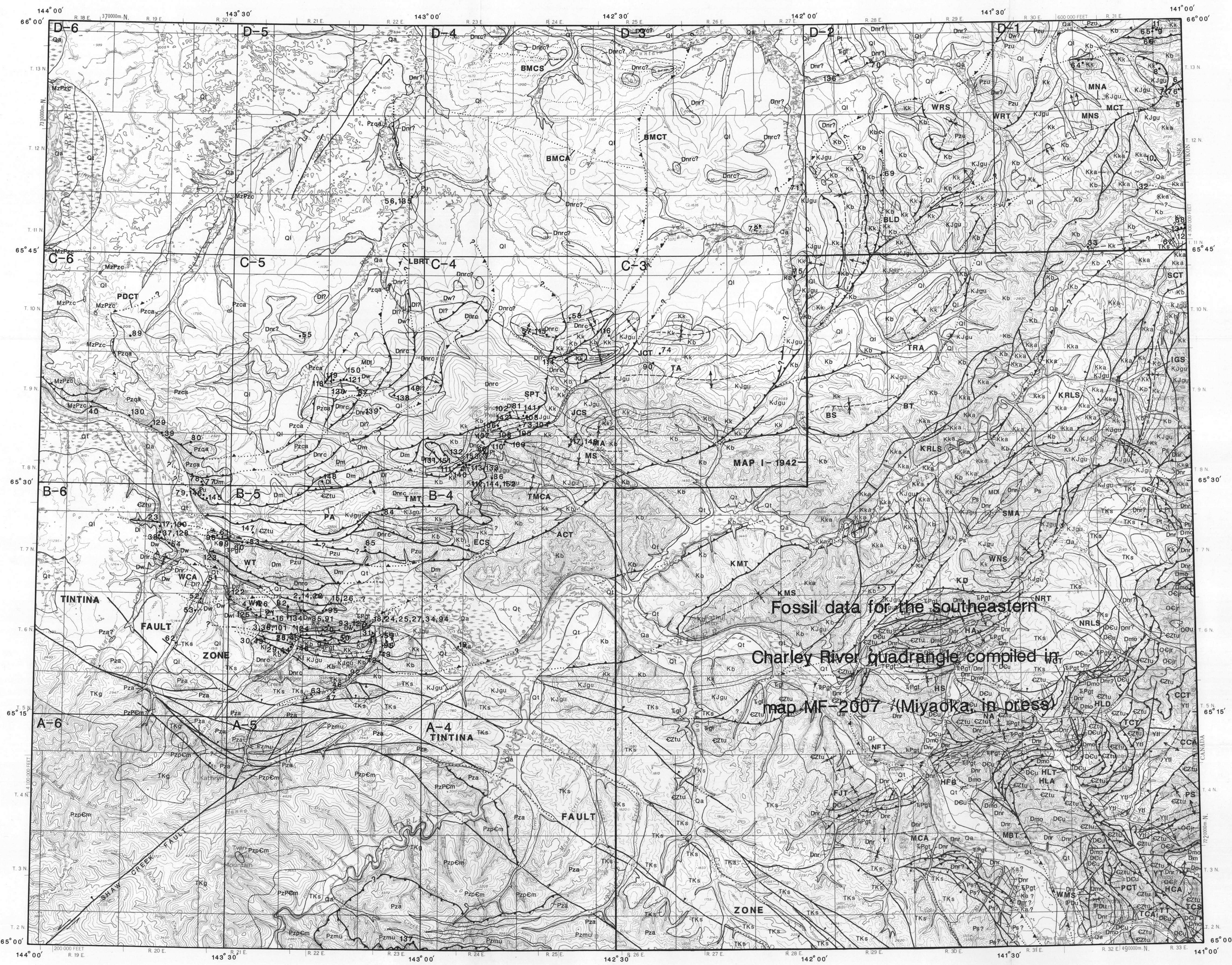
DEPARTMENT OF THE INTERIOR
U.S.GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-2004
SHEET 2 OF 2

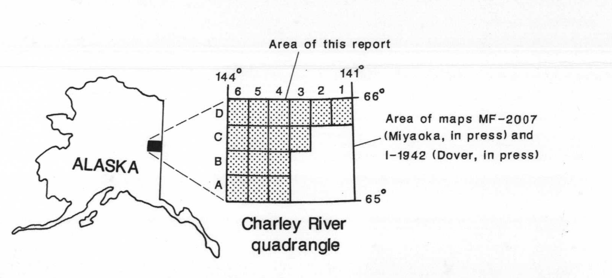



Base from U.S.Geological Survey, 1956.
Universal Transverse Mercator projection.

Geologic mapping modified extensively from Brabb and Churkin (1969) and unpublished geologic mapping in 1962 by British Petroleum Exploration Company, Alaska (R.Stoneley, party chief; B.R. Brown and K.F. Thompson, geologists; and R.B. Nelles, J.E. Dagenais, and P.E.K. Fuchs, assistant geologists), based on helicopter-supported reconnaissance mapping by the authors in 1982-85, and on re-examination of the original field notes and field sheets (1960-63, 1967-68, 1973) of Brabb and Churkin. Fossil data compiled by Ronny T. Miyaoka.

SCALE 1:250 000

CONTOUR INTERVAL 200 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929




LOCATION MAP AND INDEX TO 1:63,360 QUADRANGLES (SHADED)

FOSSIL LOCALITY MAP

# REINTERPRETED GEOLOGIC MAP AND FOSSIL DATA, CHARLEY RIVER QUADRANGLE, EAST-CENTRAL ALASKA


By

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1988

## INTRODUCTION

This table was compiled from fossil information collected within the Charley River A-5, B-4, B-5, B-6, C-3, C-4, C-5, C-6, D-1, D-2, D-3, and D-5 1:63,360 quadrangles. Absence of fossil information within the Charley River A-4, A-6, D-4, and D-6 quadrangles is mainly a result of unsuitability of rock types or lack of bedrock exposure. Fossil information for the southeastern part of the Charley River quadrangle is compiled in U.S. Geological Survey report MF-2007 (Miyaoka, in press). Sources of information for this compilation are primarily published reports of the U.S. Geological Survey, as well as unpublished fieldnotes, maps, and fossil reports of U.S. Geological Survey workers who have conducted geologic studies in the area. Collections and paleontologic determinations are by representatives of the U.S. Geological Survey unless otherwise noted.

