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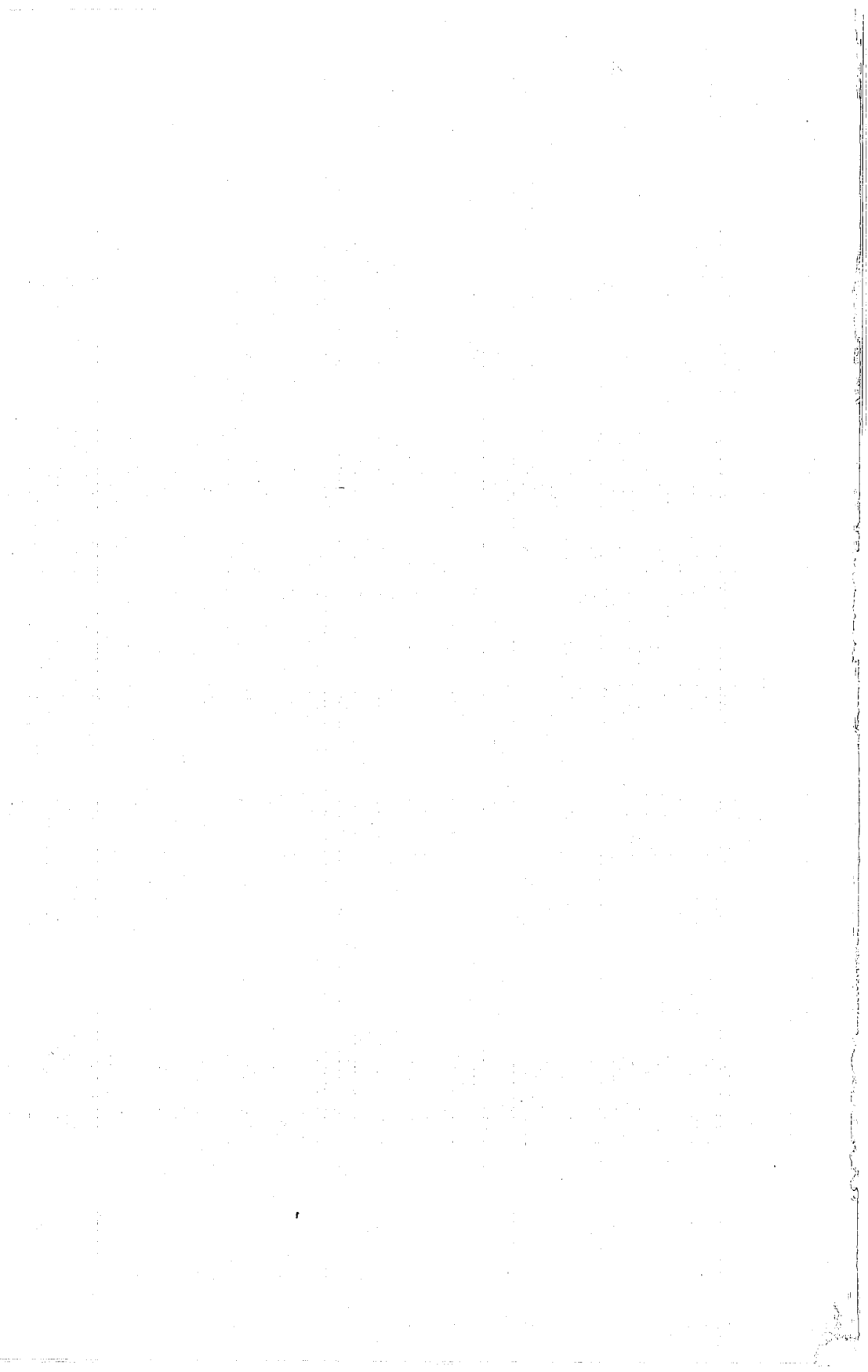
GEOLOGY STUDIES

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Bibliography and Index of Conodonts, 1959-1963¹

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ABSTRACT.—330 articles pertaining to conodonts published during 1959-1963, and 30 articles published prior to 1959, are listed and indexed. The articles contain descriptions of 264 new forms, including 209 new species and 29 new genera. In addition to the index of new forms, a stratigraphic-geographic index of conodont-bearing formations is included which shows that conodonts are now known to range from Middle Cambrian through Late Triassic time.

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INTRODUCTION

This is the second in a series of conodont bibliographies and indexes which has been compiled as a supplement to Fay's Catalogue of conodonts. The first one covered the period 1949-1958 (Ash, 1961), and this covers the years 1959-1963. Both have been compared with Ellison's two conodont bibliographies (1962b and 1963) and significant omissions have been added to this one.

The author is indebted to the students of conodonts who have generously sent him reprints for use in this compilation. He is particularly indebted to Dr. John Huddle, Dr. Willi Ziegler, Mr. Dwayne D. Stone, Mrs. Elizabeth Kuntz, and Mrs. Mary Paul who have been of assistance to him in various ways.

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Listed in the following bibliography are the 330 articles which are known to have been published during the calendar years 1959-1962 and most of 1963, and 30 articles that were published prior to 1959. An asterisk (*) marks those articles in which new forms of conodonts are proposed and those which are of taxonomic interest for other reasons.

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INDEX OF NEW CONODONTS

All of the new forms of conodonts proposed in the articles cited in the bibliographic section of this paper are listed here. Included in the alphabetically arranged list are: 7 new subfamilies, 29 new genera, 4 new subgenera, 209 new species, 18 new subspecies, and 4 new varieties of disjunct units (form genera of some authors). No new conodont assemblages were described in any of the cited articles.

The order of items given in each generic and subgeneric entry is as follows: Name of the genus or subgenus, its author, date of publication, and number of the page on which the new form is described; name of the type species, its author, date of publication; and the geologic age of the new form. If the type species is not listed in this index the full reference can be found in either Fay's Catalogue of conodonts or in my Bibliography and index of conodonts for the period 1949-1958.

The order of items given in each species, subspecies, and variety entry is as follows: Name of the new form, its author, date of its publication, page number on which it is described, and numbers of the illustrations in which it is figured; its geologic age, and the general geographical area from which it was collected.

- Acodus inornatus* Ethington, 1959, p. 268, pl. 39, fig. 11. Late Ordovician, Iowa.
- Aconitodus cooperi* Sweet and Bergström, 1962, pp. 1221-1222, pl. 168, figs. 2, 3; text-fig. 1G. Middle Ordovician, Alabama.
- A. falcatus* Ethington, 1959, pp. 268-269, pl. 39, figs. 6-7. Late Ordovician, Iowa.
- Ambalodus planus* Sergeeva, 1963, pp. 105-106, pl. 8, figs. 11-14, text-fig. 10. Early Ordovician, Russia.
- A. triangularis erratus* Bergström, 1961, pp. 26-27, pl. 3, figs. 15-17. Middle Ordovician Sweden.
- A. t. suecicus* Bergström, 1961, pp. 28-19, pl. 3, figs. 11-14. Middle Ordovician, Sweden.
- Amorphognathus elongata* Bergström, 1961, pp. 31-32, pl. 5, figs. 1-3. Middle Ordovician, Sweden.
- A. ordovicia simplicior* Bergström, 1961, pp. 34-35, pl. 4, figs. 2, 5, 6. Middle Ordovician, Sweden.
- A. waerensis* Bergström, 1961, pp. 36-37, pl. 4, figs. 7-10. Middle Ordovician, Sweden.
- A. variabilis* Sergeeva, 1962, pp. 106-107, pl. 8, figs. 15-17, text-fig. 11. Early Ordovician, Russia.
- Ancyrognathus crypa* Ziegler, 1962b, pp. 49-50, pl. 9, figs. 2-6. Late Devonian, Germany.
- ANCYROLEPIS Ziegler, 1959b, pp. 77-78. *Ancyrolepis cruciformis* Ziegler, 1959a. Late Devonian.
- A. cruciformis* Ziegler, 1959a, pp. 78-80, pl. 7, figs. 1-4. Late Devonian, Germany.
- Apatognathus tribulosus* Clark and Ethington, 1962, p. 107, pl. 1, figs. 3, 7, 13, 17. Early Permian, Texas, Wyoming.
- Aphelognathus irregularis* Pulse and Sweet, 1960, pp. 249-250, pl. 36, figs. 15, 17. Late Ordovician, Indiana, Kentucky, and Ohio.
- Bactrognathus communis* Hass, 1959a, pp. 380-381, pl. 46, figs. 20, 25-27, 30, 31. Early Mississippian, Texas.
- B. penehamata* Hass, 1959a, p. 381, pl. 46, figs. 22, 23, 29. Early Mississippian, Texas.
- BALOGNATHINAE Hass, 1959a, p. 379. A new subfamily which includes the following genera: *Balognathus* Rhodes, and *Ieriodella* Rhodes.
- BELODINA Ethington, 1959, pp. 271-272. *Belodus grandis* Stauffer, 1935. Middle and Late Ordovician.
- B. alabamensis* Sweet and Bergström, 1962, pp. 1223-1224, pl. 170, figs. 10, 11. Middle Ordovician, Alabama.
- B. dartoni* Stone and Furnish, 1959, p. 220, pl. 31, fig. 15. Late Ordovician, Wyoming.
- B. kirki* Stone and Furnish, 1959, p. 221, pl. 31, figs. 12-13. Late Ordovician, Wyoming.
- B. leirhi* Ethington and Furnish, 1960, pp. 269-270, pl. 38, fig. 12. Late Ordovician, Manitoba.
- BRANMEHLA Hass, 1959a, p. 381. *Spathodus inornata* Branson and Mehl, 1934. Late Devonian and Early Mississippian.
- Cavusgnathus inflexa* Clarke, 1960, p. 23, pl. 3, figs. 18-19. Late Mississippian, Scotland.
- CHIRODELLA Hirschmann, 1959, p. 71. *Metalonchodina triquetra* Tatge, 1956. Triassic.
- COELOCERODONTUS Ethington, 1959, p. 273. *Coelocerodontus trigonius* Ethington, 1959. Late Ordovician.
- C. digonius* Sweet and Bergström, 1962, p. 1224, pl. 168, fig. 1; text-fig. 1F. Middle Ordovician, Alabama.
- C. tetragonius* Ethington, 1959, p. 273, pl. 39, fig. 15. Late Ordovician, Iowa.
- C. trigonius* Ethington, 1959, p. 273, pl. 39, fig. 14. Late Ordovician, Iowa.
- Cordylodus excavatus* Sweet, Turco, Warner and Wilkie, 1959, pp. 1045-1046, pl. 132, fig. 16. Late Ordovician, Ohio.
- C. oklahomensis* Müller, 1959c, pp. 447-448, pl. 15, figs. 15-16, text-fig. 3A. Late Cambrian, Oklahoma.
- C. proavus* Müller, 1959c, pp. 448-449, pl. 15, figs. 11-12, 18, text-fig. 3B. Late Cambrian Oklahoma.
- C. robustus* Ethington and Furnish, 1959, p. 543, pl. 73, fig. 11. Late Ordovician, Manitoba.
- CORNUDINA Hirschmann, 1959, p. 44. *Ozarkodina breviramulus* Tatge, 1956. Triassic.
- Ctenognathus pseudofissilis* Lindström, 1959, p. 439, pl. 4, figs. 1-9. Middle and Late Ordovician, England.
- CYRTONIODONTINAE Hass, 1959a, p. 378. A new subfamily which includes the following genera: *Cyrtoniodus* Stauffer, *Plectodina* Stauffer, *Gothodus* Lindström, *Paracordylodus* Lindström, *Holodontus* Rhodes, *Keislognathus* Rhodes, *Phragmodus* Branson and Mehl, *Zyognathus* Branson and Mehl, *Periodon* Hadding.

