DEKAYELLA PRAENUNTIA ECHINATA Ulrich 1893. (Loeblich 1942, p. 426, pl. 63, figs. 12, 14). Loeblich's figured specimens. UC, USNM.

*ERIDOTRYPA ABRUPTA Loeblich 1942 (p. 429, pl. 63, figs. 20, 21). UC, USNM.

*FISTULIPORA ? BASSLERI Loeblich 1942 (p. 419, pl. 61, figs. 9, 14). UC, USNM.

*HALLOPORA DUBIA Loeblich 1942 (p. 430, pl. 62, figs. 8-11). UC, USNM.

*HALLOPORA MACROSTOMA Loeblich 1942 (p. 430, pl. 62, figs. 12-14). UC, USNM.

*HALLOPORA PACHYMURA Loeblich 1942 (p. 431, pl. 62, figs. 15-17). UC. USNM.

HEMIPHRAGMA IRRASUM (Ulrich) 1886. (Loeblich 1942, p. 433, pl. 63, figs. 19). Loeblich's figured specimens. UC, USNM.

*HEMIPHRAGMA PULCHRUM. Loeblich 1942 (p. 434, pl. 64, figs. 17-20). UC, USNM.

*HETEROTRYPA TAFFI Loeblich 1942 (p. 427, pl. 62, figs. 21-24). UC, USNM.

*HOMOTRYPA CALLITOECHA Loeblich 1942 (p. 420, pl. 62, figs. 18-20). UC, USNM.

*HOMOTRYPA MULTITABULATA Loeblich 1942 (p. 421, pl. 63, figs. 1-3; Decker 1944B, p. 875, pl. 1, figs. 4, 5, 6). Loeblich's types, UC, USNM; Decker's specimen, OU. [Decker's specimen from a well-core, Cleveland County, Okla.; in the text this species assigned to *Homotrypa,* but in the plate explanation to *Monotrypa*].

*HOMOTRYPA SAGITTATA Loeblich 1942 (p. 421, pl. 63, figs. 7-9). UC, USNM.

*HOMOTRYPA ULRICHI Loeblich 1942 (p. 422, pl. 63, figs. 4-6). UC, USNM.

*MESOTRYPA FAVOSA Loeblich 1942 (p. 422, pl. 63, figs. 15, 16). UC, USNM.

*MESOTRYPA TUBULIFERA Loeblich 1942 (p. 422, pl. 63, figs. 17, 18). UC, USNM.

*MONTICULIPORELLA CRONEISI Loeblich 1942 (p. 433, pl. 62, figs. 6-7). UC, USNM.

*MONTICULIPORELLA PECULIARIS Loeblich 1942 (p. 424, pl. 62, figs. 1, 2). UC. USNM.

*MONTICULIPORELLA SHIDELERI Loeblich 1942 (p. 425, pl. 62, figs. 3-5). UC, USNM.

*NICHOLSONELLA IRREGULARIS Loeblich 1942 (p. 428, pl. 64, figs. 5-7). UC, USNM.

NICHOLSONELLA LAMINATA Ulrich 1893 (Loeblich 1942, p. 428, pl. 64, figs. 3-4). Loeblich's figured specimens. UC, USNM.

*NICHOLSONELLA MONILIFORMIS Loeblich 1942 (p. 429, pl. 64, figs. 1, 2). UC, USNM.

*PACHYDICTYA BROMIDENSIS Loeblich 1942 (p. 435, pl. 64, figs. 21, 22). UC, USNM.

*PRASOPORA FRITZAE Loeblich 1942 (p. 426, pl. 63, figs. 10, 11). UC, USNM.

*STROMATOTRYPA FRONDOSA Loeblich 1942 (p. 434, pl. 61, figs. 15-17). UC, USNM.

TRILOBITA

*AMPYX (LONCHODOMAS) MCGEHEEI Decker 1931 (pp. 153-155, figs. 1, 2) OU.

ILLAENUS AMERICANUS (Billings) 1859. (Decker and Merritt 1931, pl. 13, fig. D).

ISOTELUS GIGAS Dekay 1824. (Laudon 1937, p. 283; 1939, pp. 211-213, fig. 2; Loeblich 1940, p. 161).

OSTRACODA

*BROMIDELLA RETICULATA Harris 1931 (p. 93, pl. 14, figs. 6a, b; Harris 1932, p. 57, pl. 3, fig. 6). HA. [The genus *Bromidella* proposed in this paper, *B, reticulata* designated the genotype; this species also recorded from the Oil Creek formation].

BYTHOCYPRIS CYLINDRICA (Hall) 1871. (Harris 1932, p. 57, pl. 2, figs. 3a, b). [This species recorded from the Bromide, Viola and Tulip Creek formations].

CRYPTOPHYLLUS OBOLOIDES (Ulrich and Bassler) 1923. Levinson 1951, pl. 77, figs. 9a, b).

DICRANELLA BICORNIS Ulrich 1894. (Harris 1932, p. 58, pl. 3, fig. 7).

*DICRANELLA MACROCARINATA Harris 1931 (p. 92, pl. 14, figs. 3a, b). HA.

ERIDOCONCHA MAGNA Harris (see under OIL CREEK FORMATION).

*ERIDOCONCHA SIMPSONI Harris 1931 (p. 90, pl. 14, figs. 1a, b; pl. 11, figs. 1a, b, c, d). HA.

EURYCHILINA RETICULATA Ulrich 1889. (Harris 1932, p. 58, pl. 3, fig. 2).

EURYCHILINA VENTROSA Ulrich 1894. (Harris 1932, p. 58, pl. 2, fig. 6).

HALLIELLA LABIOSA Ulrich 1894. (Harris 1932, p. 57, pl. 2, fig. 5).