The data in the table are keyed to a fossil location map ( scale 1:250,000), and are listed chronologically by collector. Listed in the table for each locality is the fossil location map number, geologic map unit, and where available, collector's field number, USGS collection number, fossil lists, and age designation. Sources of information are keyed with superscripts and cited at the end of the table. Reports for most of the collections that have been assigned a USGS collection number are on file at the U.S. National Museum of Natural History in Washington, D.C. The fossil lists are reproduced as originally prepared by the paleontologists indicated. However, many of the older collections have been restudied by later workers, and because of improved taxonomic and biostratigraphic frameworks, restudy has resulted in revised indentifications, correlation, and(or) age designations for many collections. Consequently, the evaluations of the later workers are considered more reliable and care should be taken in using the appraisals of earlier workers. The locations of fossils collected prior to 1939 (locality numbers 1-30 on Map ) are approximate due to the lack of precise location information.

The fossil location map is superimposed on a screened version of the geologic map.

Although much effort went into making the fossil information table and location map as complete as possible, some existing data were not available for inclusion and some data may have been omitted inadvertently.


ACKNOWLEDGEMENTS

I am indebted to Ellen White and Sue Booth of the U.S. Geological Survey's Technical Data Unit in Menlo Park, California, for their invaluable assistance in the recovery of archival information.


## EXPLANATION

.34 Location of fossil collection--Locations 1-30 are approximate; numbers refer to collections listed in Table 1

A-4 1:63,360-scale topographic quadrangle

### LIST OF MAP UNITS

Quaternary surficial deposits

- Qa Alluvium (Holocene and Pleistocene)
- Qt Terrace deposits (Holocene and Pleistocene)
- Ql Loess (Pleistocene)

Tertiary and Cretaceous sedimentary rocks

- Tks Sedimentary rocks (Eocene, Paleocene, and Upper Cretaceous)

Mesozoic sedimentary rocks

- Kandik Group
  - Kka Kathul Graywacke (Lower Cretaceous)
  - Kb Biederman Argillite (Lower Cretaceous)
  - Kk Keenan Quartzite (Lower Cretaceous)
- Ka Argillite (Lower Cretaceous)
- Kl Limestone (Lower Cretaceous?)
- Glenn Shale
  - KJgu Upper part (Lower Cretaceous to Middle Jurassic)
  - TRgl Lower part (Upper and Middle Triassic)

Mesozoic and Paleozoic sedimentary rocks

- TR Pgt Lower part of Glenn Shale (Upper and Middle Triassic) and Tahkandit Limestone (Permian), undivided
- MzPzc Circle Volcanics (Triassic and upper Paleozoic)

Paleozoic sedimentary and igneous rocks

- Pt Tahkandit Limestone (Permian)
- Ps Step Conglomerate (Permian)
- Pu Sedimentary rocks, undivided (Permian)
- Pzqa Quartzite and argillite (Upper Paleozoic)
- Pzca Chert and argillite (Upper Paleozoic)
- Pzu Clastic rocks, undivided (Paleozoic?)
- Pzmu Mafic and ultramafic rocks, undivided (Paleozoic)
- Pza Phyllitic argillite (Paleozoic)
- Pzp€m Metamorphic rocks (Paleozoic and Precambrian)
- MDf Ford Lake Shale (Upper Mississippian to Upper Devonian)
- PDu Calico Bluff Formation (Lower Pennsylvanian and Upper Mississippian)
- MDl Limestone and dolomite (Mississippian and Upper Devonian)
- Dnr Nation River Formation (Upper Devonian)
  - Dnrc Conglomerate (Upper Devonian?)
- Dwv Woodchopper Volcanics (Upper?, Middle?, and Lower Devonian)
  - Dwl Limestone (Upper?, Middle?, and Lower Devonian)
- Dl Limestone and dolomite (Devonian)
- Dm McCann Hill Chert (Upper to Lower Devonian)
- Dmo McCann Hill Chert and Ogilvie Formation of Clough (1980), undivided (Devonian)
- Do Ogilvie Formation of Clough (1980) (Middle? and Lower Devonian)
- DOu McCann Hill Chert (Upper to Lower Devonian) and Road River Formation (Lower Devonian to Lower Ordovician), undivided
- D€u Road River Formation (Lower Devonian to Lower Ordovician), Hillard Limestone (Lower Ordovician to Lower Cambrian), Adams Argillite (Lower Cambrian), and Funnel Creek Limestone (Lower Cambrian), undivided
- O€jr Jones Ridge Limestone (Upper or Middle Ordovician to Lower Cambrian)

Lower Cambrian? and Precambrian sedimentary and igneous rocks

- Tindir Group
  - €Ztu Upper part (Lower Cambrian? and Late Proterozoic)
  - Ytl Lower part (Middle Proterozoic)

Intrusive igneous rocks

- TKg Granitic rocks (Lower Tertiary and(or) Cretaceous)

### LIST OF NAMED STRUCTURES

Thrust faults

- ACT Andrew Creek thrust
- BLD Black River duplex
- BMCT Bear Mountain Creek thrust
- BT Bly thrust
- CCT Cathedral Creek thrust
- FJT Fourth-of-July Creek thrust
- HLD Hard Luck duplex
- HLT Hard Luck thrust
- JCT Judge Creek thrust
- KD Kandik detachment
- KMT Kathul Mountain thrust
- LBRT Little Black River thrust
- LCT Logan Creek thrust
- MBT Montauk Bluff thrust
- MCT Midnight Creek thrust
- NFT Nation Reef thrust
- NRT Nation River thrust system
- PCT Pass Creek thrust
- PDCT Paddle Creek thrust
- SCT Sitdown Creek thrust
- SPT Snowy Peak thrust
- TCT Three Castle Mountain thrust
- TMT Threemile Creek thrust
- TT Tatonduk thrust
- WCT Waterfall Creek thrust
- WT Wedge thrust
- WRT Wood River thrust
- YT Yukon thrust

