Annotated Bibliography of Alaskan Paleozoic Paleontology

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ANNOTATED BIBLIOGRAPHY OF ALASKAN PALEOZOIC PALEONTOLOGY

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ABSTRACT

Most papers published before June 1954 that deal with Alaskan Paleozoic paleontology are concerned primarily with stratigraphy; only a few papers are concerned primarily with taxonomy. The Upper Silurian brachiopod fauna from southeastern Alaska is the best documented. Ordovician cephalopods from Seward Peninsula, Ordovician and Silurian graptolites, Cambrian and Ordovician brachiopods and trilobites from the Eagle-Circle district, Devonian fossils from Porcupine valley, and Mississippian lithostrotonid corals have also been described. The papers are cross-indexed.

INTRODUCTION

This bibliography presents a comprehensive compilation of paleontologic information that was accumulated during the preparation of the new geologic map of Alaska.

In the past 55 years many paleontologists have studied Paleozoic fossils from Alaska, but most of the work has been done by G. H. Girty, E. M. Kindle, Edwin Kirk, and Charles Schuchert. Nearly everything that was published on the faunas or correlation of Carboniferous and Permian rocks from 1900 to 1945 was the direct result of Girty's efforts. A comparable statement can be made of Edwin Kirk's work on faunas from the early Paleozoic systems.

An attempt has been made to include not only taxonomic publications and papers that contain extensive faunal lists and correlations, but also all published work that indicates fossils were studied or age determinations were made on the basis of examination of fossil material. For example, if the statement "Middle Devonian corals were identified by Edwin Kirk" is made, the paper has been cited; however, if the reference is only to "rocks of Middle Devonian age," the paper has not been cited.

Few taxonomic paleontologic papers, especially dealing with upper Paleozoic faunas, have been published. Perhaps the best known is the Upper Silurian brachiopod fauna (Kirk, 1922, 1926, and 1927; Kirk and Amsden, 1952). However, even for this fauna much descriptive work remains to be done. A few Cambrian brachiopods and trilobites have been described (Cooper, 1936; Ulrich and
Cooper, 1938; Kobayashi, 1935 and 1936a). Lower Ordovician cephalopods from Seward Peninsula have been described and discussed (Flower, 1941a, 1941b, and 1946; Miller and Kummel, 1945). Several Ordovician and Silurian graptolite species were described by Ruedemann (1947). Devonian coral species were first described by Meek (1867), and two of these were redescribed by S. Smith (1945). A few Mississippian lithostrotionid coral species were described by Hayasaka (1936), and a new genus was described by Harker and McLaren (1952).

Taxonomic papers are indicated by asterisks. Particularly important summaries and papers that present many faunal lists are indicated by daggers. Editorial comments are enclosed in brackets. Special effort has been made to include all papers published before January 1954.
BIBLIOGRAPHY


Page 190.—Short description and reproduction of original illustrations of *Paleocyclus kirbyi* [see Meek, 1868].


Pages 20, 77, 167-168, and 220.—Lists coral faunas of Richmond age, of Silurian age from Seward Peninsula, of early Upper Devonian age from Porcupine River, and of early Carboniferous age [see S. Smith, 1945, and Hayasaka, 1936].


Pages 17, 111, and 366.—Reference to *Cithrocrinus* Kirk from supposed lower Pennsylvanian rocks of southeastern Alaska. [See Kirk, 1937a and 1937b. Age of beds from which this crinoid came is doubtful.]


Age and correlation of Mississippian rocks and faunas in northern Alaska. Overlying a lower Mississippian nonmarine formation is a shale that contains marine faunas resembling those of Kinderhook age; overlying the shale is the Lisburne limestone, which contains faunas ranging in age from Osage to late Mississippian.


Page 472.—One collection of fossils from Wellesley formation reputed by Charles Schuchert to be of Devonian or Carboniferous age; discussion of correlation included.


Page 359.—Collection of fossils from Kletsan Creek, upper White River basin, examined by Charles Schuchert; age designated as upper Carboniferous; forms listed are *Productus cora*, *Productus*, two undet. species, *Seminula* sp., *Stenopora* sp., and *Fusulina* (not *F. cylindrica*) [age now considered Permian]. Wellesley formation dated as Devonian or Carboniferous on basis of a few fossil collections; no fossil lists.


Pages 19-24.—Fossils from Drake Island, Glacier Bay, determined by Charles Schuchert to be of Late Silurian age; faunal list; a single coral from Dirt glacier moraine dated as Middle Devonian. Relationship of Paleozoic rocks in southeastern Alaska and British Columbia discussed.

Upper Silurian and Middle Devonian fossils from Drake Island and Dirt glacier respectively (Glacier Bay area), reported by Charles Schuchert [same information given by Brooks, 1902a].


Pages 210-225.—Stratigraphic summary of formations and provisional correlations. No fossil lists. [Most of this information has been superseded by later work.]


Pages 66-84.—Small Ordovician graptolite fauna from Tatinia group listed; age determined by Charles Schuchert. Tonzona group assigned Silurian or Devonian age [no fossil evidence]. Several collections of late Middle or early Late Devonian age from a limestone that overlies, probably unconformably, the Tonzona group. [The Cantwell formation incorrectly assigned to Carboniferous(?).]


Page 31.—Report by G. H. Girty on fragmentary fossils from gravels near Teller Mission, thought to have come from "Nome series;" age designated as "Lower Ordovician, suggesting an affinity with that of the Pogonip group of Nevada."


Describes stratigraphy, structure, and geologic history and gives lists of fossils from localities in the area extending from 141° to 152° W. longitude and from the Tanana River northward to about the 67th parallel, including regions drained by the Porcupine, Yukon, and Tanana Rivers. Compiles all information available before 1908. Calico Bluff and Nation River formations defined.


Pages 103-107 and 125.—Fossils of Late Ordovician, Silurian, and possible Devonian age reported on by Edwin Kirk; faunal lists. G. H. Girty's identification of four Permian collections also listed; author states, "The fauna is obviously that which has been identified in Alaska as Permian (Artinskian) and which is best known from exposures on Kuiu Island and on Yukon River opposite the mouth of Nation River."


Pages 140-147.—Summarizes Paleozoic stratigraphy and general distribution of systems in Alaska; general references made to fossils and faunas and their ages. [Information is about the same as that given by P. S. Smith, 1939.]

Pages 171-173.—States that fossils from Cape Thomson [sic] and Cape Lisburne areas are indistinguishable from those of the Derbyshire limestone. Lists "producta Martini, other productae, lithostroctum, flustrae, and trilobites."


Pages 52-53.—Refers to graptolitic beds near Wrangell [see Kirk 1918a] as of Silurian age or older. Limestone beds on Duncan Canal contain fossils identified as Middle Devonian by Edwin Kirk.


Pages 49 and 72-130.—Extensive discussion of faunas and ages of Paleozoic rocks of southeastern Alaska. Lower and Middle Ordovician faunas of Prince of Wales, Kuiu, and neighboring islands listed. Lower, Middle, and Upper Silurian faunas, widely distributed throughout Alexander Archipelago and the Glacier Bay vicinity, tabulated. Middle and Upper Devonian faunas from Prince of Wales and adjacent islands, Kupreanof Island, and Chichagof Island discussed and listed. Most Devonian and Silurian determinations made by Edwin Kirk; Ordovician and Lower Silurian graptolite faunas studied by Rudolf Ruedemann. Reports by G. H. Girty on the Mississippian rocks at Soda Bay, Trocadero Bay, Klawak Inlet, Kuiu Island, and elsewhere, quoted; one collection from Soda Bay provisionally assigned to the Pennsylvanian; many collections from Kuiu, Keku, Kupreanof, Admiralty, and Suemez Islands tentatively correlated with the Artinskian of the Russian Permian, although some may be as old as late Pennsylvanian.