KRAUSELLA ARCUATA Ulrich 1892. (Harris 1931, p. 94, pl. 14, figs. 4a, b, c).

*LEPERDITELLA ? DECKERI Harris 1931 (p. 89, pl. 14, figs. 5a, b, c). HA.

LEPERDITELLA INFLATA (Ulrich) 1892. (Harris 1931, p. 89, pl. 14, figs. 5a, b, c).

*PRIMITIOPSIS BASSLERI Harris 1931 (p. 91, pl. 14, figs. 2a, b, pl. 11, figs. 2a, b, c, d; Harris 1932, p. 57, pl. 3, figs. 1a, b). HA. [Also recorded from the Tulip Creek formation].

ULRICHIA INITIALIS (Ulrich) 1894. (Harris 1932, p. 58, pl. 3, fig. 5) [Bassler and Kellett 1934 refer this species to *Kloedenia*].

SCHMIDTELLA UMBONATA Ulrich 1894. (Harris 1932, p. 58, pl. 3, figs. 9a, b).

EDRIOASTEROIDEA

*CYATHOCYSTIS OKLAHOMAE Strimple and Graffham 1955 (pp. 353-355, figs. 3, 7, 8). USNM.

CYSTOIDEA

*AMYGDALOCYSTITES TRIBRACHIATUS Bassler 1943 (p. 695, pl. 1, figs. 14, 15). USNM, 93386.

*#ANTHRACOCRINUS PRIMITIVUS Strimple and Watkins 1955 (p. 349, figs. 1a-c, 2a, 4-6). USNM. [The genus *Anthracocrinus* proposed in this paper, *A. primitivus* designated the genotype].

*CHEIROCRINUS ARDMORENSIS Bassler 1943 (p. 699, pl. 1, fig. 6). USNM, 93471. [Bassler gives the formation as "Simpson group (Cool Creek formation). . " He is following Ulrich's usage of Cool Creek, a name now dropped from Simpson terminology. Bassler's specimens are believed to be from the Bromide formation (Sinclair 1945, p. 707), probably from the lower Bromide because Cooper notes (1956, p. 120) that his lower Mountain Lake member carries the cystids *Platycystites* and *Cheirocrinus*].

*CHEIROCRINUS ? LOEBLICHI Bassler 1943 (p. 701, pl. 1, figs. 1, 2). USNM, 113107. [For a discussion of the stratigraphic position see under *Cheirocrinus ardmorensis*].

*ECHINOENCRINITES ? ORNATUS Bassler 1943 (p. 703, pl. 1, fig. 7). USNM, 113106. [For a discussion of the stratigraphic position see under *Cheirocrinus ardmorensis*].

*ENOPLOURA ? PAPILLATA Bassler 1943 (p. 695, pl. 1, figs. 3-5). USNM, 113105. [For a discussion of the stratigraphic position see under *Cheirocrinus ardmorensis*].

*EUMORPHOCYSTIS MULTIPORATA Branson and Peck 1940 (pp. 89-90, pl. 13, figs. 1-7; Bassler 1943, p. 703). MO. [The

generic name *Eumorphocystis* proposed in this paper, *E. multiporta* being the genotype (monotypical)].

*GLYPTOCYSTITES LOEBLICHAE Bassler 1943 (p. 702, pl. 1, figs. 8, 9; Sinclair 1948, p. 312). USNM, 93484. [For a discussion of the stratigraphic position see under *Cheirocrinus ardmorensis*].

*#HESPEROCYSTIS DECKERI Sinclair 1945 (p. 711, pl. 1, figs. 9-10; text fig. 1). OU. [The genus *Hesperocystis* proposed in this paper, *H. deckeri* designated the genotype].

*#MYEINOCYSTITES NATUS Strimple 1953 (p. 106, figs. 1, 2). USNM. [The genus *Myeinocystites* proposed in this paper, *M. natus* designated the genotype].

*#PARARCHAEOCRINUS DECORATUS Strimple and Watkins 1955 (pp. 315-352, figs. 2b-f, figs. 9, 10). USNM. [The genus *Pararchaeocrinus* proposed in this paper, *P. decoratus* designated the type].

*PLATYCYSTITES BASSLERI Sinclair 1945 (p. 709, pl. 1, figs. 1-5). OU, 5001.

*PLATYCYSTITES BROMIDENSIS Bassler 1943 (p. 698, pl. 1, fig. 10; Sinclair 9945, p. 708, pl. 1, fig. 6). Bassler's types, USNM, 933333; Sinclair's figured specimens, OU, 5008. [For a discussion of the stratigraphic position of Bassler's specimens seen under *Cheirocrinus ardmorensis*].

*PLATYCYSTITES CRISTATUS Bassler 1943 (p. 697, pl. 1, fig. 11). USNM, 93334.

*PLATYCYSTITES FIMBRIATUS Bassler 1943 (p. 698, pl. 1, fig. 12). USNM, 93336. [For a discussion of the stratigraphic position see under *Cheirocrinus ardmorensis*].

*PLATYCYSTITES LEVATUS Bassler 1943 (p. 697, pl. 1, fig. 13; Sinclair 1945, p. 708, pl. 1, figs. 7-8). Bassler's types, USNM, 93339; Sinclair's figured specimens, OU, 5009. [For a discussion of the stratigraphic position of Bassler's specimens see under *Cheirocrinus ardmorensis*].

*PLEUROCYSTITES WATKINSI Strimple 1948 (p. 761, pl. 1, fig. 1-3). USNM.

*SINCLAIROCYSTIS ANGULATUS Strimple 1952 (p. 158, figs. 5-9). USNM.

*SINCLAIROCYSTIS SULPHURENSIS Strimple 1952 (p. 160, figs. 1-4). USNM.