Normal faults

- KRLS Kandik River listric fault system
- NRLS Nation River listric fault system

Folds

- BS Bly syncline
- BMCA Bear Mountain Creek anticline
- BMCS Bear Mountain Creek syncline
- CCA Cathedral Creek arch
- ECS Edwards Creek syncline
- HFB Half fold belt
- HA Hard anticline
- HS Hard syncline
- HLA Hard Lick anticline
- HCA Harrington Creek anticline
- JCS Judge Creek syncline
- IGS Indian Grave syncline
- KMS Kathul Mountain syncline
- MA Marlow Creek anticline
- MS Marlow Creek syncline
- MCA Michigan Creek anticline
- MNA Midnight Creek anticline
- MNS Midnight Creek syncline
- NA Nation anticline
- PA Peb anticline
- PS Pack syncline
- SMA Step Mountain anticline
- TA Two anticline
- TCA Tatonduk Creek anticline
- TCS Tatonduk Creek syncline
- TMCA Threemile Creek anticline
- TRA Tributary anticline
- WCA Webber Creek anticline
- WNS West Nation syncline
- WMS Windfall Mountain syncline
- WRS Wood River syncline
- WA Woodchopper anticline

Contact--Dotted where concealed; querried where uncertain

Trace of bedding or marker bed

Fault--Dotted where concealed; querried where uncertain

KRLS High-angle or listric normal fault--Bar and ball on down-thrown side. Letters refer to LIST OF NAMED STRUCTURES

Strike-slip fault--Arrows show sense of relative slip

ACT Thrust fault--Sawteeth on upper plate. Letters refer to LIST OF NAMED STRUCTURES

Axial trace of major fold--Dotted where concealed. Arrow shows direction of plunge, where known. Letters refer to LIST OF NAMED STRUCTURES

BMCA Anticline

BS Syncline

Overturned anticline

Overturned syncline

Table 1.-Fossil data for the Charley River A-4, A-5, A-6, B-4, B-5, B-6, C-3, C-4, C-5, C-6, D-3, D-4, D-5, and D-6 1:63,360-scale quadrangles, Alaska
[Footnotes at end of table]