- Cyrtionodus sinclairi* Ethington and Furnish, 1960, pp. 270-271, pl. 38, fig. 16. Late Ordovician, Manitoba.
- Distacodus* (?) *cambricus* Müller, 1959c, p. 450, pl. 14, figs. 1-2. Late Cambrian, Sweden.
- D. palmeri* Müller, 1959c, pp. 449-450, pl. 14, figs. 3-4. Late Cambrian, Nevada.
- D. procerus* Ethington, 1959, p. 275, pl. 39, fig. 8. Late Ordovician, Iowa.
- DOLLYMAE* Hass, 1959a, p. 394. *Dollymae sagittula* Hass, 1959a. Early Mississippian.
- D. sagittula* Hass, 1959a, p. 394, pl. 47, figs. 7, 10. Early Mississippian, Texas.
- D. hassi* Voges, 1959b, pp. 275-276, pl. 33, figs. 5-10. Early Mississippian, Germany.
- EOBELODINA* Sweet, Turco, Warner, and Wilkie, 1959, p. 1050. *Oistodus fornicatus* Stauffer, 1935. Middle and Late Ordovician.
- EOFALODUS* Harris, 1962, pp. 204-205. *Eofalodus brevis* Harris, 1962. Middle Ordovician.
- E. brevis* Harris, 1962, pp. 205-206, pl. 1, figs. 7a-7d. Middle Ordovician, Oklahoma.
- Eoligonodina fairmountensis* Pulse and Sweet, 1960, pp. 253-254, pl. 35, fig. 17. Late Ordovician, Kentucky.
- E. magna* Ethington, 1959, p. 277, pl. 40, figs. 3-4. Late Ordovician, Iowa.
- E. ulrichi* Stone and Furnish, 1959, pp. 222-223, pl. 32, figs. 16-18. Late Ordovician, Wyoming.
- Euprionodina glencartensis* Clarke, 1960, pp. 5-6, pl. 1, fig. 5. Late Mississippian, Scotland.
- Falcodus* (?) *alaroides* Rexroad and Burton, 1961, pp. 1152-1153, pl. 140, fig. 8. Late Mississippian, Illinois.
- F. parvidentatus* Sergeeva, 1963, pp. 103-104, pl. 8 figs. 407, text-fig. 8, Early Ordovician, Russia.
- F. simplex* Sergeeva, 1963, pp. 104-105, pl. 8, figs. 8-10, text-fig. 9. Early Ordovician, Russia.
- FURNISHINA* Müller, 1959c, p. 451. *Furnishina furnishi* Müller, 1959c. Late Cambrian.
- F. asymmetrica* Müller, 1959c, pp. 451-452, pl. 11, figs. 16, 19. Late Cambrian, Germany.
- F. bicarinata* Müller, 1959c, p. 452, pl. 12, fig. 3. Late Cambrian, Wyoming.
- F. furnishi* Müller, 1959c, pp. 452-453, pl. 11, figs. 5, 6, 8, 9, 11-15, 17, 18, pl. 12, figs. 1, 6, text-figs. 6D-6E. Late Cambrian, Wyoming.
- F. primitiva* Müller, 1959c, p. 453, pl. 11, figs. 1-4. Late Cambrian, Germany.
- F. quadrata* Müller, 1959c, pp. 453-454, pl. 12, figs. 2, 4, 9, text-fig. 6C. Late Cambrian, Germany.
- FURNISHIUS* Clark, 1959, pp. 310-311. *Furnishius triserratus* Clark, 1959. Early Triassic.
- F. triserratus* Clark, 1959, p. 311, pl. 44, figs. 1-6. Early Triassic, Nevada.
- Geniculatus glottoides* Voges, 1959b, pp. 279-280, pl. 33, figs. 21-25. Early Mississippian, Germany.
- GLADIGONDOLELLA* Müller, 1962a, p. 116. *Polygnathus rethydis* Huckriede, 1958. Triassic, Upper Cretaceous (?).
- Gnathodus clavatus* Clarke, 1960, p. 25, pl. 4, figs. 4-9. Late Mississippian, Scotland.
- G. commutatus* var. *multinodosus* Higgins, 1962, pp. 8-9, pl. 2, figs. 13-18. Late Mississippian, Spain.
- G. cruciformis* Clarke, 1960, pp. 25-26, pl. 4, figs. 10-12. Late Mississippian, Scotland.
- G. smithi* Clarke, 1960, pp. 26-27, pl. 4, figs. 13-14; pl. 5, figs. 9-10. Late Mississippian, Scotland.
- G. (Harltonodus)* Elias, 1959, pp. 144-145. Mississippian, Texas.
- G. (H.) bilineatus* Elias, 1959, pp. 145-146, pl. 1, figs. 3-12. Early Mississippian, Texas.
- G. (H.) bransoni* Elias, 1959, pp. 147-148, pl. 1, figs. 13-18. Late Mississippian, Oklahoma.
- G. (H.) minutus* Elias, 1959, pp. 148-149, pl. 1, figs. 22-25. Late Mississippian, Oklahoma.
- Gondolella carinata* Clark, 1959, pp. 308-309, pl. 44, figs. 15-19. Early Triassic Nevada.
- G. gracilis* Clark and Ethington, 1962, pp. 107-108, pl. 1, fig. 12; pl. 2, figs. 6, 10. Early Permian, Wyoming.
- G. nankingsis* Ching, 1960, pp. 238-246, pl. 2, figs. 5-8. Early Permian, China.
- G. nevadensis* Clark, 1959, p. 308, pl. 44, figs. 11-14. Early Triassic, Nevada.
- G. planata* Clark, 1959, p. 309, pl. 44, figs. 8-10. Early Triassic.
- G. serrata* Clark and Ethington, 1962, pp. 108-109, pl. 1, figs. 10-11, 15, 19; pl. 2, figs. 1, 5, 8-9, 11-14.
- GONIODONTUS* Ethington, 1959, p. 278. *Goniodontus superbus* Ethington, 1959. Late Ordovician.
- G. superbus* Ethington, 1959, p. 278, pl. 40, figs. 1-2. Late Ordovician, Iowa.

- HADDINGODUS* Sweet and Bergström, 1962, p. 1228. *Arabellites serra* Hadding, 1913. Middle Ordovician.
- HERTZINA* Müller, 1959c, p. 454. *Hertzina americana* Müller, 1959c. Late Cambrian.
- H. americana* Müller, 1959c, p. 455, pl. 13, figs. 25-26. Late Cambrian, Nevada.
- H. (?) bisulcata* Müller, 1959c, p. 456, pl. 13, figs. 22-24, 27. Late Cambrian, Sweden.
- H. elongata* Müller, 1959c, pp. 455-456, pl. 13, fig. 28. Late Cambrian, Germany.
- Hibbardella fragilis* Higgins, 1961, pp. 213-214, pl. 12, fig. 4, text-fig. 2. Late Mississippian, England.
- H. pennata* Higgins, 1961, p. 213, pl. 12, figs. 5-6. Late Mississippian, England.
- Hindeodella dimitrovi* Spasov and Ganey, 1960, pp. 82, 92, 94, pl. 2, fig. 1. Late Triassic, Bulgaria.
- H. fragilis* Hass, 1959a, p. 383, pl. 48, figs. 18, 21, 26. Early Mississippian, Texas.
- H. mülleri* Clark, 1959, p. 310, pl. 45, figs. 1-2. Early Triassic, Nevada.
- H. tenuis* Clarke, 1960, pp. 8-9, pl. 1, figs. 10-11. Late Mississippian, Scotland.
- HINDEODELLINAE** Hass, 1959, p. 378. A new subfamily which includes the following genera: *Hindeodella* Bassler, *Cervicornoides* Stauffer, *Kladognathus* Rexroad, *Tripodellus* Sannemann, and *Metaproniodus* Huddle.
- HINDEODELLOIDES** Huddle em. Elias, 1959, pp. 156-157. Late Devonian and Lower Mississippian.
- HINDEODINA** Hass, 1959a, p. 382. *Hindeodina simplaria* Hass, 1959a. Early Mississippian.
- H. simplaria* Hass, 1959a, p. 382, pl. 48, fig. 17. Early Mississippian, Texas.
- H. uncata* Hass, 1959a, p. 383, pl. 47, fig. 6. Early Mississippian, Texas.
- HISTIODELLA** Harris, 1962, pp. 207-208. *Histiodella altifrans* Harris, 1962. Middle Ordovician.
- H. altifrans* Harris, 1962, pp. 208-209, pl. 1, figs. 4a-4c. Middle Ordovician, Oklahoma.
- H. serrata* Harris, 1962, p. 209, pl. 1, figs. 3a-3b. Middle Ordovician, Oklahoma.
- Icriodus woschmidti* Ziegler, 1960a, pp. 185-186, pl. 15, figs. 16-18, 20-22. Early Devonian, Germany.
- Keislognathus simplex* Ethington, 1959, pp. 280-281, pl. 40, figs. 9-10. Late Ordovician, Iowa.
- Lambdagnathus macrodentata* Higgins, 1961, pp. 214-215, pl. 12, figs. 1-3, text-fig. 3. Late Mississippian, England.
- LATERICRIODUS** Müller, 1962a, pp. 114-116. *Icriodus latericrescens* Branson and Mehl, 1938. Lower ? Middle to Upper Devonian.
- Ligonodina completens* Clarke, 1960, pp. 9-10, pl. 1, figs. 14-15. Late Mississippian, Scotland.
- L. cragi* Clarke, 1960, pp. 10-11, pl. 2, figs. 1-2. Late Mississippian, Scotland.
- L. loisae* Clarke, 1960, p. 11, pl. 2, fig. 3. Late Mississippian, Scotland.
- L. singularis* Hass, 1959a, pp. 384-385, pl. 46, figs. 14-17. Early Mississippian, Texas.
- L. tortilis* Sweet and Bergström, 1962, pp. 1230-1231, pl. 170, figs. 13, 14. Middle Ordovician, Alabama.
- L. ultima* Clarke, 1960, pp. 12-13, pl. 2, figs. 9, 11. Late Mississippian, Scotland.
- LIGONODININAE** Hass, 1959a, p. 378. A new subfamily which includes the following genera: *Ligonodina* Bassler, *Euprioniodina* Bassler, *Synprioniodina* Bassler, *Hindeodelloides* Huddle, and *Loxognathus* Graves and Ellison.
- Lonchodina cristagalli* Ziegler, 1960a, pp. 189-190, pl. 14, figs. 1, 3, 5. Early Devonian, Germany.
- L. jovtschevi* Budurov, 1959, pp. 114, 125, 128, pl. 1, figs. 15a, 15b; pl. 5, figs. 32a, 32b. Late Triassic, Bulgaria.
- L. lungtanensis* Ching, 1960, pp. 236, 245, pl. 1, figs. 5, 7; pl. 2, fig. 4. Early Permian, China.
- L. walliseri* Ziegler, 1960a, pp. 188-189, pl. 14, figs. 2, 6, 7. Early Devonian, Germany.
- LONGODININAE** Hass, 1959a, p. 378. A new subfamily which includes the following genera: *Lonchodina* Bassler, *Apatognathus* Branson and Mehl, *Curtognathus* Branson and Mehl, *Erimodus* Branson and Mehl, *Trichonodella* Branson and Mehl.
- Loxognathus grandis* Ethington, 1959, p. 281, pl. 40, fig. 6. Late Ordovician, Iowa.
- Mestognathus biplati* Higgins, 1961, pp. 216-217, pl. 10, figs. 1, 2, text-fig. 4. Late Mississippian, England.
- Metalonchodina conflecta* Clarke, 1960, p. 17, pl. 2, fig. 14. Late Mississippian, Scotland.
- Microcoelodus sweeti* Stone and Furnish, 1959, p. 224, pl. 31, fig. 18. Late Ordovician, Wyoming.