GLYPTOCYSTITES LOGANI Billings 1853. (Decker and Merritt 1931, pl. 13, figs. A, B). [Bassler and Moodey 1943 list this species under *Cheirocrinus*].

CRINOIDEA

*ARCHAEOCRINUS SUBOVALIS Strimple 1953B (pp. 604-605, figs. 1-7). USNM.

*CARABOCRINUS TREADWELLI Sinclair 1945 (p. 715, pl. 2, figs. 14-16). OU, 5007.

*HYBOCRINUS CRINERENSIS Strimple and Watkins 1949 (p. 132, pl. 1, figs. 4-8). USNM.

*HYBOCRINUS NITIDUS Sinclair 1945 (p. 713, pl. 2, figs. 1-4). OU, 5005.

*HYBOCRINUS PYXIDATUS Sinclair 1945 (p. 713, pl. 2, figs. 5-7). OU, 5010.

*PALAEOCRINUS HUDSONI Sinclair 1945 (p. 715, pl. 2, figs. 11-13). OU, 5006.

CONODONTOPHORIDIA

*CARDIODUS ABBREVIATUS Branson and Mehl 1943 (p. 385, pl. 64, fig. 18). MO, C540-1. [The formation cited as "upper Bromide"; this "upper" fauna was collected 20 feet below the top of the Bromide formation (Branson and Mehl 1943, pp. 381-382) which would place it in the Pooleville member of Cooper 1956].

CARDIODUS DENSUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 385, pl. 64, figs. 21). MO. [The Oklahoma specimens are from the "upper Bromide"; see under *Cardiodus abbreviatus*].

*CARDIODUS ROBUSTUS Branson and Mehl 1943 (p. 382, pl. 64, figs. 23-26). MO, C536-5. [The formation cited as "lower Bromide"; this "lower" fauna was collected 65 feet above the base of the Bromide formation (Branson and Mehl 1943, pp. 381-382) which would place it in the Mountain Lake member of Cooper 1956].

CORDYLODUS sp. (Branson and Mehl 1943, p. 382, pl. 64, figs. 42, 43). MO. ["lower Bromide"; see under *Cardiodus robustus*].

CURTOGNATHUS sp. (Branson and Mehl 1943, p. 386, pl. 64, fig. 22). MO. ["upper Bromide"; see under *Cardiodus abbreviatus*].

*CURTOGNATHUS CORDIFORMIS Branson and Mehl 1943 (p. 386, pl. 64, fig. 19). MO, C538-4. ["upper Bromide"; see under *Cardiodus abbreviatus*].

CURTOGNATHUS CORONATA Branson and Mehl 1933. (Branson and Mehl 1943, p. 384, pl. 64, fig. 47). MO. ["lower Bromide"; see under *Cardiodus robustus*].

CURTOGNATHUS LIMITARIS Branson and Mehl 1933. (Branson and Mehl 1943, p. 384, 386, pl. 64, figs. 20, 49). MO. ["lower Bromide" and "upper Bromide"; see under *Cardiodus abbreviatus* and *C. robustus*].

ERISMODUS ? sp. (Branson and Mehl 1943, p. 385, pl. 64, fig. 17). MO. ["upper Bromide"; see under *Cardiodus abbreviatus*].

LEPTOCHIROGNATHUS ? sp. (Branson and Mehl 1943, p. 383, pl. 64, fig. 34). MO. ["lower Bromide"; see under *Cardiodus robustus*].

*LEPTOCHIROGNATHUS EXTENSA Branson and Mehl 1943 (p. 383, pl. 64, figs. 35, 51, 52). MO, C533-5, C535-5. ["lower Bromide"; see under *Cardiodus robustus*].

MICROCOELODUS ? sp. (Branson and Mehl 1943, p. 384, pl. 64, fig. 44). MO, ["lower Bromide"; see under *Cardiodus robustus*].

MICROCOELODUS ASYMMETRICUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 383, pl. 64, figs. 37, 39, 41, 46). MO. ["lower Bromide"; see under *Cardiodus robustus*].

*MICROCOELODUS INORNATUS Branson and Mehl 1943 (p. 384, pl. 64, fig. 45). MO, C535-3. ["lower Bromide"; see under *Cardiodus robustus*].

*MICROCOELODUS INTERMEDIUS Branson and Mehl 1943 (p. 384, pl. 64, figs. 38, 40, 53). MO, C532-1. ["lower Bromide"; see under *Cardiodus robustus*].

MICROCOELODUS MINUTIDENTATUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 384, pl. 64, fig. 50). MO. ["lower Bromide"; see *Cardiodus robustus*].

MICROCOELODUS TYPUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 383, 385, pl. 64, figs. 12, 36, 54-56); MO. [This species recorded from both the "lower" and the "upper" Bromide; see *Cardiodus abbreviatus* and *C. robustus*].

POLYCAULODUS BIDENTATUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 382, 385, pl. 64, figs. 15, 29). MO. [This species recorded from both the "lower" and the "upper" Bromide; see *Cardiodus abbreviatus* and *C. robustus*].

POLYCAULODUS TRIDENTATUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 382, 385, pl. 64, figs. 14, 27, 28). MO. [This species recorded from both the "lower" and the "upper" Bromide; see *Cardiodus abbreviatus* and *C. robustus*].

OISTODUS SUBERECTUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 385, pl. 64, fig. 11). MO. ["upper Bromide"; see *Cardiodus abbreviatus*].

*TRICHOGNATHUS OBTUSA Branson and Mehl 1943 (p. 385, pl. 64, fig. 13). MO, C538-2. ["upper Bromide"; see *Cardiodus abbreviatus*].

TRUCHEROGNATHUS DISTORTA Branson and Mehl 1933. (Branson and Mehl 1943, p. 385, pl. 64, figs. 30, 33). MO. ["lower Bromide"; see *Cardiodus robustus*].