| Map number-map unit | Location[1] | Field number | USGS collection number | Fossils | Fossil age |
|---|---|---|---|---|---|
| Collections of A.J. Collier[2] | | | | | |
| 1 - TKs | B-5 (A) | Collier 27 | | Plants | Eocene(?)[10] |
| 2 - Dwl | B-5 (A) | 2 AC 90 | | Crinoid columns<br>Monilopora | late Middle Devonian[11] |
| 3 - Dwl | B-5 (A) | 2 AC 96 | | Zaphrentis sp.<br>Chaetetes sp.<br>Crinoid columns<br>Fistulipora sp.<br>Schizophoria sp.<br>Atrypa reticularis? | late Middle Devonian[11] |
| 4 - Dw | B-5 (A) | 2 AC 97 | | Favosites sp.<br>Crinoid columns | late Middle Devonian[11] |
| Collections of D.D. Cairnes[2] (Geological Survey of Canada) | | | | | |
| 5 - Kka | D-1 (A) | XIV j 22[3] | | Brachiopods, belemnite casts? | |
| 6 - Kka | D-1 (A) | XIV j 25[3] | | Pelecypods, brachiopods | |
| 7 - Kka | D-1 (A) | XIV k 25 | | Nucula sp.<br>Astarte? sp.<br>Panopaea? sp.<br>Undet. pelecypod casts | Early Cretaceous[13] |
| 8 - Kk | D-1 (A) | XIV q 31 | | Aucella crassicollis Keyserling | Early Cretaceous[13] |
| 9 - Pzu | D-1 (A) | XIV r 43[3] | | Brachiopod, crinoid stem, corals | |
| 10 - Kka | D-1 (A) | XIV s 4[3] | | Brachiopods, bryozoa? | |
| 11 - Pzu | D-1 (A) | XIV s 43 | | Favosites sp.<br>Zaphrentis sp.<br>Crinoidal fragments<br>Fenestella, several sp.<br>Hemitrypa? sp.<br>Spirifer cf. S. marcoui<br>Martinia? sp. | Mississippian(?)[12] |
| 12 - Kk? | D-1 (A) | XV j 30 | | Aucella crassicollis Keyserling | Early Cretaceous[13] |
| 13 - Kk? | D-1 (A) | XV l 30 | | Aucella crassicollis Keyserling | Early Cretaceous[13] |
| Collections of E.M. Kindle[2] | | | | | |
| 14 - Dwl | B-5 (A) | | 841-SD | Favosites sp.<br>Crinoid columns<br>Schizophoria striatula<br>Stropheodonta cf. S. calvini<br>Chonetes sp.<br>Gypidula comis<br>Camarotoechia sp.<br>Atrypa cf. A. hystrix<br>Proetus sp.<br>Bollia sp. | late Middle Devonian[11] |
| 15 - Dwl | B-5 (A) | | 842-SD | Cyathophyllum<br>Dalmanella sp.<br>Rensselaeria? sp.<br>Atrypa cf. A. hystrix<br>Atrypa reticularis<br>Spirifer sp. | late Middle Devonian[11] |
| E.M. Kindle (cont)[2] | | | | | |
| 15 (cont) | | | | Ambocoelia cf. A. umbonata<br>Conocardium sp.<br>Cyclonema sp.<br>Diaphorostoma sp. | |
| 16 - Dw | B-5 (A) | | 846-SD | Crinoid columns<br>Stropheodonta sp.<br>Camarotoechia sp.<br>Atrypa reticularis<br>Conocardium sp. | late Middle Devonian[11] |
| 17 - Dl? | B-6 (A) | | 847-SD | Favosites sp.<br>Alveolites sp. | Devonian[11] |
| 18 - TR Pgt | B-5 (A) | | 2448-PC | Polypora sp.<br>Rhombopora sp.<br>Streptorhyncus cf. S. pelargonatus<br>Productus cf. P. koninckianus<br>Productus cf. P. transversalis<br>Avonia cf. A. porrecta?<br>Marginifera cf. M. splendens<br>Marginifera? cf. M. splendens<br>Camarophoria margaritovi<br>Spirifer cf. S. cameratus<br>Spiriferella arctica<br>Spiriferella cf. S. artiensis<br>Squamularia cf. S. perplexa<br>Aviculipecten sp.<br>Fish tooth | Permian[12] |
| 19 - Ka | B-4 (A) | | 3784-Mes. | Inoceramus sp.<br>Aucella sp. | Early Cretaceous[13] |
| Collections of E. Blackwelder[2] | | | | | |
| 20 - Dw | B-5 (A) | | 156-SD | Favosites cf. F. limitaris<br>Atrypa reticularis | late Middle Devonian[11] |
| | | | 168-SD | Cyathophyllum sp.<br>Favosites cf. F. hemisphericus<br>Atrypa reticularis | late Middle Devonian[11] |
| | | | 169-SD | Cyathophyllum sp.<br>Favosites sp.<br>Alveolites sp.<br>Actinostroma sp. | late Middle Devonian[11] |
| | | | 170-SD | Favosites cf. F. limitaris<br>Schizophoria sp.<br>Stropheodonta sp.<br>Orthothetes? sp.<br>Atrypa reticularis<br>Spirifer sp.<br>Reticularia fimbriata var<br>Proetus sp. | late Middle Devonian[11] |
| 21 - Dw | B-5 (A) | | 171-SD | Favosites cf. F. hemisphericus<br>Favosites cf. F. limitaris<br>Actinostroma sp.<br>Crinoid columns | late Middle Devonian[11] |
| 22 - Dwl | B-5 (A) | | 172-SD | Atrypa cf. A. flabellata | late Middle Devonian[11] |
| 23 - Dl | B-6 (A) | | 173-SD | Favosites sp.<br>Syringopora? sp.<br>Crinoid columns<br>Favositella sp. | Silurian[11] |
| | | | 174-SD | Diphyphyllum<br>Cladopora<br>Syringopora | Silurian[11] |
| 24 - TR Pgt | B-5 (A) | | 1801-PC | Batostomella sp.<br>Stenopora? sp.<br>Phyllopora sp.<br>Spiriferella arctica | Permian[12] |
| Collection of G.H. Girty[2] | | | | | |
| 25 - TR Pgt | B-5 (A) | | 2543-PC | Fossils | Permian[12] |
| Collections of J.B. Mertie[2] | | | | | |
| 26 - Dwl | B-5 (A) | | 2065-SD | Cyathophyllum sp.<br>Schizophoria striatula<br>Gypidula comis<br>Camarotoechia sp.<br>Atrypa cf. A. hystrix<br>Atrypa reticularis<br>Reticularia sp.<br>Proetus sp. | late Middle Devonian[11] |