- NEOPRIONIODONTINAE Hass 1959a, p. 378. A new subfamily which includes the following genera: *Neoprioniodus* Rhodes and Müller, *Leptochirognathus* Branson and Mehl, *Loxodus* Furnish, *Pachysomia* Smith, and *Subprioniodus* Smith.
- Neoprioniodus brevis* Clarke, 1960, pp. 13-14, pl. 2, fig. 7. Late Mississippian, Scotland.
- N. cassilaris* (Branson and Mehl) em. Elias, 1959, pp. 153-154, pl. 2, figs. 17-21. Early Mississippian, Illinois.
- N. cassilaris* var. *keokukensis* Elias, 1959, p. 154, pl. 2, fig. 2. Early Mississippian, Illinois.
- N. insolitus* Hass, 1959a, pp. 383-384, pl. 48, figs. 19, 22. Early Mississippian, Texas.
- N. lanceolatus* Hass, 1959a, p. 384, pl. 46, figs. 1, 2, 8. Early Mississippian, Texas.
- N. miseri* Elias, 1959, p. 154, pl. 2, figs. 23, 24. Late Mississippian, Oklahoma.
- N. nankingsensis* Ching, 1960, pp. 235, 244, pl. 1, fig. 2. Early Permian, China.
- N. postinversus* Helms, 1959, p. 644, pl. 2, fig. 6, text-fig. 1. Late Devonian, Germany.
- N. rymikeri* Elias, 1959, p. 152, pl. 2, fig. 15. Late Mississippian, Oklahoma.
- N. spatbatus* Higgins, 1961, pp. 217-218, pl. 11, figs. 2, 4, text-fig. 5. Late Mississippian, England.
- Oistodus angulensis* Harris, 1962, pp. 199-201, pl. 1, figs. 1a-1c. Middle Ordovician, Oklahoma.
- O. basiovalis* Sergeeva, 1963, pp. 96-98, pl. 7, figs. 6, 7, text-fig. 3. Early Ordovician, Russia.
- O. bilongalus* Harris, 1962, pp. 201-202, pl. 1, figs. 8, 9a, 9b, 10a-10c. Middle Ordovician, Oklahoma.
- O. brevbasis* Sergeeva, 1963, pp. 95-96, pl. 7, figs. 4-5, text-fig. 2. Early Ordovician, Russia.
- O. multicorugatus* Harris, 1962, p. 204, pl. 1, figs. 2a-2c. Middle Ordovician, Oklahoma.
- O. originalis* Sergeeva, 1963, pp. 98-99, pl. 7, figs. 8-9, text-fig. 4. Early Ordovician, Russia.
- O. robustus* Bergström, 1961, p. 45, pl. 3, figs. 7-10, text-fig. 3F. Middle Ordovician, Sweden.
- Oneotodus gallatini* Müller, 1959c, p. 457, pl. 13, figs. 5-10, 12, 18. Late Cambrian, Wyoming.
- O. tenuis* Müller, 1959c, pp. 457-458, pl. 13, figs. 11, 13, 14, 20. Late Cambrian, South Dakota.
- Oulodus casteri* Pulse and Sweet, 1960, pp. 255-256, pl. 36, figs. 1, 8, 12. Late Ordovician, Ohio, Kentucky, and Indiana.
- O. rohneri* Ethington and Furnish, 1959, p. 544, pl. 73, figs. 17-18. Late Ordovician, Manitoba.
- Ozarkodina chengpanshanensis* Ching, 1960, pp. 237-245, pl. 1, figs. 6, 8, 11. Early Permian, China.
- O. hindei* Clarke, 1960, p. 18, pl. 3, figs. 1, 6. Late Mississippian, Scotland.
- O. lacera* Helms, 1959b, p. 647, pl. 2, fig. 16; pl. 5, fig. 10. Late Devonian, Germany.
- O. lungtanensis* Ching 1960, pp. 236, 245, pl. 1, figs. 5, 7; pl. 2, fig. 4. Early Permian, China.
- O. pseudotypica* Lindström, 1959, pp. 441-442, pl. 4, figs. 17-18, text-fig. 3:4. Middle and Late Ordovician, England.
- O. rhodesi* Lindström, 1959, pl. 1, figs. 1-9, text-fig. 3:6. Middle and Late Ordovician, England.
- O. spassovi* Stefanov, 1962, pp. 83, 87-88, pl. 2, figs. 1-2. Middle Triassic, Bulgaria.
- Palmatolepis deflectens sigmoidalis* Ziegler, 1962b, pp. 56-57, pl. 3, figs. 24-28. Late Devonian, Germany.
- P. glabra pectinata* Ziegler, 1960a, pp. 8-9, pl. 2, figs. 3-5. Late Devonian, Germany.
- P. belmsi* Ziegler, 1962b, pp. 60-61, pl. 8, figs. 16, 17. Late Devonian, Germany.
- P. marginata clarki* Ziegler, 1962b, pp. 62-65, pl. 2, figs. 20-27, text-fig. 4. Late Devonian, Germany.
- P. perlobata sigmoidea* Ziegler, 1962b, pp. 71-72, pl. 8, figs. 7, 9-11. Late Devonian, Germany.
- P. quadratunodosa inflexoidea* Ziegler, 1962b, pp. 74-75, pl. 5, figs. 14-18. Late Devonian, Germany.
- P. q. marginifera* Ziegler, 1960a, pp. 11-12, pl. 1, fig. 6, pl. 2, figs. 6-8. Late Devonian, Germany.
- P. rugosa grossi* Ziegler, 1960c, p. 37, pl. 1, figs. 1-2. Late Devonian, Germany.
- P. r. postera* Ziegler, 1960c, pp. 39-40, pl. 2, figs. 10-11. Late Devonian, Germany.
- P. r. trachytera* Ziegler, 1960c, pp. 38-39, pl. 1, fig. 6; pl. 2, figs. 1-9. Late Devonian, Germany.

- Paltodus variabilis* Sergeeva, 1963, pp. 99-100, pl. 7, figs. 10-12, text-fig. 5. Early Ordovician, Russia.
- P. volchovensis* Sergeeva, 1963, pp. 100-102, pl. 7, figs. 13-14, text-fig. 6. Early Ordovician, Russia.
- PANDERODUS Ethington, 1959, p. 284. *Paltodus unicastatus* Branson and Mehl, 1933. Early Ordovician and Middle Silurian.
- PARACHIROGNATHUS Clark, 1959, p. 311. *Parachirognathus ethingtoni* Clark, 1959. Early Triassic.
- P. ethingtoni* Clark, 1959, pp. 311-312, pl. 45, figs. 3, 5, 7. Early Triassic, Nevada.
- P. geiseri* Clark, 1959, p. 312, pl. 45, figs. 4, 8, 10, 11. Early Triassic, Nevada.
- Paracordylodus lindstroemi* Bergström, 1961, pp. 50-51, pl. 2, figs. 8-12, text-fig. 2c. Middle Ordovician, Sweden.
- PLEGAGNATHUS Ethington and Furnish, 1959, p. 544. *Plegagnathus nelsoni* Ethington and Furnish, 1959. Late Ordovician.
- P. nelsoni* Ethington and Furnish, 1959, pp. 544-545, pl. 73, figs. 2-3. Late Ordovician, Manitoba.
- Polygnathodella tenuis* Clarke, 1960, p. 28, pl. 5, figs. 12, 13. Early Pennsylvanian, Scotland.
- Polygnathus bicavata* Ziegler, 1962b, pp. 86-87, pl. 10, figs. 1, 3, 6-8. Late Devonian Germany.
- P. communis* var. *bifurcata* Hass, 1959a, p. 390, pl. 48, figs. 11, 12. Early Mississippian, Texas.
- P. c. var. carina* Hass, 1959a, p. 391, pl. 47, figs. 8, 9. Early Mississippian, Texas.
- P. diversa* Helms, 1959b pp. 650-651, pl. 5, figs. 5-8, text-fig. 2. Late Devonian, Germany.
- Polyplacognathus rufiformis* Sweet and Bergström, 1963, pp. 1237-1239, pl. 171, figs. 4, 5. Middle Ordovician, Alabama.
- P. stelliformis* Sweet and Bergström, 1963, pp. 1239-1240, pl. 171, figs. 1, 2. Middle Ordovician, Alabama.
- P. pura* Voges, 1959b, p. 291, pl. 34, figs. 21-33. Early Mississippian, Germany.
- P. p. pura* Voges, 1959b, p. 291-292, pl. 34, fig. 21-26. Early Mississippian, Germany.
- P. p. subplana* Voges, 1959b, pp. 292-293, pl. 34, figs. 27-33. Early Mississippian, Germany.
- P. glabra bilobata* Ziegler, 1962b, pp. 89-90, pl. 10, figs. 4, 5, 16, 17, 21. Late Devonian, Germany.
- P. obliquicostata* Ziegler, 1962b, pp. 92-93, pl. 11, figs. 8-12. Late Devonian, Germany.
- Polylophodonta* (?) *triphyllata* Ziegler, 1960a, pl. 1, fig. 5, pl. 2, figs. 1-2. Late Devonian, Germany.
- P. vogesi* Ziegler, 1962b, pp. 94-95, pl. 11, figs. 5-7. Late Devonian, Germany.
- Prioniodella bontevii* Spasov and Ganey, 1960, pp. 88, 93-94, pl. 2, figs. 4-6, 8. Late Triassic, Bulgaria.
- P. delicatula* Buhurov, 1959, pp. 120, 126-127, 129, pl. 1, figs. 17a, 17b; pl. 3, figs. 4, 5, 11a, 11b; pl. 5, fig. 33. Late Triassic, Bulgaria.
- P. dropla* Spasov and Ganey, 1960, pp. 87, 92-93, 94, pl. 2, figs. 7-10. Late Triassic, Bulgaria.
- P. tzankovi* Buhurov, 1959, pp. 120, 126, 129, pl. 1, figs. 18, 19a, 19b; pl. 3, figs. 12a, 12b, 14, 15. Late Triassic, Bulgaria.
- Prioniodina bicurvata prionoides* Walliser, 1960, p. 33, pl. 8, figs. 8-10. Late Silurian, Devon Island, Northwest Territories.
- P. kottensis* Buhurov, 1959, pp. 122, 127, 129-130, pl. 5, figs. 10-11. Late Triassic, Bulgaria.
- P. montellensis* Clark, 1959, pp. 309-310, pl. 44, fig. 7. Early Triassic, Nevada.
- P. pulcherrima* Lindström, 1959, pp. 442-444, pl. 3, figs. 28-30. Middle and Late Ordovician, England.
- P. rotunda* Sweet, Turco, Warner and Wilkie, 1959, p. 1061, pl. 131, fig. 12; pl. 133, fig. 8. Late Ordovician, Ohio.
- P. tzankovi* Spasov and Ganey, 1960, pp. 89-90, 93-95, pl. 2, figs. 13, 14. Late Triassic, Bulgaria.
- P. velicuspis* Pulse and Sweet, 1960, pp. 259-260, pl. 36, figs. 5, 13. Late Ordovician, Ohio, Kentucky, and Indiana.
- Prioniodus variabilis* Bergström, 1961, pp. 51-53, pl. 2, figs. 1-7. Middle Ordovician, Sweden.
- PRISTOGNATHUS Stone and Furnish, 1959, p. 226. *Pristognathus bigbornensis* Stone and Furnish, 1959. Late Ordovician.

- P. bighornensis* Stone and Furnish, 1959, pp. 226-227, pl. 32, figs. 7, 8. Late Ordovician, Wyoming and Manitoba.
- PROACODUS* Müller, 1959c, p. 458. *Proacodus obliquus* Müller, 1959c. Late Cambrian.
- P. obliquus* Müller, 1959c, pp. 458-459, pl. 13, figs. 1, 2, 4. Late Cambrian, Germany.
- PROBLEMATOCONITES* Müller, 1959c. *Problematoconites perforata* Müller, 1959c. Late Cambrian.
- P. perforata* Müller 1959c, pp. 471-472, pl. 15, fig. 17. Late Cambrian, Germany.
- Pseudopolygnathus brevipennata* Ziegler, 1962b, pp. 98-99, pl. 12, figs. 1-7. Late Devonian, Germany.
- P. granulosa* Ziegler 1962b, pp. 99-100, pl. 11, figs. 25-30. Late Devonian, Germany.
- P. lanceolata* Hass, 1959a, pp. 391-392, pl. 47, figs. 19-26. Early Mississippian, Texas.
- P. triangula* Voges, 1959b, p. 301, pl. 34, figs. 51-66; pl. 35, figs. 1-13, text-fig. 5. Early Mississippian, Germany.
- P. t. inaequalis* Voges, 1959b, p. 302, pl. 34, figs. 51-58, text-fig. 5. Early Mississippian, Germany.
- P. t. pinnata* Voges, 1959b, pp. 302-304, pl. 34, figs. 59-66; pl. 35, figs. 1-6. Early Mississippian, Germany.
- P. trigonica* Ziegler, 1962b, pp. 101-102, pl. 12, figs. 8-13. Late Devonian, Germany.
- PTILONCODUS* Harris, 1962, pp. 206-207. *Ptiloncodus simplex* Harris, 1962. Middle Ordovician.
- P. simplex* Harris, 1962, p. 207, pl. 1, figs. 5a-5c, 6. Middle Ordovician, Oklahoma.
- RHYNCHOGNATHODUS* Ethington, 1959b, p. 1128. *Rhynchognathodus typica* (Ethington), 1959a. The name *Rhynchognathus* which was originally applied to this unit is preoccupied as pointed out by Ethington in 1959b when he proposed this name. Late Ordovician.
- R. aborodentata* (Ethington), 1959a, pp. 286-287, pl. 41, figs. 1-2. Late Ordovician, Iowa.
- R. typica* (Ethington), 1959a, p. 286, pl. 41, figs. 3-4. Late Ordovician, Iowa.
- Roundya bispicata* Sweet and Bergström, 1963, p. 1243, pl. 171, fig. 6. Middle Ordovician, Alabama.
- R. plana* Helms, 1959b, pp. 654-655, pl. 6, fig. 26. Late Devonian, Germany.
- R. prava* Helms, 1959, p. 655, pl. 2, fig. 11. Late Devonian, Germany.
- R. pyramidalis* Sweet and Bergström, 1963, pp. 1243-1244, pl. 170, figs. 7-9. Middle Ordovician, Alabama.
- Sagittodontus dahlmani* Müller, 1959c, pp. 460-461, pl. 14, figs. 5, 7, 10. Late Cambrian, Germany.
- S. dentatus* Ethington, 1959, p. 287, pl. 39, fig. 13. Late Ordovician, Iowa.
- S. dunderbergiae* Müller, 1959c, p. 461, pl. 14, figs. 8, 9. Late Cambrian, Nevada.
- S. eureka* Müller, 1959c, pp. 461-462, pl. 14, fig. 6. Late Cambrian, Nevada.
- Scandodus oelandicus* Müller, 1959c, p. 463, pl. 12, figs. 14, 15, text-fig. 10. Late Cambrian, Germany.
- S. rarus* Müller, 1959c, pp. 463-464, pl. 12, fig. 12. Late Cambrian, Germany.
- S. tortilis* Müller, 1959c, p. 464, pl. 12, figs. 7, 8, 10. Late Cambrian, Germany.
- S. unistriatus* Sweet and Bergström, 1962, p. 1245, pl. 168, fig. 12, text-fig. 1E. Middle Ordovician, Alabama.
- Scolopodus cornuliformis* Sergeeva, 1963, pp. 93-95, pl. 7, figs. 1-3, text-fig. 1. Early Ordovician, Russia.
- S. giganteus* Sweet and Bergström, 1962, p. 1247, pl. 169, fig. 14, text-fig. 1j. Middle Ordovician, Alabama.
- S. varicosatus* Sweet and Bergström, 1962, pp. 1247-1248, pl. 168, figs. 4-9, text-fig. 1A, C, K. Middle Ordovician, Alabama.
- Scutula* (?) *tripodis* Helms, 1959b, p. 657, pl. 5, figs. 17a, 17b. Late Devonian, Germany.
- Siphonodella cooperi* Hass, 1959a, p. 392, pl. 48, figs. 35, 36. Early Mississippian, Texas.
- S. obsoleta* Hass, 1959a, pp. 392-393, pl. 47, figs. 1, 2. Early Mississippian, Texas.
- SPATHOGNATHODONTINAE* Hass, 1959a, p. 378. A new subfamily which includes the following genera: *Aphelognathus* Branson, Mehl, and Branson, *Bryantodina* Stauffer, *Centrognathodus* Branson and Mehl, *Dinodus* Cooper, *Elicognathus* Cooper, *Falcodus* Huddle, *Lambdagnathus* Rexroad, *Nodognathus* Cooper, *Oligodus* Cooper, *Pandorinellina* Hass, *Pinacognathus* Branson and Mehl, and *Spathognathus* Branson and Mehl.
- Spathognathodus anteposicornis* Scott, 1961, pp. 1224-1225, text-figs. 2H-2K. Late Devonian, Illinois.
- S. bohlenanus* Helms, 1959b, p. 658, pl. 6, figs. 5-8. Late Devonian, Germany.