TRUCHEROGNATHUS IRREGULARIS Branson and Mehl 1933. (1943, p. 384, pl. 64, figs. 31, 32). MO. ["lower Bromide"; see *Cardiodus robustus*].

VIOLA LIMESTONE

FORAMINIFERA

*BATHYSIPHON EXIGUUS Moreman 1930 (p. 46, pl. 6, fig. 8). USNM.

*#KERIONAMMINA FAVUS Moreman 1933 (p. 397, pl. 47, figs. 1, 3). USNM. [The genus *Kerionammina* proposed in this paper, *K. favus* designated the genotype].

*MARSIPELLA AGGREGATA Moreman 1933 (p. 395, pl. 47, figs. 11, 14). USNM.

*RAIBOSAMMINA ASPERA Moreman 1930 (p. 50, pl. 6, figs. 13, 14, 15). USNM.

*#RAIBOSAMMINA MICA Moreman 1930 (p. 50, pl. 6, figs. 7, 11). USNM. [The genus *Raibosammina* proposed in this paper, *R. mica* designated the genotype].

*RHABDAMMINA TRIFURCATA Moreman 1933 (p. 394, pl. 47, fig. 12). USNM.

*THOLOSINA ELONGATA Moreman 1930 (p. 55, pl. 6, fig. 4). USNM.

*WEBBINELLA THOLUS Moreman 1933 (p. 395, pl. 47, figs. 8, 10). USNM.

GRAPTOLITHINA

CHAUNOGRAPTUS sp. (Decker and Coleman 1945, p. 457, pl. 1, fig. 11). [Well-core, Carter County, Okla.].

CLIMACOGRAPTUS ANTIQUUS Lapworth 1873. (Decker 1951B, pl. 1, fig. 2 [well-core, Beckham County, Okla.]; Decker 1952B, pl. 1, fig. 4 [well-core, Carter County, Okla.]). Decker's 1952 figured specimens, OU, 570, 571.

CLIMACOGRAPTUS ANTIQUUS POLYTHECA Ruedemann 1947 (Decker 1952B, pl. 1, fig. 15, 27). Decker's specimens, OU, 571, 578 [well-core, Carter County, Okla.].

CLIMACOGRAPTUS BICORNIS (Hall) 1847. (Decker 1944B, p. 875, pl. 1, fig. 3 [well-core, Cleveland County, Okla.]; Decker 1951B, pl. 1, fig. 1 [well-core, Beckham County, Okla.]; Decker 1952B, pl. 1, fig. 13, 20 [well-core, Carter County, Okla.]). Decker's figured specimens, OU, 569, 571, 629, 632.

CLIMACOGRAPTUS CAUDATUS Lapworth 1876 (Ruedemann and Decker 1934, p. 319, pl. 43, figs. 1, 1a; Ruedemann 1947, p. 424, pl. 72, figs. 60-62; Decker 1952B, pl. 1, fig. 29). Ruedemann and Decker's figured specimens, OU, 457, 568.

CLIMACOGRAPTUS EXIMIUS Ruedemann 1908. (Ruedemann and Decker 1934, p. 319, pl. 43, figs. 2, 2a; Ruedemann 1947, p. 435, pl. 72, figs. 8, 9). Ruedemann and Decker's figured specimens, OU, 465.

CLIMACOGRAPTUS LORRAINENSIS Ruedemann 1925. (Ruedemann and Decker 1934, p. 322, pl. 43, figs. 3, 4; Ruedemann 1947, p. 430). Ruedemann and Decker's figured specimens, OU, 455, 466.

CLIMACOGRAPTUS MODESTUS Ruedemann 1908. (Decker 1951B, pl. 1, fig. 14 [well-core, Beckham County, Okla.]; Decker 1952B, pl. 1, fig. 5, 12 [well-core, Carter County, Okla.]). Decker's specimens, OU, 570, 571.

CLIMACOGRAPTUS PARVUS Hall 1847. (Ruedemann 1947, p. 433, pl. 74, figs. 22, 23; Decker 1951B, pl. 1, fig. 12 [well-core, Beckham County, Okla.]; Decker 1952B [well-core, Carter County, Okla.]). Decker's figured specimens, OU, 568, 627.

CLIMACOGRAPTUS SCHARENBERGI Lapworth 1876. (Decker 1951B, pl. 1, fig. 3 [well-core Beckham County, Okla.]). Decker's figured specimen, OU, 628.

CLIMACOGRAPTUS SPINIFER Ruedemann 1908. (Ruedemann and Decker 1934, p. 322, pl. 43, figs. 5, 5a; Ruedemann 1947, p. 439, pl. 75, figs. 4-7 [as *C. spiniferus*]. Ruedemann and Decker's figured specimen, OU, 469.

CLIMACOGRAPTUS TYPICALIS Hall 1865. (Ruedemann and Decker 1934, p. 322, pl. 43, figs. 6-7; Ruedemann 1947, p. 441, pl. 76, figs. 36-38; Decker 1951B, pl. 1, fig. 13 [well-core, Beckham County, Okla.]; Decker 1952B, pl. 1, figs. 16, 28 [well-core, Carter County, Okla.]). Ruedemann and Decker's figured specimens, OU, 451, 468, 568, 571, 626.

*CLIMACOGRAPTUS TYPICALIS CRASSIMARGINALIS Ruedemann and Decker 1934 (p. 322, pl. 43, figs. 8, 9, 12, 12a; Decker and Coleman 1945, p. 457, pl. 1, figs. 3, 5, 6; [well-core, Carter County, Okla.]). Ruedemann and Decker's and Decker and Coleman's figured specimens, OU, 453, 620.