Pages 60 and 66.—Limestone beds on Marble and Heceta Islands contain fossils of possible Devonian age, according to Edwin Kirk [these fossils now considered Silurian; see Buddington and Chapin, 1929, p. 94].


Mentions graptolite collection [no age given] and first Cambrian fossils found in this region [see Cairnes, 1914b].

___ 1914a, Geological section along the Yukon-Alaska boundary line between Yukon and Porcupine Rivers: Geol. Soc. America Bull., v. 25, p. 179-204, pls. 4-8.

Discussion of stratigraphy and paleontology of the Paleozoic section in the boundary region. [Cairnes, 1914b, modified information given in this paper and presented more paleontologic data.]


Discusses ages and correlations of Paleozoic faunas collected in the period 1911-12 on Yukon-Alaska boundary survey. Pages 63-75.—Cambrian, Ordovician, and Silurian faunal lists. Pages 77-81.—Devonian faunal lists, prepared by E. M. Kindle. Pages 94-103.—Carboniferous faunal lists,
prepared by G. H. Girty. Pre-Devonian fossils studied by E. M. Kindle, Lawrence Lambe, L. D. Burling, R. Ruedemann, and W. A. Parks. [see Mertie, 1930 and 1933, for revision of stratigraphic significance of these collections.]


Pages 32, 33, and 40-45. — Edwin Kirk reports probable Middle Devonian age for single collection from Bonanza Creek. Detailed lists, prepared by G. H. Girty, of fossils from upper Carboniferous rocks [see Moffit, 1938, for later modifications].


Page 255. — Discusses age of Middle Devonian rocks from which two small collections of fossils have been made. No fossil lists.


Pages 179-186. — Summarizes known data on stratigraphy and age of upper Paleozoic rocks in Alaska. Pages 216-219. — Interpretation of conditions at end of Paleozoic in Alaska and British Columbia. [Age determinations should be revised in light of later work; see Girty, 1927, and Mertie, 1930.]


Pages 88, 89, and 92-94. — Discusses probable Middle Devonian rocks on Vallenar Bay. Discusses age and correlation of beds of schist and limestone northeast of Ketchikan on George Arm; tentative late Carboniferous age not based on new fossil collections. Discusses stratigraphic relationship of Triassic and older rocks.


Pages 20-22 and 24. — Fossils from Port Clarence assigned by Charles Schuchert to "middle of the Lower Silurian system" [now Ordovician system]. Faunal lists and discussion of correlation. One poor collection of fossils from the Kugruk group on Baldy Mountain dated as either Upper Silurian [true Silurian] or Devonian.


Pages 174-175 and 182. — Discusses Carboniferous plants and invertebrates from Lisburne limestone and underlying rocks [see Collier, 1906, for detail].

gold placers of parts of Seward Peninsula, Alaska, including the Nome,
Council, Kougarok, Port Clarence, and Goodhope precincts: U. S. Geol.

Pages 75-79.—Extensive quotation from reports by Charles Schuchert
dating most of Port Clarence limestone collections as Silurian; report by
E. O. Ulrich cited as evidence of Ordovician age of some of the fossil
material; authors think all the fossils are from about same stratigraphic
position and that either Ordovician or Silurian age will be proved at some
future date [see Steidtmann and Cathcart, 1922]. Page 81.—Quotes report
of G. H. Girty that assigns lower Carboniferous age to lithostrotionid
corals from the limestone near Palazruk.

*Cooper, G. A., 1936, New Cambrian brachiopods from Alaska: Jour.

Descriptions of 4 (3 are new) Middle Cambrian species and 1 new genus
based on specimens collected by J. B. Mertie, Jr., northeast of Eagle,
Alaska. New genus *Arctohedra* and new species *A. minima* and *A. mertiei*
proposed. New features of *Nisusia* Walcott recorded. New species
*N. borealis* described.

*___ 1944, Phylum Brachiopoda, in Shimer, H. W., and Shrock, R. R.,
Index fossils of North America: 837 p., 303 pls, New York, John Wiley
and Sons, Inc.

Lists and illustrates certain brachiopod species that occur in Paleozoic
rocks in Alaska.

Cooper, G. A., and others, 1942, Correlation of the Devonian sedimentary
formations of North America: Geol. Soc. America Bull., v. 53, no. 12,
p. 1729-1794, 1 pl., 1 fig.

Stratigraphic column for southeastern Alaska, prepared by E. Kirk.
Discussion on page 1784 mentions *Stringocephalus* zone [see Kirk, 1927a].
Salmontrout limestone fauna, from Porcupine River region, given
Onesquethaw age [roughly Onondaga age].

Cushing, H. P., 1892, Notes on the geology of the vicinity of Muir Glacier:
Natl. Geog. Mag., v. 4, p. 56-62.

Page 59.—Notes occurrence of *Loperditia* and gastropods in limestone
at Glacier Bay; H. S. Williams quoted as saying that age is probably
Paleozoic, but that the collection does not warrant making a decisive state­
ment.

___ 1895, Notes on the areal geology of Glacier Bay, Alaska: New York
Acad. Sci. Trans., v. 15, p. 24-34.

Pages 26 and 27.—Discussion of piece of fossil coral from moraine of
Dirt Glacier, referred by H. S. Williams to the genus *Lonsdaleia*, which
indicates Carboniferous age.

Dall, W. H., 1869, Observations on the geology of Alaska; in Coast Pilot of
Alaska, by George Davidson: U. S. Coast Survey, Pacific Coast, pt.1,

Page 197.—Mentions fossils obtained by F. W. Beechey from "carbon­
iferous limestone" at Cape Lisburne [see also Buckland, 1839; and Grewingk,
1850].

Pages 864-865.—General summary of Silurian, Devonian, and Carboniferous faunas [see also Schuchert, 1896, and Knowlton, 1896].


Paralusulina alaskensis, n. sp., described; occurs in lower 125(?) feet of Permian section at Halleck harbor near north end of Saginaw Bay on Kuiu Island; correlation made with Artinskian (Leonard) stage.


Upper Devonian faunas, mostly of Chemung age or younger; coralline and stromatoporoid assemblages of late Middle or early Late Devonian age; tentative correlations indicate relationships with Cordilleran and Asiatic Late Devonian faunas.


Age and correlation of Late Devonian and early Mississippian faunas in northern Alaska discussed.


Distribution and significance of Carboniferous biofacies and lithofacies in northern Alaska discussed.


Page 22.—Fragmentary fossils from limestone on Yuko-Solatna divide south of Ruby assigned Devonian age by Edwin Kirk.


Page 96.—Revised list of fossils from Porcupine Creek [see Wright, 1904, p. 16]; fauna apparently of Spirifer arcticus zone, which may be correlated with the Russian Artinskian [see also Wright, 1906, for Girty's reassignment].


Pages 25 and 26.—Two collections of fossils, one Upper Ordovician and the other Middle Devonian, studied by Edwin Kirk; short fossil lists; correlations discussed.


Page 11.—Fossils from Porcupine Creek [see Wright, 1904, p. 16] identified by G. H. Girty, who states they appear to be of Spirifer arcticus zone, believed to correlate with Russian Artinskian (late Pennsylvanian or early Permian age); faunal list includes Crinoid fragments, Productus aff. P. mammatus, Productus aff. P. gruenwaldti, Spirifer aff. S. marcowi and S. musakheylensis, and Camarophoria aff. C. marginata.
Eichwald, E., 1871, Geognostisch-paleontologische bemerkungen uber die halbinsel Mangischlak und die Aleutischen Inseln: 200 p., 20 pls, St. Petersburg.