- S. canadensis* Walliser, 1960, p. 34, pl. 8, figs. 1-3. Late Silurian, Devon Island, Northwest Territories.
- S. collinsoni* Scott, 1961, pp. 1225-1226, text-figs. 2A-2D. Late Devonian, Illinois.
- S. cooperi* Hass, 1959a, pp. 387-388, pl. 48, figs. 16, 20. Early Mississippian, Texas.
- S. culminidirectus* Scott, 1961, pp. 1226-1227, text-figs. 2E-2G. Late Devonian, Illinois.
- S. exodeniatus* Clarke, 1960, pp. 19-20, pl. 3, figs. 7, 8. Late Mississippian, Scotland.
- S. longus* Hass, 1959a, p. 388, pl. 48, figs. 9, 13, 14. Early Mississippian, Texas.
- S. pusillus* Clarke, 1960, pp. 20-21, pl. 3, figs. 10, 11. Late Mississippian, Scotland.
- S. remscheidensis* Ziegler, 1960a, pp. 194-195, pl. 13, figs. 1, 2, 4, 5, 7, 8, 10, 14. Early Devonian, Germany.
- S. supremus* Ziegler 1962b, pp. 114-115, pl. 13, figs. 20-26. Late Devonian, Germany.
- S. werneri* Ziegler, 1962b, pp. 115-116, pl. 13, figs. 11-16. Late Devonian, Germany.
- S. whitei* Rhodes, 1963, pp. 404-405, pl. 47, figs. 4, 9, 10, 25, 26. Early Permian, Wyoming.
- Staurognathus anchoraria* Hass, 1959a, p. 393, pl. 46, figs. 12, 13, 21. Early Mississippian, Texas.
- Streptognathodus parallelus* Clarke, 1960, p. 29, pl. 5, figs. 6, 8, 14, 15. Late Mississippian, Scotland.
- S. unicornis* Rexroad and Burton, 1961, p. 1157, pl. 138, figs. 1-9. Late Mississippian, Illinois.
- Subbryanthodus abstractus* Clark and Ethington, 1962, pp. 112-113, pl. 1, figs. 16, 20-21; pl. 2, fig. 2. Early Permian, Texas, Wyoming, Idaho, Arizona.
- S. subaequalis* Higgins, 1961, pp. 218-219, pl. 12, fig. 15, text-fig. 6. Late Mississippian, England.
- Synprioniodina denticamura* Rexroad and Liebe, 1962, p. 513, text-fig. 2. Late Mississippian, Illinois.
- S. kufengensis* Ching, 1960, pp. 237-245, pl. 1, figs. 9, 10. Early Permian, China.
- Tetraprioniodus asymmetricus* Bergström, 1961, pp. 55-56, pl. 2, figs. 15-17. Middle Ordovician, Sweden.
- T. lindstroemi* Sweet and Bergström, 1962, pp. 1248-1249, pl. 170, figs. 5-6. Middle Ordovician, Alabama.
- T. minax* Sergeeva, 1963, pp. 102-103, pl. 8, figs. 1-3, text-fig. 7. Early and Middle Ordovician, Russia.
- T. parvus* Ethington, 1959, pp. 288-289, pl. 40, fig. 8. Late Ordovician, Iowa.
- Trichonodella angulata* Sweet, Turco, Warner, and Wilkie, 1959, p. 1064, pl. 131, figs. 9, 13. Late Ordovician, Ohio and Kentucky.
- T. insolita* Ethington, 1959, p. 290, pl. 41, figs. 10-11. Late Ordovician, Iowa.
- T. parabolica* Lindström, 1959, p. 450, pl. 1, figs. 18-22. Middle and Late Ordovician, England.
- T. subundulata* Sweet, Turco, Warner, and Wilkie, 1959, p. 1065, pl. 131, figs. 2, 5, 10. Late Ordovician, Ohio.
- Tripodellus tenuis* Helms, 1959b, p. 659, pl. 2, fig. 14; pl. 5, fig. 19; pl. 6, fig. 22. Late Devonian.
- TVAERENOGNATHUS** Bergström, 1961, pp. 56-57. *Tvaerenognathus ordovicia* Bergström, 1961. Middle Ordovician.
- T. ordovicia* Bergström, 1961, pp. 57-58, pl. 1, figs. 1-5, text-fig. 2F. Middle Ordovician, Sweden.
- WESTERGAARDODINA** Müller, 1959c, pp. 465-467, *Westergaardodina biscuspidata* Müller, 1959c. Middle Cambrian and Early Ordovician.
- W. ampicava* Müller, 1959c, pp. 467-468, pl. 14, figs. 13, 14. Late Cambrian, Germany.
- W. biscuspidata* Müller, 1959c, p. 468, pl. 15, figs. 1, 4, 7, 9, 10, 14. Late Cambrian, Germany.
- W. boblini* Müller, 1959c, p. 469, pl. 15, fig. 6. Late Cambrian, Germany.
- W. kleva* Müller, 1959c, p. 469, pl. 15, fig. 2. Late Cambrian, Germany.
- W. mössebergensis* Müller, 1959c, p. 470, pl. 14, figs. 11, 12, 15. Late Cambrian, Germany.
- W. vricuspidata* Müller, 1959c, p. 470, pl. 15, figs. 3, 5, 6. Late Cambrian, Germany.
- Zygognathus crugensis* Lindström, 1959, p. 451, pl. 1, figs. 11-15, text-fig. 3:5. Middle and Late Ordovician, England.
- Z. maysvillensis* Pulse and Sweet, 1960, p. 262, pl. 37, figs. 9, 12. Late Ordovician, Ohio, Indiana, and Kentucky.

HOMONYMS AND SYNONYMS

- Ancyroides* Miller and Youngquist, 1947, pp. 502, 504, is a junior subjective synonym of *Ancyrognathus* Branson and Mehl, 1934, pp. 181, 184, 240, according to Hass, 1959a, p. 379.
- Ancyropenta* Müller and Müller, 1957, pp. 1092-1093, is a junior subjective synonym of *Ancyrodella* Ulrich and Bassler, 1926, pp. 6, 43-44, 48, according to Hass, 1959a, p. 379.
- Ctenognathodus* Fay, 1959, p. 195, is a junior subjective synonym of *Spathognathodus* Branson and Mehl, 1941. See Ziegler, 1961.
- Ctenognathus* Pander, 1856, p. 32, is preoccupied by *Ctenognathus* Fairmaire, 1843. Renamed *Ctenognathodus* Fay, 1959, p. 195, which is a junior subjective synonym of *Spathognathodus* Branson and Mehl, 1941, p. 98. See Ziegler, 1961; Hass, 1959a, p. 379; Lindström, 1960b.
- Deflectolepis* Müller, 1956, pp. 16-17, is a junior subjective synonym of *Panderodella* Bassler, 1925, p. 220, according to Hass, 1959a, pp. 369, footnote 1, 379.
- Ellisonia* Müller, 1956, p. 822, is a junior subjective synonym of *Hibbardella* Bassler, 1925, p. 219, according to Hass, 1959a, p. 379.
- Eoligonodina* Branson, Mehl, and Branson, 1951, pp. 14-15, is a junior subjective synonym of *Zygnognathus* Branson, Mehl, and Branson, 1951, pp. 11-12, according to Hass, 1959a, p. 379.
- Idiognathodus* Harris and Hollingsworth, 1933, p. 201, is a junior synonym of *Cavusgnathus* Harris and Hollingsworth, 1933, p. 200 as pointed out by Merrill, 1963.
- Kladognathus* Rexroad, 1958, p. 19, is preoccupied by *Cladognathus* Burmeister, 1847, p. 364. Renamed *Cladognathodus* by Rexroad, 1961, p. 6.
- Lepodus* Branson and Mehl, 1933, p. 37, is preoccupied by *Lepodus* Rafinesque, 1810. Renamed *Lepognathodus* Mehl, 1959. See Fay, 1959, p. 195.
- Manticolepis* Müller, 1956, p. 16, is a junior subjective synonym of *Palmatolepis* Ulrich and Bassler, 1926, pp. 6, 43-44, 49, according to Hass, 1959a, p. 380.
- Multioistodus* Cullison, 1938, pp. 219, 226, is a junior subjective synonym of *Belodus* Pander, 1856, pp. 30, 33, 90, according to Hass, 1959a, p. 380.
- Neoprioniodus lanceolatus* Ching, 1960, pp. 235, 244, is preoccupied by *Neoprioniodus lanceolatus* Hass, 1959a, p. 384.
- Paltodus variabilis* Sergeeva, 1963, pp. 99-100, pl. 7, figs. 10-12; text-fig. 5, is a junior homonym of *P. variabilis* Furnish, 1938, as pointed out by Branson, 1963, p. 224.
- Pandorina* Stauffer, 1940, p. 428, is preoccupied by *Pandorina* Bory de St. Vincent, 1827, and *Pandorina* Scacchi, 1833. Renamed *Pandorinellina* Hass, 1959a, pp. 378-379.
- Polygnathodella* Harlton, 1933, pp. 4-5, 15, is a junior synonym of *Idiognathoides* Harris and Hollingsworth, 1933, pp. 193-194, according to Hass, 1959a, p. 380.
- Prioniodella* Bassler, 1925, p. 219 is a junior synonym of *Prioniodina* Bassler, 1925, p. 219, according to Hass, 1959a, p. 380.
- Prionognathus* Pander, 1856, p. 34, is preoccupied by *Prionognathus* Ferté-Sénèctere, 1851. Renamed *Prionognathodus* Fay, 1959, p. 195.
- Rhynchognathus* Ethington, 1959a, p. 286, is preoccupied by *Rhynchognathus* Jaekel, 1929, p. 60. Renamed *Rhynchognathodus* Ethington, 1959b, p. 1128.
- Valentia* Smith, 1907, p. 251, is preoccupied by *Valentia* Stål, 1865. Renamed *Scotlandia* Cossmann, 1909, p. 68. See Fay, 1959, p. 195.