CLIMACOGRAPTUS TYPICALIS POSTERUS Ruedemann 1925. (Ruedemann and Decker 1934, p. 324, pl. 43, figs. 10, 11; Ruedemann 1947, p. 442, pl. 75, figs. 44, 45). Ruedemann and Decker's figured specimens, OU, 479, 480.

CRYPTOGRAPTUS INSECTIFORMIS Ruedemann 1908. (Ruedemann and Decker, 1934, p. 324, pl. 43, figs. 13-17; Ruedemann 1947, p. 446, pl. 75, figs. 39-41 [as *C. tricornis insectiformis*]; Decker 1951B, pl. 1, fig. 6 [as *C. tricornis insectiformis*; well-core, Beckham County, Okla]). Ruedemann and Decker's, and Decker's figured specimens, OU, 450, 461, 462, 630.

CRYPTOGRAPTUS TRICORNIS (Carruthers) 1858. (Decker 1951B, pl. 1, fig. 16 [well-core, Beckham County, Okla.]; Decker 1952B, pl. 1, figs. 3, 22, 31 [well-core, Carter County, Okla.]). Decker's figured specimens, OU, 568, 569, 570, 627.

CRYPTOGRAPTUS TRICORNIS INSECTIFORMIS Ruedemann (see *C. insectiformis*).

DESMOGRAPTUS OKLAHOMENSIS Ruedemann and Decker 1934 (p. 303, pl. 40, figs. 1, 1a; Ruedemann 1947, p. 221, pl. 22, figs. 7, 8). Ruedemann and Decker's figured specimen, OU, 463.

DICELLOGRAPTUS DIVARICATUS (Hall) 1859. (Decker 1951B, pl. 1, fig. 8 [well-core, Beckham County, Okla.]; Decker 1952B, pl. 1, fig. 1 [well-core, Carter County, Okla.]). Decker's figured specimens, OU, 570, 626.

DICELLOGRAPTUS FORCHAMMERI (Geinitz) 1852. (Ruedemann and Decker 1934, p. 307, pl. 40, figs. 9, 9a; Ruedemann 1947, p. 381, pl. 63, fig. 12). Ruedemann and Decker's figured specimens, OU.

DICELLOGRAPTUS FORCHAMMERI FLEXUOSUS Lapworth 1876. (Ruedemann and Decker 1934, p. 307, pl. 40, figs. 10, 10a, 11, pl. 41, figs. 1, 2; Decker 1944B, p. 873, pl. 1, fig. 1 [well-core, Cleveland County, Okla.]; Ruedemann 1947, p. 382, pl. 63, figs. 15-20; Decker 1951B, pl. 1, fig. 7 [well-core, Beckham County, Okla.]). Ruedemann and Decker's, and Decker's figured specimens, OU, 481, 482, 520, 562, 624, 646.

DICELLOGRAPTUS GURLEYI Lapworth 1896. (Ruedemann and Decker 1934, p. 310, pl. 41, figs. 4-6a; Ruedemann 1947, p. 382, pl. 63, figs. 29-32; Decker 1951B, pl. 1, fig. 5 [well-core, Beckham County, Okla.]). Ruedemann and Decker's, and Decker's figured specimens, OU, 470-472, 630.

DICELLOGRAPTUS MENSURANS Ruedemann 1908. (Decker 1951B, pl. 1, fig. 11 [well-core, Beckham County, Okla.]). Decker's figured specimens, OU, 624.

DICELLOGRAPTUS MOFFATENSIS ALABAMENSIS Ruedemann 1908. (Decker 1951B, pl. 1, fig. 10 [well-core, Beckham County, Okla.]). Decker's specimen, OU, 624.

DICELLOGRAPTUS SEXTANS PEREXILIS Ruedemann 1908. (Ruedemann and Decker 1934, p. 312, pl. 41, fig. 7). Ruedemann and Decker's figured specimen, OU, 459.

DICRANOGRAPTUS NICHOLSONI Hopkinson 1870. (Decker 1951B, pl. 1, fig. 9 [well-core, Beckham County, Okla.]; Decker 1952B, pl. 1, fig. 2 [well-core, Carter County, Okla.]). Decker's figured specimens, OU, 570, 624.

*DICRANOGRAPTUS NICHOLSONI GENICULATUS Ruedemann and Decker 1934 (p. 312, pl. 41, figs. 8, 8a; Decker and Coleman 1945, p. 454, pl. 1, fig. 2 [well-core, Carter County, Okla.]; Ruedemann 1947, p. 393, pl. 66, figs. 21-24). OU, 520 [?], 621.

*DICRANOGRAPTUS NICHOLSONI LONGIBASALIS Ruedemann and Decker 1934 (p. 313, pl. 41, figs. 9-10; Ruedemann 1947, p. 393, pl. 67, figs. 1-5). OU, 454.

DIPLOGRAPTUS VESPERTINUS Ruedemann 1908. (Ruedemann and Decker 1934, p. 317, pl. 42, fig. 7; Decker 1944B, p. 874, pl. 1, fig. 2 [well-core, Cleveland County, Okla.]; Decker and Coleman 1945, p. 455, pl. 1, figs. 7, 8, 10 [well-core, Carter County, Okla.]; Ruedemann 1947, p. 410, pl. 69, figs. 67-68 [as *D.* (*Glyptograptus*) *vespertinus*]; Decker 1952B, pl. 1, figs. 9, 25 [well-core, Carter County, Okla.]). Ruedemann and Decker's, and Decker's figured specimens, OU, 478, 571, 568, 631.

DIPLOGRAPTUS (AMPLEXOGRAPTUS) MAXWELLI Decker 1935B. (Decker 1952B, pl. 1, figs. 21, 26 [well-core, Carter County, Okla.]). Decker's figured specimen, OU, 569. [The type specimens of this species are from the Bromide formation; see GRAPTOLITHINA under that formation].