Especially pages 88-98, 114-115; plate 4; figure 9; and plate 7, figures 1 and 2. — Discusses occurrence of Carboniferous plants in graywacke beds north of Cape Aklek [on Puale Bay] on Alaskan Peninsula [see Goeppert, 1861]. Describes and illustrates Calamites ambiguus and mentions presence of sigillarian fragments. Illustrates fragment of Lichas from unknown locality of Silurian age. Mentions occurrence of Carboniferous corals at Cape Lisburne. [Hollick, 1936, confirms pre-Tertiary age of plants.]

Emerson, B. K., 1904, General geology, notes on the stratigraphy and igneous rocks: Alaska, v. 4, Harriman Alaska Exped., p. 11-56.

Page 20. — Refers to H. S. Williams' dating of limestone near Glacier Bay as Carboniferous on evidence of a single specimen of Lonsdaleia [see Cushing, 1895].

Emmons, S. F., 1898, Map of Alaska showing known gold-bearing rocks, with descriptive text containing sketches of the geography, geology, and gold deposits and routes to the gold fields: U. S. Geol. Survey Special Pub., 44 p., 1 map.

Page 24. — Mentions that "fossils of Carboniferous age and plants of Devonian aspect" have been found in the "Tahkandit series."


Pages 612-613. — Cites two papers in which the fauna from Cape Thompson were listed (Buckland, 1839, and Grewingk, 1850). Notes that the term Flustrae probably refers to Fenestella.


Page 778. — Reports three fossil localities near Cape Mountain; no age determination made; quotes Collier to the effect that fossils of Carboniferous age were found in the section there [see Brooks, 1906, p. 206, 217, and 224].


- Detailed descriptions of three new Early Ordovician species collected from the York district by J. B. Mertie, Jr.; species described are Ellesmeroceras bridgei Flower, Ellesmeroceras expansum Flower, and "Plectoceras" sewardense Flower; genus Ellesmeroceras Foerste is revised.

1941b, Notes on structure and phylogeny of euryipelphonate cephalopods: Paleontographica Americana, v. 3, no. 13, 56 p., 3 pls., 3 figs.

- Discusses relationship and classification of some early Paleozoic cephalopods. Mentions "Plectoceras" sewardense (p. 19) and Ellesmeroceras bridgei (p. 28) from Seward Peninsula that have been described elsewhere [Flower 1941a].


- Discusses genus Alaskoceras [see Miller and Kummel, 1945], its validity and taxonomic position. Plectoceras(?) sewardense Flower treated in detail [see Flower, 1941a, 1941b; Ulrich, Foerste, Miller, and Unklesbay, 1944].
Contributions to General Geology


Page 17. — Personal communication from E. O. Ulrich states that the Richmond of Alaska and the Western States contains a species of Recessoeculites very similar to R. oweni Hall. Page 21. — Ulrich quoted as stating that Calapoecia cf. canadensis Billings (perhaps C. huronensis Billings), Columnaria calicina (Nicholson) and C. alveolata Goldfuss are associated in the Richmond of northwest Alaska [Seward Peninsula; see Steidtmann and Cathcart, 1922].


Page 3. — Notes that Productus giganteus has been found in Alaska. Pages 16-17. — Compares one occurrence of lower Carboniferous fauna in Alaska to the Baird shale fauna. Relates upper Carboniferous Alaskan faunas to the McCloud limestone fauna and the "Hueconian" fauna of trans-Pecos Texas [now considered Permian].


Page 311. — States that the "Hueconian" fauna is widely distributed over the West and ranges into Alaska. Specifically, the fauna of the Nosoni formation is apparently recognizable to the east and west [sic] of California and to the north into Alaska. Page 314. — "...there is a possibility, if not a certain probability, that the Artinsk and Permian may be correlated with the Hueco formation."


Pages 79-81. — G. H. Girty compares Phosphoria faunas with those from Permian of southeastern Alaska, which are referred to the Artinskian; similar brachiopods occurring in both faunas are listed. [This is the first detailed record of Girty's reassignment of Alaskan faunas, previously called Gschelian, to the Permian. See Eakin, 1918a and 1919; Brown, 1924; Mertie, 1930, 1933, and 1937b.]


Page 204. — Cites presence of Calamites from locality north of Cape Aklek, Alaska Peninsula; not of Tertiary age. [Not seen by author. See Eichwald, 1871; Hollick, 1936.]


Pages 86-90. — Summarizes information from F. W. Beechey's voyage [see Buckland, 1839] and lists fossils collected at Cape Lisburne by Fisher and Kupreanof. Appendix I, pages 270 and 271. — Lists and discusses Carboniferous fossils from Cape Thompson and Cape Lisburne; corals collected by Fisher and Kupreanof have a Silurian aspect, although Grewingk follows Buckland's age assignment. [Apparently the same work was published earlier in Verhandlungun der mineralogischen gesellschaft zu St. Petersburg, 1848-49, p. 76-424.]

Sheet 3.—Brief discussion of faunas and ages of Devonian, Mississippian, and Permian formations in northern Alaska. Sheet 1.—Some typical fossils mentioned in explanation of columnar section.


Describes new genus and new species of lithostrotionid coral from limestone of Mississippian age on Canada-Alaska boundary at latitude 68°48'40" N.; affinities of the new genus discussed. [This locality is in a belt now mapped as Lisburne group (Mississippian).]


Describes 10 new species of North American Lithostrotionella; L. americana listed as from 141st meridian near headwaters of Incog Creek; L. illoriformis type specimen from west end of southern shore of Madre de Dios Island, southeastern Alaska; L. vesicularis type specimen from Soda Bay, southeastern Alaska; and other specimens from Porcupine-Arctic section [see Harker and Maclaren, 1950; both L. americana and L. vesicularis are from areas in northern Alaska in which the Mississippian Lisburne group probably crops out].


Page 144.—Notes that Lithostrotionella occurs in Alaskan Carboniferous rocks [see Hayasaka, 1936]. Figure 3.—Indicates that compound rugose corals lived in Cape Lisburne region in northwestern Alaska during Visean time.


Pages 1 and 2.—Historical review of paleobotanical references on Alaska. Discredits Grewingk's report of Carboniferous plants from Unga Island [see Grewingk, 1850, and Knowlton, 1894]. Confirms Eichwald's identification of Calamites, collected near Cape Aklek [see Eichwald, 1871, and Goeppart, 1861].


Page 48.—Mentions abundance of fossil shells, including "terebratulae" and "trilobites" in the geologic formation at Cape Thompson; no details given.


Stratigraphic column for Eagle district, Yukon River valley, prepared by C. E. Resser, indicates presence of the Calvinella zone of Trempeleau age and the Briancoia zone of Franconia age in rocks of Late Cambrian age.

Page 27. —Refers to fossils of Trenton age (Middle Ordovician) from Port Clarence limestone on Don River, Seward Peninsula [see Kindle, 1911, p. 344].


Page 519. —Summarizes information on Carboniferous fossils from northwestern Alaska [see Buckland, 1839, and Grewingk, 1850]. Mentions occurrence of Carboniferous plants in southern Alaska [probably not Carboniferous; see Knowlton, 1894]; presence of Silurian rocks in neighborhood of Sitka indicated by occurrence of Catenipora escharoides as a rolled fragment.