| 27 - TR Pgt | B-5 (A) | | 5841-PC | Spiriferella? arctica | Permian[12] |
| 28 - Kk | B-5 (A) | 25 AMt 227 | 13429-Mes. | Aucella cf. A. crassicollis<br>Aucella sp.<br>Belemnites sp. | Early Cretaceous[13] |
| 29 - Kl | B-5 (A) | 38 AMt 91 | 18068-Mes. | Lingulid brachiopod<br>Terebratulid brachiopod<br>Rhynchonellid brachiopod<br>Gervillia sp.<br>Inoceramus sp. or Pinna sp., fragments of a thick prismatic shell<br>Oxytoma sp., surface not seen<br>Ostrea sp., small simple species<br>Entolium sp.<br>Camptonectes sp.<br>Lima sp., broad form with fine sculpture<br>Lima sp., slender form with medium sculpture<br>Lima? sp., broad form with coarser sculpture<br>Cardium? sp.<br>Anixomyon? sp. | Jurassic or Cretaceous[14] |
| 30 - Kl | B-5 (A) | 38 AMt 94 | 18069-Mes. | Oxytoma sp. | Mesozoic[14] |
| Collection of D.M. Hopkins[4] | | | | | |
| 31- TR Pgt | B-5 | 57 AHpw 23 | | Crinoid columnals<br>Euryphyllum sp.<br>Indet. bryozoan fragments<br>Indet. orthotetid brachiopod (perhaps Derbyia)<br>Spiriferella? sp.<br>Indet. brachiopod fragments | Permian[15] |
| Collections and observations of E.E. Brabb[4] | | | | | |
| 32 - Kka | D-1 | 60 ABa 791 | M1021[5] | Gastropods<br>Pelecypods, poorly preserved | Indeterminate[16] |
| 33 - Kk? | D-1 | 60 ABa 797 | M1022[5] | Buchia cf. B. crassicollis | Early Cretaceous (Valanginian)[16] |
| 34 - TR Pgt | B-5 | 60 ABa 1054 | | Fossils, including bryozoa | |
| 35 - Dwl | B-5 | 60 ABa 1063 | 6446-SD[6] | Favosites? sp. | Middle Devonian[17] |
| | | | 6446-SD | Indet. echinoderm debris<br>Schizophoria sp. (large)<br>"Camarotoechia" sp.<br>Plethorhyncha? sp. (may be undetermined uncinuloid) | "probably Middle Devonian"[15] |
| 36 - Dwl | B-5 | 60 ABa 1064 | 6447-SD | Indet. echinoderm debris<br>Indet. fenestrate bryzoans<br>Schizophoria sp.<br>"Camarotoechia"? sp.<br>Undet. uncinuloid<br>Atrypa sp.<br>Undet. trilobite pygidia | "probably Middle Devonian"[15] |
| | | | 6447-SD[6] | Favosites? sp.<br>Plasmophyllum (Mesophyllum) sp. | Middle Devonian[17] |
| 37 - Dw | B-6 | 60 ABa 1075 | | Crinoid columnals | |
| 38 - Dw | B-6 | 60 ABa 1081 | | Crinoids, bryozoa | |
| 39 - Pzca | C-6 | 60 ABa 1096 | | Brachiopod | |
| 40 - TR Pzc | C-6 | 60 ABa 1153 | | Possible diatoms | |
| 41 - KJgu | B-5 | 60 ABa 1191 | | Fossils, including productids, in float | |
| 42 - Kb? | B-5 | 60 ABa 1195 | | Forams | |
| 43 - Kk | B-5 | 60 ABa 1201 | | Forams | |
| 44 - Kl | B-5 | 60 ABa 1203 | M1025[5] | Inoceramus sp. | Jurassic or Cretaceous[16] |
| 45 - Kk | B-5 | 60 ABa 1206 | M1023[5] | Buchia "sublaevis" | Early Cretaceous (Valanginian)[16] |
| 46 - TKs | B-5 | 61 ABa 1672 | | Fossil wood | |
| 47 - TKs | B-5 | 61 ABa 1673 | | Fossil wood | |
| 48 - Kl | B-5 | 61 ABa 1683 | | Corals, pelecypods | |
| 49 - Kl | B-5 | 61 ABa 1714 | | Inoceramus prisms | |
| 50 - TR Pgt | B-5 | 61 ABa 1732 | M1266 | Pelecypod: Monotis sp. indet.<br>Hydrozoan coelenterate: Heterastridium sp. | late Late Triassic (middle or late Norian)[18] |
| 51 - Dl? | B-6 | 61 ABa 1742 | | Stromatoporoids? | |
| 52 - Dw | B-6 | 61 ABa 1753 | | Plant hash | |
| 53 - Dw | B-6 | 61 ABa 1762 | | Bryozoa, atrypid brachiopods, crinoid columnals, horn corals | |
| | | | 6454-SD[6] | Corals:<br>Acanthophyllum sp.<br>Disphyllum sp.<br>Indet. stromatoporoid | Middle Silurian-early Late Devonian[17] |
| 54 - Dw | B-6 | 61 ABa 1802 | | Fossils in thin section | |
| 55 - Dnr? | C-5 | 62 ABa 2128 | | Fossil fragments in conglomerate | |
| 56 - Pu | D-5 | 62 ABa 2224 | | Fossils | Permian(?) |
| 57 - Dnrc? | C-4 | 62 ABa 2251 | | Plant fragments | |
| 58 - Dnrc? | C-4 | 62 ABa 2252 | | Plant fragments | |
| 59 - KJgu? | B-5 | 62 ABa 2353 | M1763[5] | Buchia sp., (Buchia "sublaevis"?) | Early Cretaceous (Valanginian)[16] |
| 60 - TR Pgt | B-5 | 62 ABa 2362 | | Crinoidal limestone | |
| 61 - Ka | B-6 | 62 ABa 2363 | | Brachiopods | |
| 62 - TKs | B-6 | 62 ABa 2381A, 2381B | D1930A, D1930B | Pollens: Picea, Pinus, Tsuga, cf. Seradopitya, cf. Taxodium, Betula, and Alnus | Late Tertiary (post-Oligocene?)[19] |
| 63 - TKs | B-5 | 62 ABa 2502 | D1932 | Pollens: Carya, Pterocarya, Sterenliaceous, Caprifoliaceous, Tiliaceous, Anacardiaceous | early Tertiary (late Eocene? or Oligocene?)[19] |
| E.E. Brabb (cont)[4] | | | | | |
| 64 - Kk | D-1 | 62 ABa 2571 | | Pelecypod fragments | |
| 65 - Pzu | D-1 | 62 ABa 2581 | | Crinoids<br>Poorly preserved brachiopods | |
| 66 - Kk | D-1 | 62 ABa 2582 | | Poorly preserved pelecypods(?) | |
| 67 - TKs | D-1 | 62 ABa 2594 | D1935 | Pollens: Betula, Pinus, Picea, Lycopodium, Ulmus (Zelkova?) | late Tertiary[19] |