DIPLOGRAPTUS (AMPLEXOGRAPTUS) AMPLEXICAULIS (Hall) 1847. (Ruedemann and Decker 1934, p. 313, pl. 42, figs. 1-2a; Ruedemann 1947, p. 411, pl. 70, figs. 12-14). Ruedemann and Decker's and Decker's figured specimens, OU, 452, 464.

DIPLOGRAPTUS (AMPLEXOGRAPTUS) RECURRENS Ruedemann 1925. (Ruedemann and Decker 1934, p. 316, pl. 42, figs. 6, 6a; Ruedemann 1947, p. 415, pl. 70, figs. 49-50). Ruedemann and Decker's figured specimens, OU, 458.

DIPLOGRAPTUS (GLYPTOGRAPTUS) EUGLYPHUS Lapworth 1877. (Decker 1952B, pl. 1, figs. 10, 18 [well-core, Carter County, Okla.]). Decker's figured specimens, OU, 569, 571. [Ruedemann 1947, p. 405 lists this species from the "Stringtown shale" (=Womble shale)].

DIPLOGRAPTUS (GLYPTOGRAPTUS) EUGLYPHUS PYGMAEUS Ruedemann 1908. Decker 1952B, pl. 1, fig. 11 [well-core, Carter County, Okla.]. Decker's figured specimen, OU, 571. [Ruedemann 1947, p. 406 records from the "Stringtown shale" (=Womble shale)].

DIPLOGRAPTUS (GLYPTOGRAPTUS) TERETIUSCULUS (Hisinger) 1840. (Ruedemann 1947, pl. 69, figs. 44, 45; Decker 1951B, pl. 1, fig. 15 [well-core, Beckham County, Okla.];

Decker 1952B, pl. 1, figs. 8, 19 [well-core Carter County, Okla.]). Decker's figured specimens, OU, 569, 571, 626.

DIPLOGRAPTUS (ORTHOGRAPTUS) CALCARATUS ACUTUS Elles and Wood 1901-1918. (Decker 1952B, pl. 1, figs. 7, 17, 23 [well-core, Carter County, Okla.]). Decker's figured specimens, OU, 568, 659, 571.

DIPLOGRAPTUS (ORTHOGRAPTUS) CALCARATUS INCISUS Lapworth 1908. (Decker 1952B, pl. 1, figs. 6, 24 [well-core, Carter County, Okla.]). Decker's figured specimens, OU, 568, 571. [Ruedemann 1947 records this species from the "Stringtown shale"; see under WOMBLE FORMATION].

DIPLOGRAPTUS (ORTHOGRAPTUS) NEXUS Ruedemann 1925. (Ruedemann and Decker 1934, p. 316, pl. 42, fig. 3; Ruedemann 1947, p. 402, pl. 69, fig. 11). Ruedemann and Decker's figured specimen, OU, 477.

GLOSSOGRAPTUS CILIATUS Emmons 1855. (Ruedemann and Decker 1934, p. 317, pl. 42, fig. 8; Ruedemann 1947, p. 450). Ruedemann and Decker's figured specimen, OU, 467.

GLOSSOGRAPTUS QUADRIMUCRONATUS (Hall) 1865. (Ruedemann and Decker 1934, p. 318; Decker and Coleman 1945, p. 456, pl. 1, fig. 9 [well-core, Carter County, Okla.]). Decker and Coleman's figured specimen, OU, 636.

GLOSSOGRAPTUS QUADRIMUCRONATUS CORNUTUS Ruedemann 1908. (Decker 1952B, pl. 1, fig. 32 [well-core, Carter County, Okla.]). Decker's figured specimen, OU, 568.

GLOSSOGRAPTUS QUADRIMUCRONATUS SPINIGERUS (Lapworth) 1876. (Ruedemann and Decker 1934, p. 318, pl. 42, figs. 9-10a; Decker and Coleman, 1945, p. 456, pl. 1, fig. 4 [well-core, Carter County, Okla.]; Ruedemann 1947, p. 457, pl. 79, figs. 14, 15). Ruedemann and Decker's, and Decker and Coleman's figured specimens, OU, 476, 639.

GLOSSOGRAPTUS WHITFIELDI (Hall) 1859. (Decker 1952B, pl. 1, fig. 33 [well-core, Carter County, Okla.]). Decker's figured specimen, OU, 568.

LASIOGRAPTUS (THYSANOGRAPTUS) EUCHARIS (Hall) 1865. (Ruedemann and Decker 1934, p. 324, pl. 43, figs. 18-20; Decker and Coleman 1945, p. 457, pl. 1, fig. 1 [well-core, Carter County, Okla.; as *Lassiograptus eucharis*]; Ruedemann 1947, p. 461, pl. 82, fig. 25). Ruedemann and Decker's, and

Decker and Coleman's figured specimens, OU, 636.

LEPTOGRAPTUS ? sp. ind. (Whittington 1955, p. 838, pl. 83, figs. 1, 2; text figs. 1-5). HA, 520a, b, c.

LEPTOGRAPTUS ANNECTANS (Walcott) 1883. (Ruedemann and Decker 1934, p. 305, pl. 40, figs. 4, 4a; Ruedemann 1947, p. 363, pl. 59, fig. 6). Ruedemann and Decker's figured specimen, OU, 590.

LEPTOGRAPTUS CAPILLARIS (Carruthers) 1868. (Ruedemann and Decker 1934, p. 305; Ruedemann 1947, p. 364).