Extensive remarks on the stratigraphic succession; and discussion, with lists, of the invertebrate faunas (largely Brachiopoda) found along the coast and in the Alexander Archipelago. Silurian; Lower, Middle, and Upper Devonian; Mississippian; and upper Carboniferous (Geschel-stufe equivalent) faunas listed [these upper Carboniferous faunas now considered probable Permian; see Buddington and Chapin, 1929].


Description of the structure and stratigraphy based on a field study in 1906 of the valley of this tributary of the Yukon (at about lat, 66°35' N., long, 145°28' W.). Faunas listed and discussed: Ordovician, Middle Silurian, Middle or Upper Silurian graptolite fauna, Middle Devonian (Salmontrout limestone), Mississippian, and upper Carboniferous (Pennsylvania?).


Includes lists of invertebrate fossils from the lower ramparts of the Porcupine River, and from Kulu Island, southeastern Alaska; fauna closely allied to the Niagara fauna of the Eastern United States.


Pages 523-527. —Description of formations, lists of Mississippian fossil plants and invertebrates, and discussion of ages of beds.


Gives order of succession and correlation of the several faunas known to occur in the formation (ranging in age from Cambrian to Devonian or Carboniferous) on Seward Peninsula; includes preliminary lists of invertebrate species represented. [Much of this paper has been superseded by later work; see Steidtmann and Cathcart, 1922.]

Indicates that Portage fauna is probably widely distributed to west of Mackenzie River. *Buchia retriorstrata* von Buch collected by Kindle on Yukon River below Eagle [see Brooks and Kindle, 1908, p. 288]. Burling also collected a Portage fauna on the Canadian-Alaskan boundary north of the Yukon [see Kindle and Burling, 1914, p. 317].


Pages 308-314 and 316-321. Preliminary reports on fossils collected by D. D. Cairnes party along Canadian-Alaskan boundary in 1912-13; all Paleozoic systems from Cambrian to Carboniferous represented; Ordovician faunas compared to those obtained from Port Clarence limestone; Silurian faunas similar to those collected along Porcupine River [see Kindle, 1908a and 1911]; Devonian fauna like that of Salmontrot limestone; a "Portage fauna" from overlying shales.


Pages 33. Discusses Permian faunas of Alaska; points out their similarity to the Phosphoria fauna and their relationship to the *Schwagerina* zone and the Russian Artinskian stage. [Good general discussion of Arctic Permian faunas.]


Discusses occurrence of Lower Ordovician graptolite fauna in Wrangell series at Wrangell; *Tetragraptus* and *Phyllograptus*? listed.


Mentions faunas of two Silurian limestone beds on north side of Heceta Island. Upper limestone contains rich *Conchidium* fauna [see Kirk and Amsden, 1952]. Lower limestone contains pentameroids, corals, and gastropods. Both limestone beds called late Niagara in age. Refers to *Stringoccephalus*-bearing limestone zone of Middle Devonian on west coast of Prince of Wales Island.


Full description of a new genus and type species of fossil brachiopod, and discussion of its faunal affinities and the zone in which abundant specimens were found (on Kosciusko and Heceta Islands).


Descriptions of three species of this new brachiopod found in the limestone series on Heceta and Kosciusko Islands. Limestone series characterized by another new brachiopod described by Kirk (1922).


Reports finding *Stringoccephalus* at two localities in southeastern Alaska in 1917, both near Klawak on west coast of Prince of Wales Island; zone considered to lie near top of Middle Devonian.

Discussion of the faunal sequence in southeastern Alaska, including a description of the new genus represented by two species collected by the author on Kosciusko Island.


Descriptions of *Pycnodesma giganteum* and *P. benjami*ni, n. gen. and n. spp., from the "uppermost stratigraphic unit of the Silurian in Southeast Alaska"; rocks of this age occur also on Seward Peninsula and "probably in the Upper Yukon Valley in the Fairbanks region."


Description of a new species based on specimens from Willoughby Island, Glacier Bay, southeastern Alaska [Shimer and Shrock, 1944, show this genus as = *Euomphaiopterus* Roemer 1876; see also Knight, 1938].


Brief discussion and correlation of stratigraphic units represented on Seward Peninsula, in the Yukon-Porcupine area, and in southeastern Alaska. Discussion of Paleozoic geography of the northeastern Pacific Ocean.


Describes new genus and species, *Clistocrinus pyriformis* from Carboniferous strata on large island at head of Saginaw Bay on Kuiu Island, southeastern Alaska. E. Kirk, G. H. Girty, and L. G. Henbest believe the fauna is of early Pennsylvanian age.


Proposes new generic name because of possibility that original name [Kirk, 1937a] is a homonym of *Clistocrinus* Springer.


Describes part of Upper Silurian brachiopod fauna from southeastern Alaska. Twenty-one species considered, of which 6 are new, 6 were described in earlier publications by Kirk, 3 are referred to previously known species, and 6 are incompletely known. New genus *Alaskospira* described; attention called to the resemblances between this fauna and one that occurs in the Upper Silurian of the eastern Urals.


Pages 49-51 and plate 78, figure 2.—Discussion of Kirk's genus *Bathmopterus* [see Kirk, 1928]; the Alaskan form closely resembles *Euomphaiopterus* Roemer [see Shimer and Shrock, 1944, in which *Bathmopterus* is listed as a synonym].


Page 13.—Reports identification by E. M. Kindle of fossils collected at head of Cassiterite Creek. These fossils apparently included specimens of
Raphistoma and Liospira, indicating an Ordovician age for the Port Clarence limestone.


Page 216. —Refers to fossiliferous Mississippian rocks in vicinity of Cape Mountain, Seward Peninsula [see Collier, 1908].


Pages 17-18. —Discusses relationship of rocks in northern part of Juneau gold belt to fossiliferous Carboniferous rocks at Taku Harbor [see Wright and Wright, 1908, p. 55].


Pages 11-12. —Summarizes data on Silurian, Devonian, and Carboniferous rocks on Freshwater Bay, Chichagof Island [see Kindle, 1907].


Page 573. —In a review of previous work, Dr. Knowlton expresses doubt that Carboniferous plants occur at Unga, south-central Alaska [the plants were reported by Grewingk, 1850, and by Isbister, 1855].

1896, Report on the fossil plants collected in Alaska in 1895 as well as an enumeration of those previously known from the same region, with a table showing their relative distribution: U. S. Geol. Survey 17th Ann. Rept, pt. 1, app. 1, p. 876-897.

Page 872.—Discusses fragment of Calamites collected near Cape Aklek [see Geoppert, 1861; Eichwald, 1871; and Hollick, 1936].


Describes 2 new brachiopod species, 2 new genera, and 16 new species of trilobites [fauna that author considered of Trempeleau age now thought to be of high Franconia age]. Compares Alaskan fauna with that in Upper Lingula flags, England, and in Fengshanian, East Asia.


Discusses and correlates Upper Cambrian and Lower Ordovician trilobite faunas of Yukon-Alaska boundary area; describes 2 new genera and 8 new species; Upper Cambrian Briscoia fauna succeeded by Lower Ordovician Symphysurina fauna.


Page 169 and figure 1. —Discusses occurrence of Briscoia and Hungaia in the Alaska-Canada boundary area; figure shows presence of Briscoia, Parabriscoia, and Hungaia in the Upper Yukon-International Boundary region [see Kobayashi, 1935, and Mertie, 1933].

Pages 106-115. — Discusses ages and correlations of Carboniferous rocks and presents extensive lists of fossils from Lisburne limestone (Mississippian) and Sadlerochit sandstone (Pennsylvanian). Faunas studied by G. H. Girty, whose reports are quoted at length [Sadlerochit fauna was later considered by Girty to be of Permian age; see Mertie, 1930, and P. S. Smith, 1939].