NEW NAMES

- Cladognathodus* Rexroad and Collinson, 1961, p. 6. New name for *Cladognathus* Rexroad, 1957, p. 28, and *Kladognathus* Rexroad, 1958, p. 19, which are preoccupied by *Cladognathus* Burmeister, 1847.
- Gnathodus commutatus homopunctatus* Ziegler, 1960b, p. 5. New name for *Gnathodus commutatus punctatus* Bischoff, 1957, p. 24, which is preoccupied by *Dryphenitus punctatus* Cooper, 1939.
- Lepognathodus* Mehl, 1959. New name for *Lepodus* Branson and Mehl, 1933, p. 37, which is preoccupied by *Lepodus* Rafinesque, 1810, as pointed out by Fay, 1959, p. 195.
- Pandorinellina* Hass, 1959a, pp. 378-380. New name for *Pandorina* Stauffer, 1940, p. 428, which is preoccupied by *Pandorina* Bory de St. Vincent, 1827; Scacchi, 1833.
- Prionognathodus* Fay, 1959, p. 195. New name for *Prionognathus* Pander, 1856, p. 34, which is preoccupied by *Prionognathus* Ferté-Sénèctere, 1851.

Scotlandia Cossmann, 1909, p. 68. New name for *Valentia* Smith, 1907, p. 251, which is preoccupied by *Valentia* Stål, 1865, as pointed out by Fay, 1959, p. 195, and Hass, 1959a, p. 380.

ERRATA AND CORRECTIONS TO INDEX OF CONODONTS, 1949-1958.

Five errors have been noted in the previous index of conodonts (Ash, 1961, pp. 229-237) as shown below: On page 230 authorship of *Avignathus* and *Avignathus beckmanni* was incorrectly assigned to Lys, Serre, and Deroo whereas the authors are Lys and Serre. On page 235 *Polygnathus styriaca* was incorrectly spelled *Polygnathus styriaea*.

On page 235 authorship of *Polygnathus styriaca* and *Prioniodina bischoffi* was incorrectly assigned to Flugel and Ziegler whereas the author is Ziegler.

The corrected entires should read as follows:

Page 230.

Avignathus Lys and Serre, 1957, pp. 797-798. *Avignathus beckmanni* Lys and Serre, 1957. Late Devonian.

A. beckmanni Lys and Serre, 1957, p. 798, text-figs. 2a-2b. Late Devonian, Germany.

Page 235.

Polygnathus styriaca Ziegler, 1957, p. 47, pl. 1, figs. 11-13. Late Devonian, Germany.

Prioniodina bischoffi Ziegler, 1957, p. 48, pl. 4, fig. 5. Late Mississippian, Germany.

INDEX OF CONODONT-BEARING FORMATIONS

Names of conodont-bearing formations and faunal zones mentioned in the articles listed in the bibliographic section of this paper are indexed here. Formations and faunal zone are listed alphabetically under the appropriate geologic series as used by the U. S. Geological Survey together with the name of the author and the publication date of the articles which indicate that the unit contains conodonts. Nomenclature used in this report is adapted from the published sources. An asterisk (*) precedes the publication date of articles in which faunal lists are included for the indicated formation or zone.

CAMBRIAN (UNDIVIDED)

Unnamed formation:

Australia - Ludbrook, 1963.

Germany - Müller, 1960a.

Nevada - Müller, 1960a.

Oklahoma - Müller, 1960a.

South Dakota - Müller, 1960a.

Sweden - Müller, 1960a.

Utah - Müller, 1960a.

Wyoming - Müller, 1960a.

MIDDLE CAMBRIAN

Gros Ventre Formation:

Wyoming - Koucky, Cygan, and Rhodes, *1961; Müller, *1959c.

Lejopyge laevigata Zone:

Sweden - Westergård, 1940, 1953.

Olygomys exporrecta conglomerate:

Sweden - Westergård, 1953.

Orusia lenticularis conglomerate:

Sweden - Westergård, 1922.

Solenopleura brachymetopa Zone:

Sweden - Westergård, 1953.

Zone of *Prychagnostus* (*Triplagnostus*) *gibbus* (B₁):

Sweden - Müller, *1959.

UPPER CAMBRIAN

Acerocare - *Parabolina heres* Zone:

Sweden - Westergård, 1953.

Arbuckle Limestone:

Texas - Barnes, Cloud and others, *1959.

Chatsworth Limestone:

Queensland, Australia - Jones, P. J., 1961.

Conaspis - Zone:

Wyoming - Müller, *1959c.

Deadwood Formation:

South Dakota - Müller, *1959c.

Williston Basin - Echols, 1961.

Also see Little Elk Member.

Dunderberg Shale:

Nevada - Müller, *1959c.

Eoorthis subzone of the *Conaspis* Zone:

Utah - Müller, *1959c.

Gallatin Limestone:

Wyoming - Koucky, Cygan and Rhodes, *1961; Müller, *1959c.

Gros Ventre Formation:

Wyoming - Goodwin, 1962.

Little Elk Member of the Deadwood Formation:

South Dakota - Müller, *1959c.

Mungerebar Limestone:

Queensland, Australia - Jones, P. J., *1961.

Olenus Zone:

Sweden - Westergård, 1953.

Orusia lenticularis conglomerate - listed under Middle Cambrian.*Orusia-Peltur-Ctenopyge* Zone:

Sweden - Westergård, 1953.

Peltura-Ctenopyge Zone:

Sweden - Westergård, 1953.

Signal Mountain Formation:

Oklahoma - Müller, *1959c.

Windfall Formation:

Nevada - Müller, *1959c.

Zones 1, 2, 3, 4, 5, 5c, 5d, 5e, and 5f:

Sweden - Müller, *1959c.

Zones 1, 2, 3, 5b, and 5d:

Germany - Müller, *1959c.

ORDOVICIAN (UNDIVIDED)

Unnamed formation:

Australia - Ludbrook, 1963.

LOWER ORDOVICIAN

Ceratopyge Shale:

Sweden - Westergård, 1953; Wiman, 1893.

Deadwood Formation (upper part):

North Dakota - Carlson, *1960.

El Paso Limestone:

Texas - Ash, 1962; Ellison, 1962a.

Erratic boulders:

Poland - Wolska, *1961.

Expansus Limestone:

Sweden - Lindström, *1960a.

Gigas Limestone:

Sweden - Lindström, *1960a.

Grove Creek Formation:

Wyoming - Goodwin, 1962.

Honeycut (?) Formation:

Texas - Barnes, Cloud, and others, 1959.

Jefferson City Dolomite:

Missouri - Unklesbay, *1952.

Kunda horizon:

Russia - Sergeeva, *1963.

Leetse Stage (B₁) of the Ontiken Subseries of the Oelandiar Series:

Estonia - Rõõmusoks, 1960.

Lepidurus Limestone:

Sweden - Lindström, *1960a.

Limbaia Limestone:

Sweden - Lindström, *1960a.

Lower *Dicellograptus* Shales:

Sweden - Nilsson, *1960.

Lower *Didymograptus* Shales:

Sweden - Tjernvik, *1960.

Middle *Dicellograptus* Shales:

Sweden, Nilsson, *1960.

Oelandian Series - see Leetse Stage (B₁) of the Ontiken SubseriesOntiken Subseries - see Leetse Stage (B₁).

Pander Greensand:

Western Australia - Teichert, 1958.

Prairie du Chien Group:

Minnesota - Echols, 1959.

Upper Mississippi and Minnesota River Valleys - Echols, 1959.

Raniceps Limestone:

Sweden - Lindström, *1960a.

Unnamed formation:

Mexico - Bridges and DeFord, 1960.

Volkhov horizon:

Russia - Sergeeva, *1963.

MIDDLE ORDOVICIAN

Crassicauda Limestone:

Sweden - Lindström, *1960a.

Crug Limestone:

England - Lindström, *1959, *1960b.

Cynthiana Formation:

Kentucky - Kesling, 1961; 1963.

Ohio - Kesling, 1961; 1963.

Erratic boulders:

Poland - Wolska, *1961.

Galena Formation - see Prosser Member. Also listed under Upper Ordovician.

Harding Formation:

Colorado - Chronic, 1961; Sweet, 1961.

Harding Formation equivalent:

Wyoming - Koucky, Cygan, and Rhodes, *1961.

Ice Box Member of the Winnipeg Sandstone:

North Dakota - Carlson, *1960.

South Dakota - Carlson, *1960.

Joins Creek Formation:

Oklahoma - Harris, *1962; Sweet, 1963.

Ludibundus Limestone:

Sweden - Hessland, 1960; Strachan, 1960.

Normanskill Shale:

Maine - Hessland, 1962; Sweet and Bergström, *1962.

Oil Creek Formation of the Simpson Group:

Oklahoma - Echols, 1961.

Platteville Formation:

Minnesota - Echols, 1959.

Platyurus Limestone:

Sweden - Lindström, *1960a.

Pratt Ferry Formation:

Alabama - Kesling, 1959, 1960, 1961; Sweet and Bergström, *1962.

Prosser Member of the Galena Formation:

Iowa - Ethington, *1959.

Roughlock Member of the Winnipeg Sandstone:

North Dakota - Carlson, *1960.

South Dakota - Carlson, *1960.

Schroeteri Limestone:

Sweden - Lindström, *1960a.

Simpson Group - see Oil Creek Formation.

Tallinn horizon:

Russia - Sergeeva, *1963.

Trenton Limestone:

New York - Kesling, 1960.

Ontario - Kesling, 1960.

Unnamed formation:

Kentucky - Kesling, 1960.

Upper unit of the Winnipeg Sandstone:

Manitoba - Carlson, *1960.

Also see Ice Box and Roughlock Members of the Winnipeg Sandstone.

UPPER ORDOVICIAN

Beaverfoot Limestone:

British Columbia - Echols, 1963.

Bighorn Dolomite:

Wyoming - Jones, *1960.

See also Lander Sandstone and Leigh Dolomite Members of the Bighorn Dolomite.

Brisco Formation:

British Columbia - Echols, 1963.

Cape Phillips Formation:

Northwest Territories, Canada - Ethington, 1959.

Crug Limestone:

England - Hessland, 1960; Lindström, *1959, *1960b.

Dubuque Member of the Galena Formation:

Iowa - Ethington, *1959.

Eden Group:

Indiana - Sweet, 1959.

Kentucky - Douglass, 1960; Kesling, 1959; Sweet, 1959.

Ohio - Douglass, 1960; Kesling, 1959; Pulse and Sweet, *1960; Sweet, 1959.

Also see Fulton Shale, Economy, McMicken, and Southgate Shale Members.

Ely Springs Dolomite:

Nevada - Carss and Langenheim, *1963; Langenheim and others, 1962.

Erratic boulders:

Poland - Wolska, *1960.

Fairview Formation:

Indiana - Kesling, 1960; Pulse and Sweet, *1960; Sweet, *1959.

Kentucky - Kesling, 1960; Pulse and Sweet, *1960; Sweet, *1959.

Ohio - Kesling, 1960; Pulse and Sweet, *1960; Sweet, *1959.

Fulton Shale and Economy Member of the Latonia Shale of the Eden Group:

Kentucky - Sweet, Turco, Warner, and Wilkie, *1959.

Ohio - Sweet, Turco, Warner, and Wilkie, *1959.

Galena Formation - See Stewartville and Dubuque Members.

Also listed under Middle Ordovician.

Gelli-grin Limestone:

England - Lindström, *1959.

Gunn Member of the Stony Mountain Formation:

Manitoba, Canada - Ethington and Furnish, 1959, *1960.

Keesley Limestone:

England - Lindström, *1959.

Lander Sandstone Member of the Bighorn Dolomite:

Wyoming - Koucky, Cygan, and Rhodes, *1961.

Leigh Dolomite Member of the Bighorn Dolomite:

Wyoming - Koucky, Cygan, and Rhodes, *1961; Stone and Furnish, *1959.

McMicken Member of the Eden Formation:

Ohio - Sweet, Turco, Warner, and Wilkie, *1959.

McMillan Formation of the Maysville Group:

Indiana - Sweet, 1959; Kesling, 1960; Pulse and Sweet, *1960.

Kentucky - Sweet, 1959; Kesling, 1960.

Ohio - Sweet, 1959; Kesling, 1960; Pulse and Sweet, *1960.

Maysville Group:

Ohio - Kesling, 1959, 1960.

Also see McMillan Formation.

Montoya Limestone:

Texas: Ash, 1962; Ellison, 1962a.