LEPTOGRAPTUS FLACCIDUS MACER Elles and Wood 1901-1918. (Ruedemann and Decker 1934, p. 306, pl. 40, fig. 5; Ruedemann 1947, p. 365, pl. 59, figs. 22-24). Ruedemann and Decker's figured specimen, OU, 456.

LEPTOGRAPTUS FLACCIDUS TRENTONENSIS Ruedemann 1908. (Ruedemann and Decker 1934, p. 306, pl. 40, figs. 7, 8; Ruedemann 1947, p. 366, pl. 59, figs. 14-17). Ruedemann and Decker's figured specimens, OU, 460, 473.

MASTIGOGRAPTUS cf, M. CIRCINALIS Ruedemann 1908. (Ruedemann and Decker 1934, p. 304, pl. 40, figs. 2, 2a, 3 3a; Ruedemann 1947, p. 256, pl. 35, figs. 23-26). Ruedemann and Decker's figured specimens, OU, 474, 475.

NEMAGRAPTUS GRACILIS (Hall) 1847. (Decker 1951B, pl. 1, fig. 4 [well-core, Beckham County, Okla.]). Decker's figured specimen, OU, 625.

*#ORTHORETIOLITES HAMI Whittington 1954 (pp. 613-621, pl. 63; text figs. 1-13). HA, 511, 512a-m. [The genus *Orthoretiolites* proposed in this paper, *O. hami* designated the genotype].

*#PHORMOGRAPTUS SOONERI Whittington 1955 (pp. 847-850, pl. 83, figs. 4, 5; text figs. 15-19). HA, 523, 524a-j. [The genus *Phormograptus* proposed in this paper, *P. sooneri* designated the genotype].

*#PIPIOGRAPTUS HESPERUS Whittington 1955 (pp. 841-846, pl. 84; text fig. 6-14). HA, 521, 522a-e. [The genus *Pipiograptus* proposed in this paper, *P. hesperus* designated the genotype].

CHITINOZOA

RHABDOCHITINA ? cf. R. MINNESOTENSIS Stauffer 1933. (Whittington 1955, p. 850, pl. 83, figs. 3, 6). Whittington's figured specimen, HA, 1021.

BRACHIOPODA

*PATERULA POLITA Cooper 1956 (p. 239, pl. 24, A, figs. 1, 2). USNM, 109411a, b.

TRILOBITA

*#CRYPTOLITHOIDES ULRICHI Whittington 1941 (pp. 38-39, pl. 6, figs. 1, 2, 6, 12-14, 16, 17, 21, 22). USNM. [The genus *Cryptolithoides* proposed in this paper, *C. ulrichi* designated the genotype].

CRYPTOLITHUS sp. (Whittington 1941, pp. 37-38, pl. 6, fig. 15). USNM.

*CRYPTOLITHUS CARINATUS Ulrich and Whittington 1941 (in Whittington 1941, pp. 34-35, pl. 6, figs. 3, 23, 25, 39). USNM.

*CRYPTOLITHUS CONVEXUS Ulrich and Whittington 1941 (in Whittington 1941, p. 35, pl. 6, figs. 4, 5, 33, 37). USNM.

*CRYPTOLITHUS FITTSI Ulrich and Whittington 1941 (in Whittington 1941, pp. 36-37, pl. 5, figs. 3, 5, 6, 10-12, 16, 20, 24). USNM. [The holotype is from a chert boulder in the Johns Valley shale, Johns Valley, Okla.; other specimens from the Viola limestone].

*ROBERGIA DECKERI Cooper 1953 (pp. 23-24, pl. 2, figs. 1-6, pl. 19, figs. 1-2). USNM, 116432a-c. [Decker (1933, pp. 1415, 1417) identified this as *Robergia athenia,* a species described by Butts from the Athens shale, Shelby County, Ala.].

OSTRACODA

BYTHOCYPRIS CYLINDRICA (Hall) 1871. (See under Bromide formation).

CERATOPSIS CHAMBERSI (Miller) 1874. (Harris 1932, p. 58, pl. 2, fig. 7).

CEPHALOPODA

*WESTONOCERAS DECKERI Foerste 1935 (p. 61, pl. 4, fig. 1). USNM [?]. [Foerste states that the specimens used in describing this species are in the "Collection of Prof. Charles E. Decker". There is one paratype in the OU paleontological collections, numbered 238, but this is not Foerste's figured specimen. Presumably this figured specimen is the holotype and is at the USNM].

CONODONTOPHORIDIA

DICHOGNATHUS EXTENSA Branson and Mehl 1933. (Branson and Mehl 1943, p. 387, pl. 64, fig. 10). MO.

DICHOGNATHUS TYPICA Branson and Mehl 1933. (Branson and Mehl 1943, p. 387, pl. 64, fig. 9). MO.

OISTODUS ABUNDANS Branson and Mehl 1933. (Branson and Mehl 1943, p. 386, pl. 64, fig. 11). MO.

OISTODUS INCLINATUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 386, pl. 64, fig. 1). MO.

PALTODUS COMPRESSUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 386, pl. 64, fig. 6). MO.

PALTODUS GRACILIS Branson and Mehl 1933. (Branson and Mehl 1943, p. 386, pl. 64, figs. 7, 8). MO.

PHRAGMODUS UNDATUS Branson and Mehl 1933. (Branson and Mehl 1943, p. 386, pl. 64, figs. 4, 5). MO.

*PTEROCONUS ? ABBREVIATUS Branson and Mehl 1943 (p. 387, pl. 64, figs. 2, 3). MO, C541-3.

"FERNVALE" LIMESTONE

BRACHIOPODA

LEPIDOCYCLUS sp. 1 (Cooper 1956, p. 658, pl. 130, G, figs. 36, 37). USNM.