Page 310. — Rocks west of upper Old Crow River (on Yankee Ridge and Horse Hill), mainly limestones and limy shales, contain fossil corals and brachiopods of Carboniferous age. [These fossils, and others collected in 1912, were studied by G. H. Girty, who reported presence of both Mississippian and Permian faunas (this faunal information has not been published); see Harker and McLaren, 1950, for description of coral from this belt of Mississippian rocks; Hayasaka, 1936, lists corals collected in this area.]


Pages 156-157. — Age of limestones in upper Kuskokwim region, believed to be equivalent to "Takotna series", is considered probably Middle Devonian or possibly Ordovician. [See Brown, 1924, for more detail on this region.]


Page 5. — Summarizes character of pre-Triassic basement as follows: "The youngest rocks of known age that underlie the Triassic beds of Alaska are early Permian (?) limestones. These limestones carry a fauna closely related to that of the Artinskian of Russia, which is regarded by some as pre-Permian but which is more generally considered as the lowest division of the Permian. These limestones are very widely distributed in Alaska, occurring in nearly all the larger geographic regions, and show that toward the end of the Paleozoic era (at about the beginning of Permian time) limestone-forming seas extended over the larger part if not all of the area that is now Alaska. Marine Permian deposits younger than the Artinskian are not known and probably are not present in Alaska." Other data on pre-Mesozoic rocks, most of which summarize earlier work, are found on pages 67, 68, 73-78, 81-83, 89, 92-94, 96, 101, 103, 106-111, 113-117, 128-129, 257, 260-282, 376-377, 383-386, 391-393, 395, 448-449, 452, and 455-456.

*Meek, F. B., 1867, Remarks on the geology of the valley of Mackenzie River, with figures and descriptions of fossils from that region, in the museum of the Smithsonian Institution, chiefly collected by the late Robert Kennicott, Esq.: Chicago Acad. Sci. Trans., v. 1, p. 61-114, 5 pls.

Describes Devonian fossils from Porcupine River valley and other fossils; Alaskan species include Cystophyllum arcticum, Zaphrentis recta, Zaphrentis mcalanai, Paleocyclus kirbyi, Favoritites polymorpha Goldfuss, Atrypa aspera Schlotheim, and Cyrtina hamiltonensis Hall; the four coral species are new.


Page 32. — Mentions earlier collection of Silurian and Devonian fossils on Seward Peninsula [see Brooks and others, 1901, and Collier, 1902].

Pages 40-46. - Report by Charles Schuchert on eight collections from the Mankomen formation establishes Permian age of the predominantly brachiopod faunas; fossil lists. Discussion of correlation of Mankomen formation with other Permian rocks in Alaska and elsewhere in the world.


Pages 14-15. - Nikolai greenstone and Chitistone limestone provisionally assigned Permian age [the limestone now considered Triassic; see P. S. Smith, 1939, and Moffit, 1938]. No faunal lists.


Page 238. — Edwin Kirk reports on Middle Devonian fossil collection obtained about 1½ miles south of Livengood.


Pages 228, 232, 235, and 237-238. — Fossils from early Paleozoic schist and limestone assigned Silurian age by Edwin Kirk; Clorinda sp. and Conchidium sp. listed. Middle Devonian fauna from slate sequence also reported on by Kirk; fossil list. Discusses rocks of Devonian or Mississippian age; fossil lists by G. H. Girty.


Summarizes knowledge of Paleozoic rocks of central and northern Alaska and makes general references to the more fossiliferous zones [for more detail see Mertie, 1930, 1933, 1937h; and Smith and Mertie, 1930].


Pages 115 and 122. — Report on collection containing Conchidium, identified by Edwin Kirk, is reprinted [see Mertie, 1923]. Three small collections from the Lisburne limestone in the upper Sheenjek valley assigned a probable Mississippian age by G. H. Girty.


Pages 369-432. —Detailed discussion of age and correlation of late pre-Cambrian and Paleozoic rocks; data additional to those given by Mertie (1930). Extensive lists of Cambrian, Ordovician, Silurian, Devonian, Mississippian, and Permian faunas. Especially important new collections from Cambrian, Ordovician, Mississippian (Calico Bluff formation), and Permian (Tahkandit limestone) are discussed.


Page 160. —Devonian limestone dated on basis of one small collection of fossils [see Eakin, 1914, p. 22]; Kirk's identifications reprinted.


Pages 73-153. —Compiles all previous and many new data on stratigraphy and paleontology of Paleozoic rocks in central Alaska. The report on faunas is most recent comprehensive one and represents efforts of several paleontologists. Faunas listed range from Middle Cambrian through Permian. Cambrian fossils identified by G. A. Cooper, Edwin Kirk, C. E. Resser, L. D. Burling, and T. Kobayashi. Ordovician, Silurian, and Devonian forms studied by Kirk; three Middle Devonian fossil horizons recognized by Kirk. Carboniferous and Permian faunas studied by G. H. Girty. Lists of fossils from the Calico Bluff and Tahkandit formations are essentially the same as those published in Mertie (1930).


Pages 43-44. —Two collections of fossils from Permian limestone reported by G. H. Girty; fossil lists.


Pages 20 and 21. —Earlier reports dating Middle (?) Devonian limestone in Ruby-Kuskokwim region reproduced.


Description of type specimens of Aiaskoceras from the York district, Seward Peninsula [see Flower, 1941a, 1946].


Pages 39-40. —Summary of early Upper Ordovician faunal lists previously reported from Alaska [see Cairnes, 1914b; Kindle, 1908a; Prindle, 1913a; Eakin, 1918b; Steidtmann and Cathcart, 1922].


Pages 23 and 24. —Dating of Mankomen fauna as Pennsylvanian based on reassignment by G. H. Girty [now considered Permian; see Moffit, 1938b].

Page 20. —G. H. Girty indicates age of interstratified schist, slate, and limestone beds as probably Carboniferous; poor preservation of fossils makes age assignment provisional.


Page 25. —Edwin Kirk assigns Devonian age to fossils from limestone on Jack River; Martinia cf. M. maia (Billings), Tentaculites sp., Proetus sp. (same as that referred by Kindle to P. haidemani Hall), and several coralline and molluscan genera listed [see Mertie, 1937b, for revision of Middle Devonian horizons by Kirk].


Pages 21-22. —Report by G. H. Girty that fossil collections probably are Mississippian in age, although younger age not discounted; faunal lists.


Page 152. —Says fossils were found that give definite evidence of Permian age for sequence of predominantly volcanic rocks in the Nizina district [no fossil lists].


Page 117. —Fossils collected on Indian Creek show that the limestone is late Carboniferous (Permian) age and is to be correlated with the Mankomen formation of Mendenhall and with the Permian limestone at the heads of the White and Nizina Rivers [no fossils lists].


Page 147. —Lists Permian faunas from rocks on Platinum and Suslositna Creeks; fossils examined by G. H. Girty and Charles Schuchert. [Collection 1520 lists Schwagerina Sp.]


Pages 27-37. —Fossil lists for Mississippian and Permian formations compiled from reports by G. H. Girty; collections from the Strela formation and associated rocks regarded as late Mississippian in age; abundantly fossiliferous rocks from the upper Nizina and White River areas referred to a Permian age.


Pages 1830. —Faunas from Middle Devonian limestone, identified by Edwin Kirk, mainly coralline. Permian Mankomen formation and correlative rocks, richly fossiliferous; fossil lists compiled from reports by G. H. Girty and Charles Schuchert.