Ottawa Formation:

Ontario - Echols, 1963.

Pen-y-garnedd Limestone:

England - Lindström, *1959.

Richmond Group:

Indiana - Sweet, *1959.

Kentucky - Sweet, *1959.

Ohio - Sweet, *1959.

Shamattawa Limestone:

Manitoba, Canada - Ethington, 1959; Ethington and Furnish, *1959; Stone and Furnish, *1959.

Southgate Shale Member of the Latonia Shale of the Eden Group:

Ohio - Sweet, Turco, Warner, and Wilkie, *1959.

Stewartville Member of the Galena Formation:

Iowa - Ethington, *1959.

Stony Mountain Shale - see Gunn Member.

Unnamed formation:

France - Remack-Petitot, *1960.

Mexico - Bridges and DeFord, 1961.

Winnipeg Formation:

North Dakota - Echols, 1959, 1961.

Also listed under Middle Ordovician.

SILURIAN (UNDIVIDED)

Unnamed formation:

Illinois - Echols, 1961.

Indiana - Kesling, 1962.

Western Australia - Teichert, 1958.

LOWER SILURIAN

Chimneyhill Formation:

Oklahoma - Echols, 1961; Ireland, 1961.

Also see Clarita and Cochrane Members.

Clarita Member of the Chimneyhill Formation:

Oklahoma - Amsden, 1960.

Cochrane Limestone Member of the Chimneyhill Formation:

Oklahoma - Amsden, 1960.

Unnamed formation:

Algeria - Remack-Petitot, *1960.

MIDDLE SILURIAN

"Calizas alabeadas" (Santi Petri-Kalk):

Spain - Colom, 1959.

Chimneyhill Formation - listed under Lower Silurian.

St. Clair Limestone:

Arkansas - Amsden, 1960.

Unnamed formation:

England - Echols, 1959.

Upper Haugh Wood Bed:

England - Squirrell and Tucker, 1960.

UPPER SILURIAN

Beyrichia Limestone:

Germany - Walliser, *1960a.

Bodenham Beds - see Lower and Upper Bodenham Beds.

"Calizas alabeadas" (Santi Petri-Kalk):

Spain - Colom, 1959.

Henryhouse Formation:

Oklahoma - Amsden, 1960.

Lower Bodenham Beds:

England - Squirrell and Tucker, *1960.

Lower Perton Beds:

England - Squirrell and Tucker, *1960.

Perton Beds - see Lower and Upper Perton Beds.

Rushall Beds:

England - Squirrell and Tucker, 1960.

Sutherland River Formation:

Northwest Territories, Canada - Walliser, *1960a.

Unnamed formations:

Algeria - Cuvillier, 1962a; Remack-Petitot, *1960.

Bulgaria - Spasov, *1960.

England - Echols, *1959.

Germany - Pietzsch, 1960.

Rio De Oro (Spanish Sahara) - Echols, 1963; Ethington and Furnish, *1962.

Yugoslavia - Spasov, *1960.

Upper Bodenham Beds:

England - Squirrell and Tucker, *1960.

Upper Perton Beds:

England - Squirrell and Tucker, *1960.

DEVONIAN (UNDIVIDED)

Calcaire de Chalonnès:

France - Serre and Lys, 1959.

Unnamed formations:

Arizona - Anderson, 1962; Ethington, *1962.

Spain - Drooger, 1962.

Texas - Graves, *1954.

Utah - Jones, 1960.

Western Australia - Crespin, 1959.

LOWER DEVONIAN

Bois D'Arc Formation - see Cravatt Member.

Calcaire de Le Meignanne:

France - Serre and Lys, *1959.

Calcaire de Vern:

France - Serre and Lys, *1959.

"Calizas alabeadas" (Santi Petri-Kalk):

Spain - Colom, 1959.

Cravatt Member of the Bois D'Arc Formation:

Oklahoma - Amsden, 1960.

Frisco Formation:

Oklahoma - Amsden, 1960.

Ockrigen Kalke:

Germany - Ziegler, *1960a.

Prinzeß-Kalk:

Germany - Schriel, *1960a.

Unnamed formation:

France - Remack-Petitot, *1960; Serre and Lys, *1960.

Germany - Reichstein, *1959.

Algeria - Cuvillier, 1962a; Remack-Petitot, *1960.

MIDDLE DEVONIAN

Bandsschiefer:

Germany - Schriel, *1960b.

Buntschiefer:

Germany - Schriel, *1960b.

Calcaire d'Angers:

France - Erben, *1960.

Calcaire de Chaudefonds:

France - Serre and Lys, *1959.

"Calizas alabeadas" (Santi Petri-Kalk):

Spain - Colom, 1959.

Canutill Formation:

Texas - Ellison, 1962a.

Carrière de Blacourt:

France - Serre and Lys, *1960.

Couvinien inférieur:

Belgium - Serre and Lys, *1960.

dubia - *rotundiloba* Subzone:

Germany - Reichstein, 1960a.

Eifelquarzit:

Germany - Klitzsch, *1959; Erben, *1960.

Flinz:

Germany - Schriell and Stoppel, *1958a.

Fortune Formation:

Missouri - Echols, 1959.

Greifensteinerkalk:

Germany - Erben, *1960.

Kalkiger Lagerhorizont:

Germany - Reichstein, *1960a.

La Grange:

France - Serre and Lys, *1959.

Lower Banderschiefer:

Germany - Klitzsch, *1959.

Mangshan Sandstone:

China - Ching, 1960.

Mittel-devonischer Flinz:

Germany - Lutzens, *1959.

Odershäuser Kalk:

Germany - Schriell and Stoppel, *1958.

Plattenschieferübergangszone:

Germany - Lutzens, *1959.

Styliolinenkalkes:

Germany - Reichstein, *1959.

Unnamed formation:

Algeria - Remack-Petitot, *1960.

France - Remack-Petitot, *1960.

England - House, 1963.

Germany - Reuter, 1959; Schriell and Stoppel, *1958a, 1958b; Trautwein and

Wittekindt, *1960; Ziegler, *1960b.

Mexico - Bridges and DeFord, 1961.

Rio de Oro (Spanish Sahara) - Panseri, *1959.

Texas - Peirce, 1962.

Usingerkalk:

Germany - Rietschel, 1961.

Varca - Zeit:

Germany - Kutscher, 1960.

UPPER DEVONIAN

Adorf - Stufe:

Germany - Krebs, *1960a; Rietschel, *1961; Schriell and Stoppel, *1958, *1960.

Arkansas group:

Arkansas - Branson, 1959.

Oklahoma - Branson, 1959.

Arkansas Novaculite:

Arkansas - Elias, 1959.

Bandkalk:

Germany - Lutzens, *1959.

Bohlen profiles:

Germany - Helms, 1959a.

Büdesheimer Schiefer mit Kellwasserkalk:

Germany - Schriell and Stoppel, 1958a.

Bugle Gap Formation:

Western Australia - Glenister and Crespin, *1959.

Burt Range Limestone:

Northern Territory, Australia - Glenister, *1960.

Carrière de Diou:

France - Guffroy, *1959; Lys, Serre, Mauvier, and Grekoff, *1961.

Carrière de Fontête:

France - Guffroy, *1959; Lys, Serre, Mauvier, and Grekoff, *1961.

Carrière de Gilly:

France - Guffroy, *1959; Lys, Serre, Mauvier, and Grekoff, *1961.

Cassadaga Stage:

New York - Hass, *1959b.

Pennsylvania - Hass, *1959b.

Cashaqua Shale Member of the Sonyea Formation - see Parrish Limestone Bed.

Chattanooga Shale:

Mississippi River Valley - Weller, 1960.

Tennessee - Conant and Swanson, 1961.

Cheiloceras Stufe:

France - Ziegler, *1959b.

Germany - Ziegler, *1960b.

Spain - Ziegler, *1959b.

Chemung:

New York - Hass, *1959b.

Pennsylvania - Hass, *1959b.

Crosby Sandstone:

New York - Hass, *1959b.

Crystal Pass Limestone:

Nevada - Langenheim and Collinson, *1963.

"Cypridinenschiefers":

Germany - Helms, 1960b.

Darby Formation:

Montana - Echols, 1961.

Wyoming - Echols, 1959, 1961.

Dasberg-Stufe:

Germany - Schriel and Stoppel, *1960.

Devils Gate Limestone:

Nevada - Clark and Becker, *1960.

Dillenburg Tuffe:

Germany - Krebs, 1960b.

Dunkirk Shale Member of the Perrysburg Formation:

New York - Hass, *1959b.

Pennsylvania - Hass, *1959b.

dubia-rhenana-Interregnum:

Germany - Krebs, *1959.

Englewood Formation:

South Dakota - Klapper and Furnish, *1962.

F_{2g}:

Belgium - Serre and Lys, *1960.

F_{2i}:

Belgium - Serre and Lys, *1960.

Fairfield Beds:

Western Australia - Glenister and Crespin, *1959.

Flaserkalk:

Germany - Rietschel, *1961.

Flasrige Kalkbänderschiefer:

Germany - Lutzens, *1959.

Gardner Formation:

Utah - Beach, *1961; Clark and Beach, 1962.

Genundewa Limestone Member of the Genesee Formation:

New York - Hass, *1959b.

Pennsylvania - Hass, *1959b.

Genesee Formation - See Genesee Shale Member, Genundewa Limestone Member, Ithaca Member, Renwick Shale Member, Sherburne Flagstone Member, and West River Shale Member.

Genesee Shale Member of the Genesee Formation:

New York - Hass, *1959b.

Pennsylvania - Hass, *1959b.

Givet-Stufe:

Germany - Krebs, *1960a.

Glen Park Formation:

Missouri - Mehl, 1960.

Gogo Formation:

Western Australia - Glenister, *1960; Glenister and Crespin, *1959.

- Gonioclymenia*-Stufe:
Germany - Ziegler, *1960b.
- Grassy Creek Shale:
Missouri - Howe and Koenig, 1961; Mehl, 1960; Unklesbay, *1952.
Upper Mississippi Valley - Collinson, Scott and Rexroad, 1962a; 1962b.
- Hauptquartzit:
Germany - Reichstein, *1961.
- Hemberg-Stufe:
Germany - Krebs, *1960a; Rietschel, *1961; Schriel and Stoppel, *1960.
- Hercynkalkes:
Germany - Jordan, *1960.
- Holt's Summit Formation:
Missouri - Echols, 1959; Mehl, 1960.
- Huron Shale:
Ohio - Hoover, 1960.
- Ithaca Member of the Genesee Formation:
New York - Hass, *1959b.
- Kalkknotenschiefer:
Germany - Helms, *1959b.
- Kieselkalk:
Germany - Lutzens, *1959.
- Kieselschiefer:
Germany - Schriel and Stoppel, *1958a.
- Kiesel-und Wetzschieferzone:
Germany - Lutzens, *1959.
- Kleinknotiger Kalk:
Germany - Helms, *1959b.
- Lime Creek Shale:
Iowa - Dow, 1960.
- Liegende Alaunschiefer:
Germany - Patteisky and Schönwälder, *1960.
- Louisiana Limestone:
Illinois - Collinson and Swann, 1958; Scott, *1961.
Missouri - Mehl, 1960.
Upper Mississippi Valley - Collinson, Scott and Rexroad, 1962.
- Manticoceras*-Stufe:
Germany - Hosel, *1960; Ziegler, *1959a, *1960b.
- Maple Mill Shale:
Upper Mississippi Valley - Collinson, Scott and Rexroad, 1962.
- Martin Limestone:
Arizona - Ash, 1962; Ethington, *1962.
- Massie Creek Sandstone:
Missouri - Mehl, 1960.
- Middlesex Shale Member of the Sonyea Formation:
New York - Hass, *1959b.
Pennsylvania - Hass, *1959b.
- Mittlerer Kalkknollenschiefer:
Germany - Helms, *1959b.
- Nehden-Stufe:
Germany - Krebs, *1960a; Rietschel, *1961; Schriel and Stoppel, *1960.
- New Albany Shale:
Indiana - Gutschick and Treckman, 1957; Mehl, 1960.
- Noel Shale:
Missouri - Echols, 1959, 1961; Huffman and Stark, 1960; Mehl, 1960.
- Ober-devonischer Flinz:
Germany - Lutzens, *1959.
- Ober *Platyclymenien*-Stufe:
Germany - Hosel, 1960.
- Ortberggrauwacke:
Germany - Schriel and Stoppel, *1958a.
- Oxyclymenien*-Stufe:
Germany - Hosel, 1960.
Spain - Ziegler, *1959b.