| 68 - Kk? | D-1 | 62 ABa 2601 | M1764[5] | Buchia "sublaevis" | Early Cretaceous (early Valanginian)[16] |
| 69 - Kb? | D-2 | 62 ABa 2613 | | Forams | |
| 70 - Pt | D-2 | 62 ABa 2623 | | Productid and crinoid fragments<br>Bryozoa | |
| 71 - KJgu? | D-3 | 62 ABa 2631 | | Plant fragments | |
| 72 - Kk | D-3 | 62 ABa 2632 | M1765[5] | Buchia "sublaevis" | Early Cretaceous (early Valanginian)[16] |
| 73 - Kk | C-4 | 62 ABa 2646 | M1766[5] | Buchia "sublaevis" | Early Cretaceous (early Valanginian)[16] |
| 74 - Kk | C-3 | 63 ABa 3882 | M2057[5] | Buchia "sublaevis" | Early Cretaceous (early Valanginian)[16] |
| 75 - Kb | C-3 | 63 ABa 3883 | | Foraminifera (Bathysiphon) | |
| 76 - Kka | D-1 | 63 ABa 3933 | M2058[5] | Pholadomya sp. | no age significance[16] |
| 77 - Pu | C-6 | 63 ABa 4111 | | Plant fragments | |
| 78 - Pu | C-6 | 63 ABa 4112 | 22360-PC[5] | Calliprotonia? sp.<br>Horridonia sp.<br>Liosotella? sp.<br>Linoproductus sp.<br>Indet. linoproductid<br>Indet. punctate spiriferoid<br>Stenoscisma sp. (large) | Permian[20] |
| 79 - Pu | B-6 | 63 ABa 4121 | 22352-PC[5] | Derbyia? sp.<br>Licharewia sp.<br>Liosotella sp.<br>Megousia sp.<br>Orthotichia sp.<br>Pterospirifer sp.<br>Streptorhynchus sp. | mid-Permian[20] |
| 80 - Pzqa | C-6 | 63 ABa 4133 | | Bryozoa, crinoids | |
| 81 - KJgu | C-4 | 63 ABa 4136 | | Plant stems? | |
| 82 - Dwl | B-5 | 63 ABa 4146 | | Crinoid columnal? | |
| 83 - TR Pgt | B-5 | 63 ABa 4152 | | Crinoids in rubble | |
| 84 - KJgu | B-5 | 63 ABa 4164 | | Plant impressions? | |
| 85 - Pzu? | B-5 | 63 ABa 4176 | | Worm borings<br>Plant fragments? | |
| 86 - KJgu | C-4 | 63 ABA 4184 | | Plant stems? | |
| 87 - Qa | C-5 | 63 ABa 4224 | | Contains pollen of such genera as spruce, birch, and alder | late Tertiary-Quaternary (Miocene-Pleistocene)[19] |
| 88 - Pt | C-4 | 63 ABa 4244 | | Coral, spirifer, brachiopod? | |
| | | | 22361-PC | Pterospirifer sp. | probably Permian[20] |
| Collections and observations of M. Churkin, Jr.[4] | | | | | |
| 89 - Pzca | C-6 | 62 ACn 34 | | Crinoid columnal, brachiopod | |
| 90 - KJgu | C-3 | 62 ACn 55 | | Foraminifera | |
| 91 - Dwl | B-5 | 62 ACn 321 | | Corals, bryozoa, crinoid columnals, stromatoporoids | |
| | | | 6831-SD[6] | Alveolites sp.<br>Thamnopora sp.<br>Keriophyllum? sp.<br>Indet. breviseptate horn coral<br>Bryozoans | Silurian or Devonian (probably Middle Devonian)[17] |
| 92 - TKs | B-5 | 62 ACn 391e | D1938A | Pollens: Betula, Ulmus (Zelkova?), Lycopodium, conifers and fern spores | Late Tertiary[19] |
| | | 62 ACn 402 | D1938B | Pollens: ?Salix sp., Betula-cf. Myriophyllum, Ulmus-Zelkova and Pistillipollenites | Early Tertiary (Eocene?)[19] |
| 93 - TR Pgt | B-5 | 62 ACn 421 | | Bryozoa, crinoids, small corals | |
| 94 - TR Pgt | B-5 | 62 ACn 441 | | Corals | |
| 95 - Dw | B-5 | 62 ACn 453 | | Fragments of: corals, bryozoa, crinoids, gastropods, stromatoporoids | |
| | | | 6828-SD[6] | Indet. receptaculitid fragment<br>Actinostroma sp.<br>Clavidictyon? sp.<br>Favosites sp. | Silurian or Devonian[17] |
| 96 - KJgu? | B-5 | 62 ACn 471 | | Buchia (in concretions) | |
| 97 - TR Pgt | B-5 | 62 ACn 514 | | Corals, crinoids | |
| 98 - Ka | B-6 | 62 ACn 722 | M1767 | Small fragments of Aucella? | Early Cretaceous[16] |
| 99 - Ka | B-6 | 62 ACn 724 | M1768 | Inoceramus sp. | Early Cretaceous[16] |
| 100 - Dl? | B-6 | 63 ACn 2001 | | Colonial corals, crinoid columnals | |
| | | | 7186-SD | Favosites sp. A (squamulate) | probably Middle Devonian[17] |
| 101 - Dwl | B-5 | 63 ACn 2013 | | Abundant corals, bryozoa, stromatoporoids | |
| | | | 7187-SD[6] | Corals:<br>Massive stromatoporoid<br>Alveolites sp.<br>Aulocystis? sp.<br>Cladopora sp.<br>Favosites sp. D<br>Thamnopora sp.<br>Pseudochonophyllum sp.<br>Undet. horn corals | probably Middle Devonian[17] |
| | | | 7187-SD | Conodonts:<br>Panderodus sp.<br>Scolecodonts<br>Drepanodontiform element | Middle Ordovician-Middle Devonian[21] |
| 102 - Dl? | C-4 | 63 ACn 2481 | | Stromatolites | |
| 103 - Dl? | C-4 | 63 ACn 2483 | | Stromatolites | |
| 104 - Kk | C-4 | 63 ACn 2505 | | Buchia "sublaevis" | Early Cretaceous (early Valanginian)[16] |
| | | 63 ACn 2511 | | Worm markings? | |
| 105 - Kk | C-4 | 63 ACn 2512 | | Pelecypods | |
| 106 - KJgu | C-4 | 63 ACn 2532 | | Conical, tube-shaped fossils<br>Spirophyton-like cast | |
| 107 - KJgu | C-4 | 63 ACn 2533 | | Black worm-like trails | |
| 108 - Kk | C-4 | 63 ACn 2541 | | Pelecypods, beleminite phragmacone | |
| | | | M2061[5] | Buchia "sublaevis" | Early Cretaceous (early Valanginian)[16] |
| 109 - Kk | C-4 | 63 ACn 2545 | | Worm tube casts | |
| 110 - Kk | C-4 | 63 ACn 2546 | | Brachiopod mold | |