Age of fossiliferous Devonian rocks ranges from Middle to Upper Devonian. [No new fossil data.] Reference made to previous publications dealing with Permian faunas.


Pages 120-121.—Reference to collections of Permian fossils made in 1940; fossil lists to appear in future paper.


Pages 20-24.—Quotes extensive report, by G. H. Girty, which contains many fossil lists for collections from Carboniferous limestone and shale; Girty correlated the fossils most closely with the Russian Gschelian fauna [he later called this fauna Permian; see Moffit, 1938a].


Pages 27-28.—Fossils from Strelna formation assigned lower Carboniferous (Mississippian) age by G. H. Girty; faunal lists. Chart shows tentative correlations of Carboniferous rocks in Alaska.


Pages 50 and 108.—Clithrocrinus Kirk [see Kirk, 1937] listed under Family Codiacrinidae Bather.


Chart, page 704.—Age of supposed Pennsylvanian rocks in Alaska uncertain; Nation River formation, largely nonmarine, and the "limestones of Soda Bay", in southeastern Alaska, possibly of Pennsylvanian age. J. Steele Williams prepared the Alaskan portion of this chart.


Pages 18-23.—Repeats data from Prindle and Hess (1908) and adds report by E. M. Kindle on material collected in 1907; one collection called "late Silurian" on basis of presence of Megalomus? and another collection referred to "late Devonian". [No new data on Carboniferous fossils.]


Pages 20-22.—Quotes extensively from Brooks and Kindle (1908) on faunas and age of the Calico Bluff and Nation River formations. G. H. Girty related the Calico Bluff fauna to the Productus giganteus zone in Russia, which perhaps is correlative to the faunas of the Moorefield formation and "White Pine shale" in the United States. David White regarded plant fossils from the Nation River formation as basal Carboniferous or Late Devonian in age.

Pages 38, 39, and 42-47. —Age of Tatalina group given as Upper Ordovician; faunal list. Probable Middle Silurian and Silurian or Devonian fossils also collected from rocks assigned to this group. Undifferentiated Paleozoic limestones include rocks of Late Ordovician, Middle Silurian, and Middle (?) Devonian age; faunal lists. Rocks correlated with Tonzona group provisionally assigned a Devonian age. Carboniferous faunal lists of Prindle (1908) repeated [see also Mertie, 1937b, for latest summary].


Pages 27-30. —Extensive quotations from Brooks and Kindle (1908) on Middle Devonian and upper Carboniferous [now considered Permian] faunas from outcrops along Yukon River in Circle quadrangle; fossil lists provided by Kindle and G. H. Girty reproduced; additional faunas collected from the younger beds, which Girty believes are "upper" Carboniferous rather than Permian [see Mertie, 1937b, for latest summary].


Page 110. —Reports occurrence of Devonian corals in limestones associated with tuffs and diabasic rocks [see Prindle and Hess, 1906; and Mertie, 1937b].


Pages 19-22. —Quotes E. M. Kindle on his determinations of middle Paleozoic fossils from White Mountains and Rampart region; 1 collection, probably of Silurian age, contains Cythorolena sp., Cladopora sp., and Pistidictya cf. P. Irontosa; 3 collections, probably Early Devonian, contain a Gypidula of the pseudo-galeatus type; 4 collections, referred to the Middle Devonian, contain Favosites near epidermatus, Favosites winchelli, Cladopora sp., and Favosites near limitaris; 2 collections, referred to as probably Devonian, contain Michelinia, Zaphrentis, and Stromatopora. Quotes G. H. Girty regarding 3 Carboniferous collections, 1 of which is tentatively referred to a Pennsylvanian, perhaps "Permo-Carboniferous," age on the basis of the presence of Hustedia cf. H. compressa Meek and fistuliporoid bryozoans. [See Mertie, 1937b, for latest summary.]


Pages 433-434. —Fossils attributed to Carboniferous age reported [see Cushing, 1895].


Page 298. —Report on a single collection of fossils, determined by G. H. Girty as probably Permian in age; fossil list.


Especially pages 95, 112-113, 116, and 130. —Detailed discussion of Ordovician and Silurian graptolite faunas of Alaska, their correlation and
age significance. Three new species and one new variety described from Alaskan material; data given regarding other specimens referred to existing species, including Dictyonema alaskense n. sp., Petalograptus posterus n. sp., Cryptograptus tricornis var. schaferi Lapworth, Monograptus chimaera var. alaskensis n. var., M. priodon (Bromn), M. cf. raitshainiensis (Eisel), M. n. sp. aff. undulatus Elles and Wood, M. variaens Wood, and Ctyrogaptus kindlei n. sp. [Many of these fossil lists replace those given in such earlier publications as Kindle, 1908a; Buddington and Chapin, 1929; and Mertie, 1933.]


Page 476. —West Fork series reportedly contains fossils that G. H. Girty identified as "certainly Paleozoic and probably Devonian"; fossil list to be published in later report [see Schrader, 1904].


Pages 238-244. —Age of Paleozoic rocks based on study of fossil material by Charles Schuchert; fossil lists identical to those given in Schrader (1904) for Lisburne formation and "Fickett series" [see Smith and Mertie, 1930].


Pages 57, 64-66, and 70-71. —One fossil collection from Skajit limestone, studied by Charles Schuchert, contains brachiopod like Meristina and Meristella; the brachiopod also resembles a transverse Seminula. "This kind of shell indicates that the rock cannot be older than Upper Silurian and not younger than Lower Carboniferous"; author provisionally dates formation as Upper Silurian on stratigraphic evidence. Several collections from the Lisburne formation identified by Schuchert, who assigned them a Middle Devonian age; six small collections from gravels of the Chandler River, studied by G. H. Girty, called probably Devonian; the fossils collected by Schrader are compared with a coral fauna from near Cape Lisburne, which Schuchert also dates as Middle Devonian [see Collier, 1906, for correct age assignment of Lisburne coral faunas]. A large number of collections from gravels are dated as lower Carboniferous by Schuchert [they supposedly came from Schrader's Fickett series, no longer recognized as a mappable unit].


General notes on Silurian, Devonian, and Carboniferous faunas; summary of earlier fossil discoveries, and description of localities (Cape Thompson, Cape Lisburne, Cape Beaufort, Glacier Bay, Cape Yaklok) and fossils. Four Devonian and nine Carboniferous brachiopod species from Saginaw Bay, Kuiu Island, described; no illustrations. [see also Dall, 1896.]


Page 89. —Lists Lithostrotonella americana Hayasaka from Mississippian of Alaska [other coral genera of widespread distribution occur in Alaskan Paleozoic rocks; see S. Smith, 1945; Meek, 1967; Bassier, 1937].

Page 381. —Lists Megalonus canadensis Hall from Alaskan Silurian.
Page 467.—Shows Bathmopterus Kirk, 1928, as synonym of Euomphalopterus Roemer, 1876 [many undescribed species of widespread molluscan genera occur in the Alaskan Paleozoic, see Flower, 1941a and 1946]. Pages 643 and 651.—Trilobites listed as occurring in Alaska: Cyphaspis (Ordovician through Devonian) and Proetus crassimarginatus Hall (Lower Devonian) [see Kobayashi, 1935 and 1936a; for references to Brachiopoda see Cooper, 1944].


Pages 23-25 and 54-55.—Fossil evidence for age of Port Clarence limestone summarized [see Knopf, 1908; Collier and others, 1908]. Quotes E. M. Kindle regarding one collection of very poor fossil material, that may represent a Carboniferous horizon, from the Sowik limestone.