- Parrish Limestone Bed of Cashaqua Shale Member of the Sonyea Formation:
 New York - Hass, *1959b.
 Pennsylvania - Hass, *1959b.
- Perrysburg Formation - see Dunkirk Shale Member.
- Pilot Shale:
 Nevada - Clark and Becker, *1960.
 Utah - Baer, *1962, Clark and Becker, *1960.
- Pinyon Peak Limestone:
 Utah - Beach, *1961; Clark and Beach, 1962; Clark and Becker, *1960.
- Plattenkalsteinserie:
 Germany - Rabien and Krebs, 1959.
- Plattenkalk:
 Germany - Rietschel, *1961.
- Plattenschiefer:
 Germany - Schriel and Stoppel, *1958a.
- Plattige Kalkbänderschiefer:
 Germany - Lutzens, *1959.
- Platyclymenia*-Stufe:
 France - Ziegler, *1959b.
- Portal Formation:
 Arizona - Ash, 1962; Ethington, 1962.
- Renwick Shale Member of the Genesee Formation:
 New York - Hass, *1959b.
 Pennsylvania - Hass, *1959b.
- Rhinestreet Shale Member of the West Falls Formation:
 New York - Hass, *1959b.
 Pennsylvania - Hass, *1959b.
- Roaring River Sandstone:
 Missouri - Mehl, 1960.
- Rotschiefern:
 Germany - Schriel and Stoppel, *1958a.
- Sadler Formation:
 Western Australia - Glenister, *1960; Glenister and Crespin, *1959.
- Sappington Formation:
 Montana - Gutschick, Suttner and Switek, 1962; Sandberg, 1962.
- Saverton Shale:
 Illinois - Scott, *1961; Collinson and Swann, 1958.
 Missouri - Mehl, 1960; Howe and Koenig, 1961.
 Upper Mississippi Valley - Collinson, Scott and Rexroad, 1962a, 1962b.
- Sherburne Flagstone Member:
 New York - Hass, *1959b.
 Pennsylvania - Hass, *1959b.
- Sonyea Formation - see Middlesex Shale Member and Parrish Limestone Bed of the Cashaqua Shale Member.
- Sylamore Sandstone:
 Illinois - Collinson and Swann, 1958.
 Missouri - Mehl, 1960.
 Oklahoma - Amsden, 1961.
 Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959; Collinson, Scott and Rexroad, 1962a, 1962b.
- Threeforks Shale:
 Montana - Gutschick and Perry, 1959.
- Turpin Sandstone Member of the Grassy Creek Shale:
 Missouri - Mehl, 1960.
- Unnamed formation:
 Algeria - Remack-Petitot, *1960.
 China - Ching, 1960.
 France - Serre and Lys, *1960; Remack-Petitot, *1960.
 Germany - Greiling, *1961; Hiltermann, 1961b; Kronberg, Pilger, Scherp, and Ziegler, *1960; Reichstein, *1959, 1960a, 1960b, 1961a; Schriel and Stoppel, 1960; Trautwein and Wittkindt, *1960.
 Missouri - Echols, 1961.
 Nevada - Dow, 1960.

- Rio De Oro (Spanish Sahara) - Echols, 1963; Ethington and Furnish, *1962;
Panseri, *1959.
Western Australia - Echols, 1963.
Wyoming - Ethington, Furnish, and Wingert, *1961; Koucky, Cygan, and Rhodes,
*1961.
- Unterer Alaunschiefer:
Germany - Helms, *1959b.
- Unterer Kalkknollenschiefer:
Germany - Helms, *1959b.
- Unterer Quarzitschiefer:
Germany - Schriel and Stoppel, *1958a.
- Upper Bänderschiefer:
Germany - Klitzsch, *1959.
- Varca - Ziet:
Germany - Krebs, *1959.
- Virgin Hills Formation:
Western Australia - Glenister, *1960; Glenister and Crespin, 1959.
- Wagner-Bank:
Germany - Helms, *1959b.
- West Falls Formation - see Rhinestreet Shale Member.
New York - Hass, *1959b.
Pennsylvania - Hass, *1959b.
- Wocklumeria* (?) Stufe:
Spain - Ziegler, *1959b.
- Woodford Shale:
Oklahoma - Amsden, 1960; Branson, 1959.
- MISSISSIPPIAN (UNDIVIDED)
- Tangpakou Limestone:
China - Ching, 1960.
- Unnamed formation:
Algeria - Cuvillier, 1962a.
Indiana - Kesling, 1962.
- LOWER MISSISSIPPIAN
- Anchoralis*-Stufe:
Germany - Voges, *1959b.
- Aplington Formation:
Iowa - Echols, 1959.
- Arkansas group - listed under Upper Devonian.
- Arkansas Novaculite - listed under Upper Devonian.
- Bachelor Formation:
Missouri - Mehl, 1960.
- Banff Formation:
Alberta - Müller, 1962e.
- Bedford Shale:
Ohio - Hoover, 1960.
- Bohlen profiles - listed under Upper Devonian.
- Burlington Formation:
Illinois - Collinson and Swann, 1958.
Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959.
- Burt Range Limestone:
Northern Territory, Australia - Glenister, *1960.
- Bushberg Formation:
Missouri - Mehl, 1960.
- Castle Reef Dolomite:
Montana - Mudge, Sands and Dutro, 1962.
- Cavusgnathus* Beds:
Western Australia - Glenister, *1960.
- Chappel Limestone:
Texas - Ellison, 1960; Gutschick, Weiner, and Young, 1961; Hass, 1959a.
- Chattanooga Shale:
Mississippi River Valley - Weller, 1960.

- Chouteau Limestone:
 Illinois - Collinson and Swann, 1958.
 Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959; Collinson, Scott and Rexroad, 1962a, 1962b.
- Cremistria*-Zone:
 Germany - Voges, 1959b.
- Cuivre Shale:
 Missouri - Mehl, 1960.
- Englewood Formation:
 South Dakota - Klapper and Furnish, *1962.
- English River Sandstone:
 Upper Mississippi Valley - Collinson, Scott and Rexroad, 1962a, 1962b.
- Fern Glen Limestone:
 Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Scott and Rexroad, 1962a, 1962b.
- Gardner Formation:
 Utah - Beach, *1961; Clark and Beach, 1962.
- Glen Park Formation:
 Illinois - Collinson, and Swann, 1958.
 Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Scott and Rexroad, 1962a; 1962b.
- Grassy Creek Shale:
 Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959.
- Hangenbergkalk:
 Germany Voges, *1959b; *1960.
- Hannibal Shale:
 Illinois - Collinson and Swann, 1958.
 Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959; Collinson, Scott and Rexroad, 1962b.
- Haupteruptionsphase der Deckdiabase:
 Germany - Walliser, *1960b.
- Keokuk Formation:
 Illinois - Elias, 1959.
 Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959.
- Kieselkalk:
 Germany - Voges, 1959a; *1960.
- Lake Valley Limestone:
 New Mexico - Ash, 1962.
- Laurel Beds:
 Western Australia - Glenister, *1960.
- Liegende Alaunschiefer:
 Germany - Schriell and Stoppel, *1958a; Voges, *1959b; *1960.
- Lodgepole Limestone:
 Montana - Gutschick, Weiner, and Young, 1961.
- Louisiana Limestone:
 Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Scott and Rexroad, 1962b.
- Lydite Kalk:
 Germany - Voges, 1959a; *1960.
- Madison Formation:
 Wyoming - Kouchy, Cygan, and Rhodes, *1961.
- New Albany Shale - listed under Upper Devonian.
- Northview Formation:
 Missouri - Echols, 1959.
- Oberen Kalkknollenschiefer:
 Germany - Helms, *1959b.
- Obere Quarzitschiefer:
 Germany - Schriell and Stoppel, *1958a.
- Pahasapa Formation:
 South Dakota - Klapper and Furnish, *1962.
- Perapertu Formation:
 Spain - Wagner and Wagner-Gentis, 1963.

Pericyclus - Stufe:

Germany - Krebs, *1960a.

Rockford Limestone:

Indiana - Gutschick, 1959.

St. Louis Formation:

Illinois - Collinson and Swann, 1958.

Salem Formation:

Illinois - Collinson and Swann, 1958.

Sappington Formation:

Montana - Gutschick, Suttner and Switek, 1962; Sandberg, 1962.

Saverton Shale:

Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Scott and Rexroad, 1962b.

Schiffelborner - Schichten:

Germany - Ziegler, 1959.

Sedalia Limestone:

Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959.

Septimus Limestone:

Western Australia - Glenister, *1960.

Siphonodella Zone:

Missouri - Mehl, 1960.

Springville Shale:

Illinois - Weller, 1960.

Spirit Hill Limestone:

Northern Territory, Australia - Glenister, *1960.

Tn_{1b}:

Belgium - Serre and Lys, *1960.

Tn_{2a}:

Belgium - Serre and Lys, *1960.

Tn_{2b}:

Belgium - Serre and Lys, *1960.

Tn_{2b-c}:

Belgium - Serre and Lys, *1960.

Unnamed formation:

Algeria - Remack-Petitot, *1960.

England - Mathews, 1961.

France - Remack-Petitot, *1960; Serre and Lys, *1960; Ziegler, *1959b.

Germany - Paproth, 1960; Trautwein and Wittekindt, *1960.

Missouri - Echols, 1961.

Utah - Sando, Dutro, and Gere, 1959.

Wechselagerungen:

Germany - Schriel and Stoppel, *1958a.

Welden Limestone:

Oklahoma - Gutschick, Weiner, and Young, 1961.

UPPER MISSISSIPPIAN

Anchoralis-Stufe - listed under Lower Mississippian.

Arden Member Limestone and Shales:

Scotland - Clarke, *1960.

Assise de Warnant:

Belgium - Serre and Lys, *1960.

Barnett Shale:

Texas - Elias, 1959.

Beech Creek Limestone:

Illinois - Rexroad and Jarrell, *1961.

Indiana - Rexroad and Jarrell, *1961.

Kentucky - Rexroad and Jarrell, *1961.

Bilston Burn Bone Bed:

Scotland - Clarke, *1960.

Birkhead Beds:

Scotland - Clarke, *1960.

Blackhall Limestone and Shales:

Scotland, Clarke, *1960.

- Bluefield Shale:
Virginia - Rexroad and Clarke, *1960.
- Bluefield Group:
West Virginia - Rexroad and Clarke, *1960.
- Brazer Limestone:
Idaho - Skipp, 1961.
- Calcaire à Polypiers de Temploux:
Belgium - Serre and Lys, *1960.
- Caney Shale - see Sand Branch Member.
- Castlecary Limestone and Shales:
Scotland - Clarke, *1960.
- Clore Limestone:
Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959.
- Cove Creek Limestone:
Virginia - Rexroad and Clarke, *1960.
- Delaware Creek Shale:
Oklahoma - Elias, 1959; Elias and Branson, 1959.
- Downeys Bluff Formation:
Illinois - Rexroad and Liebe, *1962.
Kentucky - Rexroad and Liebe, *1962.
- Erdbacher Kalk Horizont:
Germany - Voges, *1959b.
- Frailays Shale:
Illinois - Rexroad and Jarrell, *1961.
- Glencart Beds:
Scotland - Clarke, *1960.
- Glen Dean Limestone:
Illinois - Elias, 1959.
Kentucky - Rexroad and Clarke, *1960.
Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959.
- Goddard Shale:
Oklahoma - Elias, 1959.
- Golconda Formation:
Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Scott and Rexroad, 1962b.
- "Griotte" Limestone:
Spain - Higgins, 1962.
- Haney Limestone:
Illinois - Rexroad and Jarrell, *1961.
Indiana - Rexroad and Jarrell, *1961.
Kentucky - Rexroad and Jarrell, *1961.
- Hawthorn Limestone:
Scotland - Clarke, *1960.
- Heath Formation:
Montana - Willis, 1959.
- Helms Formation:
Texas - Ellison, 1962a.
- Hurlet Limestone and Shales:
Scotland - Clarke, *1960.
- Index Limestone and Shales:
Scotland - Clarke, *1960.
- Johns Valley Shale:
Oklahoma - Cline, 1960; Elias and Branson, *1959.
- Kinkaid Limestone:
Illinois - Rexroad and Burton, *1961.
- Kulmkieselschiefer:
Germany - Schriel and Stoppel, *1958a.
- Law Beds:
Scotland - Clarke, *1960.
- Linn Spout Beds:
Scotland - Clarke, *1960.
- Lower Limestone Group:
Scotland - Clarke, *1960.