| 111 - Dl? | C-4 | 63 ACn 2573 | | Stromatolites? in float | |
| 112 - Dl? | C-4 | 63 ACn 2581 | | Stromatolites | |
| 113 - Dl? | C-4 | 63 ACn 2583 | | Fenestellid bryozoa<br>Orthid brachiopods<br>Atrypa sp.<br>Proetid trilobite<br>Favosites sp.<br>Macgeea-like corals with distinctive horseshoe-shaped dissepiments<br>Solitary coral of undet. genus | Devonian (probably Late Devonian)[22] |
| 114 - Dl? | C-4 | 63 ACn 2591A | | Crinoid | |
| 115 - Dnrc? | C-4 | 63 ACn 2601 | | Small plant stems | |
| 116 - Kk | C-4 | 63 ACn 2604 | | Worm tubes | |
| 117 - Kk | C-4 | 63 ACn 2623 | M2062[5] | Buchia "sublaevis" | Early Cretaceous (early Valanginian)[16] |
| 118 - Pzca | C-5 | 63 ACn 2632 | | Worm-like casts | |
| 119 - MDl? | C-5 | 63 ACn 2635 | | Crinoids, brachiopods, gastropods | |
| 120 - MDl? | C-5 | 63 ACn 2642 | | Spirifer cf. s. centronatus<br>Chonetes?<br>Rhynchonellid brachiopod<br>Straparollus sp.<br>Small solitary coral of undet. genus | probably Mississippian[22] |
| 121 - MDl? | C-5 | 63 ACn 2643 | | Abundant fossils in float | |
| 122 - Dl? | B-5 | 68 ACn 1292 | 10079-SD | Corals:<br>Haplothecia? sp. A (astreoid)<br>Phillipsastraea sp. (very small corallites) | Late(?) Devonian (Frasnian?)[17] |
| | | 68 ACn 1371 | 10082-SD | Corals:<br>Favosites sp.<br>Haplothecia? sp. A (astreoid) | Late(?) Devonian (Frasnian?)[17] |
| | | 80 ACn 11 | 10581-SD | Conodonts:<br>4 mid-platform spathognathodiform fragments<br>1 Belodella resima (Philip)<br>1 Belodella triangularis (Stauffer)<br>17 Panderodus sp. elements<br>2 elements of Panderodus n. sp. of Lane and Ormiston (1979, pl. 1, fig. 42)<br>2 $S_2$ elements<br>6 $A_1$ or $S_1$ elements<br>1 indet. $M_2$ element<br>36 indet. simple cone, bar, blade and platform fragments | Early-Middle Devonian (probably Early Devonian)[23] |
| 123 - Dw | B-6 | 80 ACn 41B | MR1843 | Recrystallized, very poorly preserved Radiolaria | not determined[24] |
| | | | | Tentaculatids resembling Nowakia sp. | |
| 124 - Dw | B-5 | 80 ACn 72 | MR1845 | Radiolaria: Spumellariina with simple spines, internal structure not preserved | probably Ordovician-Early Devonian[24] |
| 125 - Dw | B-5 (A) | 80 ACn 121[7] | | Monograptus yukonensis Jackson and Lenz | Early Devonian |
| M. Churkin, Jr. (cont)[4] | | | | | |
| 126 - Dwl | B-5 | 80 ACn 131 | 10582-SD | 2 P elements of Polygnathus cf. P. webbi Stauffer<br>2 Polygnathus cf. P. linguiformis Hinde<br>3 platform fragments of Polygnathus sp. indet.<br>6 $A_1$ or $A_2$ elements<br>2 $A_3$ elements<br>36 indet. bar, blade, and platform fragments | Middle-earliest Late Devonian[23] |
| 127 - TR Pgt | B-5 | 80 ACn 152 | D502-PC | Neogondolella idahoensis (Youngquist, Hawley, and Miller) | Early Permian (Leonardian) |
| | | | | Crinoid and bryozoan fragments | |
| 128 - Dw | B-6 | 80 ACn 241 | 10583-SD | 5 P elements of Polygnathus cf. P. costatus costatus Klapper<br>1 P element of Polygnathus robusticostatus Bischoff and Ziegler<br>3 P elements of Polygnathus of the P. robusticostatus Group<br>2 P element fragments of P. linguiformis Hinde<br>28 indet. platform fragments of Polygnathus sp. indet.<br>8 I elements of Icriodus sp. indet.<br>1 element of Panderodus sp.<br>1 I element of Pelekysgnathus sp. indet.<br>2 O elements<br>6 $A_1$ and $A_2$ elements<br>1 N element<br>1 acodiniform element<br>1 mid-platform fragment of a spathognathodiform element<br>45 indet. bar, blade, and platform fragments | early Middle Devonian (P. costatus costatus Zone)[23] |
| 129 - Pzca | C-6 | 80 ACn 271A | | Abundant Radiolaria in hand speciman | |
| | | | MR1836 | Sponge spicules | not determined[24] |
| | | 80 ACn 271B | MR1837 | Very poorly preserved spherical Spumellariina<br>Sponge spicules common | not determined[24] |
| | | 80 ACn 271C | MR1838 | Very poorly preserved spherical Spumellariina<br>Sponge spicules | not determined[24] |
| 130 - Pzqa | C-6 | 80 ACn 292A | MR1840 | Radiolaria:<br>Spongotripus? fragment<br>Lanceolate Albaillella fragment<br>"Parahagiastriid" fragment<br>Spumellariina with robust tri-bladed spines | Late Mississippian-Pennsylvanian[24] |
| | | 80 ACn 292B | MR1841 | Radiolaria:<br>Spongotripus sp.<br>Spongodiscaceid, gen. nov. (Tetrahedral) (Holdsworth and Jones, 1980) | latest Late Mississippian-Pennsylvanian[24] |
| Collections and observations of D.L. Giles[4] | | | | | |
| 131 - Dl? | C-4 | 63 AGs 496 | | Stromatolites? | |
| 132 - Dl? | C-4 | 63 AGs 501 | | Corals?, crinoids? | |
| | | | 7188-SD | Scolecodont | uncertain[21] |
| | | | 7188-SD[5] | Corals:<br>Aulocystic sp.<br>Thamnopora sp. | probably Middle Devonian[17] |