Pages 65-69 and 72-78.—Stratigraphy and age relationships of pre-Carboniferous rocks discussed. Faunas from Noatak sandstone assigned to upper Mississippian by G. H. Girty. Author suggests that certain of the lower beds of Noatak may be Upper Devonian. Lisburne limestone fossils also assigned a late Mississippian age. Girty states that the coralline faunas probably are a different aspect of the fauna found in the Noatak sandstone. E. M. Kindle suggests that one collection from limestones assigned to Lisburne may be Devonian in age. Faunal lists.


Pages 99-103.—Quotes report of E. M. Kindle as to Middle Devonian age of fossils from near South Vallenar Point, Gravina Island. One other Devonian collection, examined by Edwin Kirk, from 3 miles north of Dall Head, Gravina Island [see also Wright and Wright, 1908]. An ambiguous fauna provisionally called Triassic by G. H. Girty.


Pages 54-57.—Age of limestones in Lime Hills discussed at length. No fossils found in Lime Hills, but indirect evidence suggests that rocks of Devonian age lie areally close to the limestones. Devonian age for limestones strongly indicated.


Pages 1034.—Detailed stratigraphic summary of all Paleozoic rocks in Alaska; includes interpretations of ages and correlations. Some older published assignments are changed; for example, Sadlerochit sandstone shifted from Pennsylvanian to Permian age. A collection from hills 4 miles northwest of Mumtrak, in Goodnews Bay district, assigned a Permian age by G. H. Girty; this material previously unreported. Correlation chart included.


Pages 47-50.—Collections from the Kwinik River area and White Mountain, according to E. M. Kindle, contain Megalomus canadensis, indicating Late Silurian age [Kindle correlated with Guelph fauna, now considered...
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latest Middle Silurian; see Swartz and others, 1942]. Poorly preserved fossils from sea cliffs south of Mt. Kwiniuk referred to Devonian or Carboniferous by Kindle and E. O. Ulrich. No fossil lists.


Pages 131, 136-141, 146-151, 158, 165-168, and 179-185. — Ages of Silurian and Devonian rocks based on Edwin Kirk's identifications of small fossil collections. Upper Devonian Spirifer disjunctus zone well represented in rocks of upper Killik valley. Flora from basal Noatak sandstone reported by David White to be early Mississippian in age. Reports by G. H. Girty on faunas of Noatak and Lisburne formations tabulated; extensive collections indicate age is Mississippian, but Girty suggests Noatak fauna is early Mississippian and Lisburne fauna is late Mississippian; the two faunas are not differentiated in the table.


Monograph describing 67 coral species, 20 of which are new, mainly from the Mackenzie Basin between Fort Simpson and the Slave River; discussion of correlation and extensive bibliography on fossil corals. Pages 38, 39, and 47; plate 14, figure 4; plate 18, figure 1; plate 23, figure 1. — Two species redescribed: Prismatophyllum quadrigeminum arcticum (Meek) and Phillipsastraea verrilli (Meek), from Middle Devonian of Porcupine River region. Page 66. — States that Zaphrentis recta and Z. mclelandi [see Meek, 1867] are not congeneric with Z. phrygia but are more closely allied to forms described under Mictophyllum Wedekind.


Page 10. — Summary of data on Paleozoic rocks of southeastern Alaska; includes report of Carboniferous fossils from limestone at Taku Harbor [see Buddington and Chapin, 1929, for latest summary].


Pages 168-172. — "Rampart series" dated as pre-Carboniferous. Collection of fossils from "Tahkandit series," above Circle City on the Yukon River, dated by Charles Schuchert as Upper Carboniferous. Faunal list made up predominantly of brachiopods [see Mertie, 1937b, for recent summary]. Plants from limestone below mouth of Mynoook Creek on the Yukon River identified by David White as possibly Middle or Upper Devonian.


Pages 158-159. — Fossils from Tachatna series, on Kuskokwim River about 10 miles upstream from Tachatna [now Takotna] River junction, assigned Middle Devonian age by Charles Schuchert; fossil list.


Page 35. — Mentions collecting Devonian fossils on the upper Kuskokwim River; locality shown on map [see Spurr, 1900, for details].

**ANOTATED BIBLIOGRAPHY, ALASKAN PALEOZOIC PALEONTOLOGY**

*Pages 21 and 23-29.*—Report on new fossil collections and reevaluation of previously collected material from western part of Seward Peninsula. Collections previously recorded as Upper Cambrian assigned to Lower Ordovician by Edwin Kirk; C. D. Walcott and E. O. Ulrich concurred. Most of the earlier "Silurian" collections assigned to Upper Ordovician; one collection called probably Middle Silurian. Carboniferous collections restudied by G. H. Girty, who stated, "Personally I have scarcely a doubt that these fossils represent the same coral fauna that occurs in the Lisburne limestone, upper Mississippian***". Extensive faunal lists.


*Page 70.*—Mentions finding form like *Acervulora* in moraine of Dirt Glacier. Age of limestone from which fossil supposedly came given as not younger than Middle Devonian [see Cushing, 1895].


Stratigraphic column for southeastern Alaska, prepared by Edwin Kirk, indicates presence of *Lissatrypa* fauna in Upper Silurian. Column for central northern Alaska, also prepared by Kirk, indicates presence of grapto-lites of approximately Clinton age in shales and limestones on Porcupine River. Limestones and dolomites of central northern Alaska bear fauna with Guelph affinities, but they may be of Upper Silurian age.


*Page 132.*—Refers to listing of *Halysites hartii* Etheridge from Port Clarence limestone [see Kindle, 1911, p. 347] in fauna considered of Middle Silurian age.


*Pages 172-173.*—Summarizes occurrences of Middle and Upper Ordovician fossils, especially corals, on Seward Peninsula [see Kindle, 1911], in Porcupine Valley [see Kindle, 1908], and in Yukon-Tanana region [see Prindle, 1913a].


Makes available new names of forms described in Ulrich and Cooper, 1938; short descriptions, no plates.


Describes four species of brachiopods from Yukon-Alaska boundary region (Tatankuk River area): *Westonia linguloides* (Kobayashi), Upper Cambrian or Lower Ordovician; *Eklandia alaskanais* Ulrich and Cooper, 1936, Upper Cambrian; *Schizambon borealis* Ulrich and Cooper, n. sp., Upper Cambrian; *Conodiscus burlingi* (Kobayashi), Upper Cambrian.


*Pages 23 and 66-67.*—Refers to Flower's (1941a) description of three species from Seward Peninsula. *Plectoceras? sewardense* referred to
**Tarphyceras** [see Flower 1946]. *Ellesmeroceras bridgei* and *E. expansum* listed, but no new descriptive data given.


Stratigraphic summary of Paleozoic rocks [see also Mertie, 1930, 1933, and 1937b] and some new data. Several types of Ordovician (?) graptolites collected from quartzitic sandstone and shale on Tatontuk River.


*Pages 128-130.* —J. Steele Williams summarizes knowledge of faunas in Alaska as of 1948 and discusses formations of known or probable Mississippian age; age assignments shown in columns 1 through 5 are explained.


*Pages 324-325.* —Discusses early Mississippian floras (Pocono), their distribution, and the affinities of the Pocono flora with the Arctic Alaskan flora [see Collier, 1906].


Discusses Mississippian and Permian faunas of Alaska. Tentative correlations of the latter with other Arctic Permian faunas given; relationship to the Phosphoria fauna also indicated [see Girty, 1927].


Calls attention to studies of Alaskan late Paleozoic faunas being undertaken to determine relationships of various faunal elements to lithologic facies and stratigraphic position. Suggests that Permian faunas are largely of Arctic aspect, but that some forms are like those of the Phosphoria and others are related to west coast faunas [see Girty, 1927].