- Maxville Limestone:
Ohio - Kesling, 1961; 1963.
- Menard Limestone:
Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959.
- Millstone Grit:
Scotland - Clarke, *1960.
- Monkcastle Beds:
Scotland - Clarke, *1960.
- North Greens Limestone and Shales:
Scotland - Clarke, *1960.
- Paint Creek Formation:
Illinois - Elias, 1959.
Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959.
- Paoli Formation:
Indiana - Rexroad and Liebe, *1962.
Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959.
- Pella Limestone:
Iowa - Dow, 1960.
Oklahoma - Elias, 1959.
- Pericyclus* - Stufe:
Germany - Walliser, *1959.
- Petershill Limestone and Shales:
Scotland - Clarke, *1960.
- Ponniel Water Bed:
Scotland - Clarke, *1960.
- Posidonienkalk:
Germany - Meischner, *1962.
- Renault Formation:
Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Scott and Rexroad, 1962b.
- Rhenær Kalk:
Germany - Meischner, *1962.
- Ste. Genevieve Limestone:
Illinois - Collinson and Swann, 1958.
Kansas - Thompson and Goebel, *1963.
Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Scott and Rexroad, 1962b.
- St. Louis Limestone:
Kansas - Thompson and Goebel, *1963.
Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Scott, and Rexroad, 1962b.
- Salem Formation:
Kansas - Thompson and Goebel, *1963.
Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Rexroad and Scott, 1962b.
- Sand Branch Member of the Caney Shale:
Oklahoma - Elias and Branson, *1959.
- Second Abden Limestone and Shale:
Scotland - Clarke, *1960.
- Shetlerville Member of the Renault Formation:
Illinois - Rexroad and Liebe, *1962.
Kentucky - Rexroad and Liebe, *1962.
- Skateraw Middle Limestone and Shales:
Scotland - Clarke, *1960.
- Stacklawhill Beds:
Scotland - Clarke, 1960.
- Stanley Shale:
Oklahoma - Cline, 1960; Elias, 1959; Shelburne, 1960.
- Tesnus Formation:
Texas - Ellison, 1962a.
- Top Hosie Limestone and Shales:
Scotland - Clarke, *1960.

Unnamed formation:

- Algeria - Remack-Petitot, *1960.
- France - Remack-Petitot, *1960; Serre and Lys, *1960.
- Germany - Paproth, 1960; Ziegler, *1960b.
- Spain - Ziegler, *1959b.

Upper Limestone Group:

- Scotland - Clarke, *1960.

V_{1b}:

- Belgium - Serre and Lys, *1960.

V₃:

- Belgium - Serre and Lys, *1960.

Vienna Limestone:

- Upper Mississippi River Valley - Collinson, Rexroad, and Scott, 1959. Collinson, Scott and Rexroad, *1962b.

Warsaw Formation:

- Kansas - Thompson and Goebel, *1963.
- Upper Mississippi Valley - Collinson, Rexroad and Scott, 1959; Collinson, Scott and Rexroad, 1962b.

Wesley Formation:

- Oklahoma - Cline, 1960.

Winterberg:

- Germany - Helms, 1960b.

Yankeetown Formation:

- Illinois - Rexroad and Liebe, *1962.
- Kentucky - Rexroad and Liebe, *1962.

PENNSYLVANIAN (UNDIVIDED)

Gap Tank Formation:

- Texas - Ellison, 1962a.

Madera Limestone:

- New Mexico - Ash, 1962.

Magdalena Group:

- New Mexico - Ash, 1962.
- Texas - Ellison, 1962a.

Minturn Limestone:

- Colorado - Anderson, 1962.

Naco Limestone:

- Arizona - Ash, 1962.

Unnamed formation:

- Brazil - Lange, 1961.
- China - Ching, 1960.
- Kansas - Echols, 1959.
- Missouri - Echols, 1959.

LOWER PENNSYLVANIAN

Amsden Formation:

- Wyoming - Koucky, Cygan, and Rhodes, *1961.

Chickasaw Creek Formation:

- Oklahoma - Cline, 1960.

Glen Eyrie Shale:

- Colorado - Lehmann, 1953.

Skipsey's Marine Band:

- Scotland - Clarke, *1960.

Springer Formation:

- Oklahoma - Elias, 1959.

Unnamed formation:

- Algeria - Remack-Petitot, *1960.

MIDDLE PENNSYLVANIAN

Amsden Formation - listed under Lower Pennsylvanian.

Cherokee Shale:

- Kansas - Mamay and Yochelson, *1962.

Dorr Run Member of the Lower Freeport Cyclothem:

- Ohio - Sturgeon, 1958.

- Fort Scott Formation:
 Missouri - Unklesbay, *1952.
- Krebs Group:
 Oklahoma - Mamay and Yochelson, *1962.
- Lake Neosho Shale:
 Iowa - Kesling, 1961.
 Kansas - Kesling, 1961.
 Missouri - Kesling, 1961.
- McLeansboro Group:
 Illinois - Mamay and Yochelson, *1962.
- Paradox Formation:
 Colorado - Elias, G. K., 1963.
 Utah - Elias, G. K., 1963; Jones, 1960.
- Stanton Formation:
 Indiana - St. Jean, 1957.
- Tebo Formation:
 Missouri - Unklesbay, *1952.
- Unnamed formation:
 Algeria - Remack-Petitot, *1960.
 Iowa - Dow, 1960.

UPPER PENNSYLVANIAN

- Ames Limestone Member of the Conemaugh Series:
 Ohio - Sturgeon, 1958.
- Dennis Formation - see Stark Shale Member.
- Eudora Shale Member of the Stanton Limestone:
 Kansas - Ball, *1959; Ball, Ball and Laughlin, *1963.
- Gaysport Limestone Member of the Gaysport Cyclothems:
 Ohio - Sturgeon, 1958.
- Heebner Shale Member of the Oread Formation:
 Iowa - Welp, Thomas and Dixon, 1957.
 Kansas - Ball, 1959; Ball, Ball, and Laughlin, *1963.
- Hushpuckney Shale Member of the Swope Formation:
 Iowa - Welp, Thomas, and Dixon, 1957.
- Minnelusa Formation:
 South Dakota - Jennings, *1959.
- Modesto Formation:
 Illinois - Kosanke, Simon, Wanless, and Willman, 1960.
- Oread Formation - see Heebner Shale Member.
- Quindaro Shale Member of the Wyandotte Formation:
 Iowa - Welp, Thomas, and Dixon, 1957.
- Stark Shale Member of the Dennis Formation:
 Iowa - Welp, Thomas, and Dixon, 1957.
- Swope Formation - see Hushpuckney Shale Member.
- Winterset Formation:
 Iowa - Dow, 1960.
- Wyandotte Formation - see Quindaro Shale Member.

LOWER PERMIAN

- Beattie Limestone - see Florena Shale Member.
- Bone Springs Formation:
 Texas - Clark and Ethington, *1962.
- Cherry Canyon Formation - see Getaway Member.
- Florena Shale Member of the Beattie Limestone:
 Kansas - Verville, 1958.
- Foraker Limestone - see Hughes Creek Shale Member.
- Getaway Member of the Cherry Canyon Formation:
 Texas - Ash, 1962; Sohn, *1961.
- Hughes Creek Shale Member of the Foraker Limestone:
 Kansas - Verville, 1958.
- Kufeng Suite (Formation):
 China - Ching, *1960.
- Meade Peak Phosphatic Member of the Phosphoria Formation:
 Idaho - Clark and Ethington, *1962; McKelvey and others, *1959.

- Montana - McKelvey and others, *1959.
- Utah - McKelvey and others, *1959.
- Wyoming - McKelvey and others, *1959.
- Phosphoria Formation - see Meade Peak Phosphatic Shale Member.
- San Andres Limestone:
 - New Mexico - Ash, 1962; Clark and Ethington, *1962.
- Siksikup Formation:
 - Alaska - Bergquist, *1960.
- Tensleep Sandstone:
 - Wyoming - Rhodes, 1963.
- Unnamed Formation:
 - Arizona - Clark and Ethington, *1962.
 - Mexico - Clark and Ethington, *1962.
- Werra - Dolomit:
 - Germany - Seidel, 1959.
- Wolfcamp Formation:
 - Texas - Ellison, 1962a.

LOWER TRIASSIC

- Gondolella planata* Assemblage Zone:
 - Nevada - Clark, 1960.
- Meekoceras* limestones:
 - Nevada - Clark, *1959.
 - Utah - Clark, *1959.
- Meekoceras* zone of the Thaynes Limestone:
 - Nevada - Jones, *1960.
 - Utah - Jones, *1960.
- Neoprioniodus bransoni* Assemblage Zone:
 - Nevada - Clark, 1960.
- Thaynes Limestone:
 - Nevada - Schell and Clark, 1960.
 - Also see *Meekoceras* zone.
- Unnamed formations:
 - Nevada - Clark, *1959.
 - Utah - Clark, *1959.

MIDDLE TRIASSIC

- Asklepieionkalk:
 - Greece - Bender, *1960.
- Dachsteinkalk:
 - Austria - Zankl, *1962.
- Knubbelkalk:
 - Austria - Huckriede, *1959a.
- Oberen Muschelkalk:
 - Germany - Hirschmann, *1959.
- Shublik Formation:
 - Alaska - Bergquist, 1960.
- Unnamed formation:
 - Bulgaria - Budurov, *1960; Stefanov, *1962.
 - Nevada - Anderson, 1962.

UPPER TRIASSIC

- Asklepieionkalk - listed under Middle Triassic.
- Rot-und Graukalksteinen:
 - Bulgaria - Budurov, *1959.
- Shublik Formation - listed under Middle Triassic.
- Unnamed formation:
 - Bulgaria - Spasov and Ganey, *1960.
- Zone von *Trachiceras aonoides*:
 - Bulgaria - Budurov, *1959.

STRATIGRAPHIC AND GEOGRAPHIC DISTRIBUTION
OF CONODONT-BEARING ROCKS

The reported stratigraphic and geographic distribution of conodont-bearing rocks is summarized in Table 1. Published articles which mention conodont-bearing rocks of a certain geologic system in a particular geographic area can be located by referring to Table 1 and to the geologic indexes and accompanying bibliographies in the Catalogue of conodonts (Fay, 1952), in my previous bibliography and index of conodonts (1961), and in this paper.

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TABLE 1 — CONODONT OCCURRENCE

F, occurrence reported in Catalogue of conodonts (Fay, 1952); A1, occurrence reported in Bibliography and index of conodonts, 1949-1958 (Ash, 1961); A2, occurrence reported in this paper.

COUNTRY	GEOLOGIC SYSTEM AND ERA	P A L E O Z O I C						M E S O Z O I C			
		CAMBRIAN	ORDOVICIAN	SILURIAN	DEVONIAN	CARBONIFEROUS		PERMIAN	TRIASSIC	JURASSIC	CRETACEOUS
AFRICA											
Algeria				A1, A2	A1, A2	A1, A2	A2				
Cameroon											
Egypt							F, A1	F, A1	F, A1		A1
Rio de Oro					A2						
ASIA											
China					A2	A2	A2				
Pakistan (west)											
Palestine										A1	
Turkey					A1					A1	
AUSTRALIA											
Northern Territory			F, A1		A2	A2					
Queensland											
Western Australia	A2		A1, A2	A1, A2	A1, A2	A1, A2					
EUROPE											
Austria					A1	A1				A1, A2	
Baltic region		F									
Belgium					A2	F, A2					
Bulgaria				A2							
Czechoslovakia			F	F					A2		
Estonia			F, A1	F, A2							
France					A1, A2	A1, A2					

TABLE 1 (CONT'D.)

Germany	A1, A2	A1	F, A1, A2	F, A1, A2	F, A1, A2	A1	F, A1, A2	F, A1, A2	
Great Britain									
England		A1, A2	F, A1, A2	A1, A2	F, A1, A2	F, A1			
Northern Ireland						A1			
Scotland		F, A1			F, A1, A2	F, A1, A2			
Greece								A1, A2	
Italy				A1				A1	
Netherlands						A1			
Poland		A2	F						
Prussia		F, A2							
Russia			F		F				
Sicily							A1		
Silesia		F		A1					
Spain			A1, A2	A1, A2	A1, A2				
Sweden	A2	F, A1, A2	A2					A2	
Yugoslavia									
NORTH AMERICA									
Canada									
Alberta						F, A1	F, A2		
British Columbia		A2							
Mackenzie region						F			
Manitoba		A2							
Northwest Territories		A2	A2						
Ontario		F, A2				F, A1			
Quebec		F							
Mexico									
Chihuahua		A2		A2					
Coahuila							A2		
United States of Amer.									
Alabama		A2				F, A1	A1		
Alaska								A2 (?)	A2
Arizona						A1, A2		A2	
Arkansas			A2			F, A1	F, A1		
Cincinnati arch						A1			
Colorado		F, A1, A2				A1		F, A1, A2	