CEPHALOPODA

*#DECKEROCERAS ADAENSE Foerste 1935 (p. 93, pl. 21, fig. 4). USNM [?]. [The genus *Deckeroceras* proposed in this paper, *D. adaense* designated the genotype. According to Foerste the types are in the "Collection of Prof. Charles E. Decker", but the only specimen in the OU collections is a paratype numbered 237 and this is not the figured specimen. Presumably the holotype is the figured specimen and is at the USNM].

SYLVAN SHALE

GRAPTOLITHINA

*CLIMACOGRAPTUS MISSISSIPPIENSIS Ruedemann 1908 (pp. 413-414, pl. 28, figs. 12, 13; Decker 1935A, pp. 704, 706, figs. 1j-1; Decker 1945, p. 1044, figs. 2, 2a [well-core, Carter County, Okla.]; Ruedemann 1947, p. 431, pl. 74, figs. 3-9). Decker's figured specimens, OU, 484, 504 [old numbers, A2370, A2371, A2380]. [Ruedemann's types (1908) from the "Sylvan shale of the Arbuckle Mountains in Indian Territory"].

CLIMACOGRAPTUS PUTILLUS (Hall) 1865. (Decker 1935A, p. 706, figs. 1m-o; Decker 1945, p. 1045, figs. 3, 3a [well-cuttings, Carter County, Okla.]; Ruedemann 1947, p. 434, pl. 72, figs. 30, 31, 34-40). Decker's figured specimens, OU, 490, 492 [old numbers, A2372, A2373].

*CLIMACOGRAPTUS TRIDENTATUS MAXIMUS Decker 1935A (p. 707, figs. 1p-t, 2a-d; Ruedemann 1947, p. 439, pl. 75, figs. 16-26). OU, 486-488, 494 [old numbers, A2374, A2375, B2361-2364].

CLIMACOGRAPTUS ULRICHI Ruedemann 1908. (Decker 1935A, p. 707, fig. 2e; Ruedemann 1947, p. 443). Decker's figured specimens, OU, 491 [old number, B2365].

*DICELLOGRAPTUS COMPLANATUS Lapworth 1880. (Ruedemann 1908, p. 294, pl. 18, fig. 1 [as *Dicellograptus* cf. *D. complanatus* Lapworth: illustration marked "wrongly reproduced"]; Decker 1935A, p. 702, figs. 1a-e; Ruedemann 1947, p. 376, pl. 62, figs. 4-5, 8-9; Decker and Huffman 1953, p. 451, figs. 1, 2). Decker's figured specimens, OU, 495, 496, 499, 500, 501, 503 [old numbers, A2361-2365, A2376].

*DIPLOGRAPTUS CRASSITESTUS Ruedemann 1908 (p. 354, pl. 25, fig. 6; Decker 1935A, pp. 702-703, figs. 1f-i; Ruedemann 1947, p. 415, pl. 71, figs. 3-9 [as *D. (Mesograptus) crassitestus*]). Decker's figured specmiens, OU, 485, 489, 493, 523 [old numbers, A2366-2369, A2377]. [Ruedemann (1908) type specimens, "Sylvan shale, Arbuckle Mountains, Indian Territory"].

RETIOGRAPTUS sp. (Decker 1935A, p. 708, fig. 2f). OU, 491 [old number, B2366].

BRACHIOPODA

ELLIPTOGLOSSA SYLVANICA Cooper 1956 (p. 244, pl. 23, D, figs. 7-13). USNM, 109388a, b, e, f-i. [Types from Oklahoma; also reported from the Maquoketa of Missouri].

OUACHITA MOUNTAIN REGION

WOMBLE FORMATION (= Stringtown)

GRAPTOLITHINA

DIPLOGRAPTUS (GLYPTOGRAPTUS) EUGLYPHUS Lapworth 1877. (see under Viola limestone).

DIPLOGRAPTUS (GLYPTOGRAPTUS) EUGLYPHUS PYGMAEUS Ruedemann 1908. (see under Viola limestone).

DIPLOGRAPTUS (ORTHOGRAPTUS) CALCARATUS INCISUS Lapworth 1908. (Ruedemann 1947, pl. 68, fig. 10; see also under Viola limestone).

BRACHIOPODA

ARCHAEORTHIS BICONVEXA Cooper 1956 (p. 293, pl. 31, B, figs. 7-10). USNM, 116852a, b.

PATERULA SUBCIRCULARIS Cooper 1956 (p. 239, pl. 24, C, figs. 7-10). USNM, 109414a-c. [Cooper gives the formation as "Stringtown shale = Womble shale (Big Fork chert)"].

POLK CREEK SHALE

GRAPTOLITHINA

?CLIMACOGRAPTUS ANTIQUUS Lapworth 1873. (Ruedemann 1908, p. 439, pl. 28, figs. 28, 29; Ruedemann 1947, p. 423). [In 1908 Ruedemann illustrated specimens which he referred to this species from "the shales associated with the Talihina formation in the Indian Territory". The Talihina formation has subsequently been divided into four formations: Arkansas novaculite, Missouri Mountain shale, Polk Creek shale and Big Fork chert; Ruedemann's specimens were probably from the Polk Creek shale. In 1947 Ruedemann stated that he had erroneously recorded this species from the Talihina formation].

OZARK REGION

FITE LIMESTONE

ANTHOZOA

*TETRADIUM OCULATUM Bassler 1950 (p. 283, pl. 1, figs. 7, 8, pl. 5, fig. 9). USNM, 95635. [Bassler gives the formation as "Richmondian (Basal Fernvale-Fite ls.); 7 miles nw of Tahlequah, Okla.". The Fite limestone was named by Cram in Okla. Geological Survey, Bull. 40, vol. 3; according to Cram (p. 548) the Fite limestone overlies the Tyner formation unconformably, and is unconformably overlain by the Fernvale limestone].

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