Summarizes knowledge of Mississippian rocks and faunas. Faunas mainly composed of corals, bryozoans, and brachiopods. Preliminary studies indicate absence of rocks of Kinderhook or early Osage age. Mississippian rocks in most places underlain unconformably by Devonian rocks and overlain unconformably by Permian or younger strata. No Pennsylvanian rocks definitely known to be present. [see Buddington and Chapin, 1929.]


Discusses correlation and age of Permian rocks in Alaska; "It is thought that all the rocks included in the Permian of the upper Yukon region are younger than Wolfcamp."

Notes on type and distribution of Permian rocks, which are divided into two units: a lower, predominantly clastic sequence containing conspicuous igneous rocks; and an upper, predominantly limestone, dolomite, and chert sequence.


Page 221.—Refers to Ordovician graptolites from Alaska Range, reported by Brooks and Prindle (1911), and Ordovician fossils found on Porcupine River (Brooks and Kindle, 1905). Page 222.—Statement by E. M. Kindle that Cambrian and Ordovician faunas have been collected from Port Clarence limestone and that fossils previously determined as Silurian are of Late Ordovician age. Page 262.—Quotes Kindle (1907) regarding Silurian faunas of southeastern Alaska; faunal list and discussion. Page 265.—Refers to Kindle's (1911) discussion of Port Clarence limestone faunas; additional statement that Silurian Megalonus canadensis, identical to Glacier Bay and Freshwater Bay form, was found in magnesian limestone on Fish River. Page 266.—Refers to Kindle's discussion of Silurian fauna from Porcupine River (1908b, p. 126). Page 356.—States that collections made by Wright and Kindle have marked European affinities and represent Lower, Middle, and Upper Devonian, but are not related to American contemporaneous faunas; cites Kindle (1907, p. 324-330); Page 377.—States that Middle Devonian fossils have been found in several places in Yukon-Tanana region. Page 338.—Statement by P. S. Smith that Devonian fossils have been found on Fish River, north of Golofnin Bay, and that Devonian (or possibly Carboniferous) fossils have been found in the Darby Range on Seward Peninsula. Page 338.—Brooks (1906, p. 220) quoted on probable Middle Devonian age of Rampart group [see Mertie, 1937b, for more recent interpretation]; Page 339.—Quotes at length from Kindle (1908a, p. 327-330) regarding age and nature of Salmontreut fauna. Page 392.—Quotes Kindle (1907, p. 330-335) on lower Carboniferous fauna of Freshwater Bay. Page 393.—Quotes Kindle (1907, p. 330-335) on upper Carboniferous fauna of southeastern Alaska; author says that, although Girty considers the fauna to be most closely related to the Russian Gschelstufe, the fauna resembles that of the McCloud limestone of California [now considered to be of Permian (?) and Permian age]. Page 394.—Quotes Moffit and Knopf (1910, p. 25-26) on Carboniferous formations of Napesna-White River region. Page 395.—Cites Collier (1908, p. 81-82) on several Carboniferous faunas collected from Seward Peninsula. Page 395.—Cites Brooks and Kindle (1907) and Kindle (1908a, p. 332-336) regarding Carboniferous faunas and floras studied by G. H. Girty and David White (from Porcupine River valley). Pages 396-399.—Quotes extensively from Collier (1906, p. 16-21) and Kindle (1909, p. 522-526) on stratigraphic relationships, age, and correlation of faunas from Cape Lisburne and Cape Thompson areas, northwestern Alaska: cites letter from G. H. Girty to effect that Lisburne formation is to be correlated, in the main, with the upper Mississippian, although an older fauna is present which contains a few invertebrates, among them Leptaena rhomboidalis, not known above the Burlington limestone.


Page 16.—G. H. Girty indicates that a small collection of fossils from Porcupine Creek is from upper part of lower Carboniferous and that fauna is a Pacific Coast type; identified forms are "Crinoidal fragments, Productus latissimus, Productus semireticulatus, Spirifer atrius, Camarophoria? sp." [Age and identifications revised by Girty in Eakin, 1919, p. 11.]

Pages 140-141 and 143.—Metamorphosed strata include rocks as old as Silurian. Quotes G. H. Girty on probable Permian and Carboniferous age of fossils from a point near the southeast entrance of Pybus Bay, Admiralty Island.


Pages 17-19 and 70-71.—Stratigraphic summary of Paleozoic rocks in Ketchikan district. Faunal lists of Lower and Middle Devonian limestones on Long Island [see also Kindle, 1907; Wright and Wright, 1908].


Pages 45-57.—Detailed lists of Silurian and Devonian faunas, prepared by E. M. Kindle, and of lower and upper Carboniferous faunas, prepared by G. H. Girty [some of these data have been reevaluated; see Buddington and Chapin, 1929].
INDEX

Included in this index are references to systems, major taxonomic groups, geographic areas, major localities, rock units, and a list of paleontologists whose determinations are included in papers by other geologists.

The cross index is not complete. For example, some papers that mention brachiopods are not listed under Brachiopoda. Only those that specifically refer to Brachiopoda in the title or annotation are indexed. Clearly, papers which include extensive faunal lists usually mention brachiopods as well. Similar comments apply to other fossil groups.

Geographic regions and major localities, indicated by Roman numerals and numbers in brackets, are shown in plate 29.

A

Alaska Peninsula [VII]

Plants, Calamites n. sp.: Elchwald 1871; Goepert 1861; Grewingk 1856; Knowlton 1896.

Questionable plant locality: Isbister 1855; Knowlton 1896.

Alaska Range [V]

Correlation, railroad belt: Capps 1940

Devonian fossils, Broad Pass region: Moffit 1915

Faunas, Ordovician, Silurian, Devonian: Brooks 1911.

Permian: Mendenhall 1905

Permian(?): Ross 1903

Middle Devonian rocks: Capps 1933

Brachiopoda


Artinskian faunas: Girty 1897

Brookian, n. gen., Silurian: Kirk 1922

Cambrian (and Ordovician) spp.: Ulrich and Cooper 1936, 1938.

Cambrian spp., Middle: Cooper 1936

Cambrian spp., Upper: Kobayashi 1935

Cape Thompson locality, Carboniferous: Hooper 1932.

Carboniferous spp., upper[?]: Brooks 1900b

Conchidium, Upper Silurian: Kirk 1918b, Mertie 1927.

Cymbidium, n. gen., Silurian: Kirk 1927

Devonian spp., Porcupine valley: Meek 1867

Devonian and Carboniferous spp., Kuku Island locality: Schuchert 1896.

Gypidula, Lower Devonian type: Prindle and Hess 1906.

Harpidium, n. gen., Silurian: Kirk 1925

Index fossils: Cooper 1944

"Lepidodendron homoeodendron," early Mississippian: Willis 1912.

"Linostoma" fauna: Swartz and others 1942

Mortician-type, northern Alaska: Schrader 1904

Brachiopoda—Continued

Paleozoic faunal lists, southeastern: Kindle 1907


"Producta" giganteus zone, Mississippian: Girty 1905; Prindle 1909.

Producta, Derbyshire limestone age (Mississippian): Buckland 1839.

Silurian fauna, Upper, southeastern: Kirk and Amsden 1952.

Silurian fossils, northern Alaska: Mertie 1923

"Spirifer" arcicus zone, Permian: Eakin 1916a; Eakin 1917.

"Spirifer" disjunctus zone, Upper Devonian: Smith and Mertie 1930.

Stringocephalus zone, Middle Devonian: Kirk 1918b, 1927a.

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