| 133 - Dl? | C-4 | 63 AGs 502 | | Brachiopods, bryozoa, corals, crinoid stems, sponge? | |
| Collections and observations of private industry[4] | | | | | |
| 134 - Dw | B-5 | Amoco 3-14[8] | | Conodonts:<br>Indet. $A_1$ element<br>Polygnathus sp. (P)<br>Indet. $S_2$ element<br>Indet. $M_2$ element<br>Polygnathus dehiscens (P)<br>Panderodus unicostatus<br>Belodella resima<br>Pandorinellina exigua (P)<br>Pandorinellina exigua ($A_2$)<br>Belodella triangularis<br>Peleksygnathus furnishi (I)<br>Peleksygnathus furnishi ($S_2$)<br>Peleksygnathus furnishi ($M_2$)<br>Indet. simple cone A<br>Peleksygnathus cf. P. furnishi (I)<br>Peleksygnathus cf. P. furnishi ($S_2$)<br>Coelocerodontus sp.<br>Belodella devonica<br>Ozarkadina sp. indet. (P)<br>Megafossils:<br>Ogilviella n. sp.<br>Nucleospira sp.<br>Coenites sp.<br>Clathrocailona sp.<br>Xystriphyllum n. sp.<br>Schizophoria sp.<br>Heteratrypa sp.<br>Trupetastroma sp.<br>Trupetastroma cf. T. ideale<br>Favosites sp. A.<br>Favosites sp.<br>Desquamatia sp.<br>Spongophyllum halysitoides<br>Pseudamplexus sp.<br>Canutrypa sp.<br>Linguapugnoides n. sp.<br>Indet. orthid<br>Indet. ostracods<br>Indet. bryozoans | Early Devonian (Emsian) |
| 135 - Pu | D-5 | Mobil 159 | 22059-PC | Gastrioceratid-like ammonoid, indet. | Permo-Carboniferous[25] |
| 136 - Pt | D-2 | Shell Y-406 | | Eoasianites | Permo-Carboniferous[25] |
| Collections and observations of J.H. Dover[9] | | | | | |
| 137 - Pza | A-5 | 83 ADo 313A | | Radiolaria | |
| 138 - Dl? | C-5 | 83 ADo 364 | | 2 Panderodus sp. indet. fragments<br>1 indet. bar fragment | Middle Ordovician-Middle Devonian[26] |
| 139 - Dl? | C-5 | 83 ADo 366B | 10890-SD | 1 Neopanderodus sp. element | Early-Middle Devonian[26] |
| 140 - Dl? | C-4 | 84 ADo 303 | | Stromatolites? | |
| 141 - Dl? | C-4 | 84 ADo 305 | | Burrows, Planulites? | |
| | | | | Conodont blade fragments | Ordovician-Triassic[23] |
| 142 - Dl? | C-4 | 84 ADo 307 | | Stromatolites | |
| 143 - Kk | C-4 | 84 ADo 309a | M7959 | Pelecypods:<br>Buchia crassicollis solida (Lahusen)<br>Buchia sublaevis Keyserling<br>Pleuromya sp. | Early Cretaceous (Valanginian)[27] |
| 144 - Dl? | C-4 | 84 ADo 313a | | Trace fossils?, sponge spicules, shell fragments | |
| | | 84 ADo 313b | | Sponge spicules | |
| 145 - Pu | B-6 | 84 ADo 314 | | Worm tubes, plant stems | |
| 146 - Pu | B-6 | 84 ADo 320 | | Plant fossils<br>Shell? | |
| 147 - €Ztu | B-5 | 84 ADo 389 | | Spiney acritarchs | Cambrian or Precambrian[28] |
| 148 - Dl? | C-5 | 85 ADo 206 | | Crinoid columnal? | |
| 149 - Dl? | C-5 | 85 ADo 212 | | Conodont:<br>1 bar fragment | Middle Ordovician-Permian[29] |
| 150 - MDl? | C-5 | 85 ADo 214b | 11390-SD | Conodonts:<br>2 Apathognathus sp. elements<br>2 Pa elements of Bispathodus aculeatus (Branson and Mehl)<br>4 P and 2 S elements of Icriodus? raymondi Sandberg and Ziegler<br>1 Pa element of Polygnathus sp. of the P. nodocostatus group<br>6 Pa elements of Polygnathus communis Branson and Mehl<br>1 M and 1 Sc elements<br>22 indet. bar, blade, and platform fragments | Late Devonian (Famennian; Middle Expansa Zone)[23] |
| Collections and observations of R.T. Miyaoka[9] | | | | | |
| 151 - Dl? | C-4 | 85 ARm 30 | | Stromatolitic float | |
| 152 - Dl? | C-4 | 85 ARm 31 | | Brachiopod, ostracodes, trilobite free cheek, Favosites-type colonial coral | |
| 153 - Dl? | C-4 | 85 ARm 32a | | Brachiopod fragment | |
| | | | | 3 ichthyoliths? | Phanerozoic[23] |

Location

[1] A-4, A-5, A-6, B-4, B-5, B-6, C-3, C-4, C-5, C-6, D-3, D-4, D-5, and D-6--1:63,360-scale quadrangles within the Charley River 1:250,000 quadrangle; (A)--station approximately located


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[2] Fossil information published in one or more of the following:
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[3] Cairnes, D.D., 1914, The Yukon-Alaska international boundary between Porcupine and Yukon Rivers: Canadian Geological Survey Memoir 67.

[4] Fossil information from unpublished field notes and maps of E.E. Brabb, M. Churkin, Jr., and co-workers, 1960-80, from U.S. Geological Survey fossil reports, and, where noted, from published sources.

[5] Brabb, E.E., 1969, Six new Paleozoic and Mesozoic formations in east-central Alaska: U.S. Geological Survey Bulletin 1274-I, 26 p.

[6] Oliver, W.A., Jr., Merriam, C.W., Churkin, Michael, Jr., 1975, Ordovician, Silurian, and Devonian corals of Alaska: U.S. Geological Survey Professional Paper 823-B, 43 p., 25 pls.

[7] Churkin, Michael, Jr., Trexler, J.H., Jr., and Carter, Claire, 1982, Graptolites discovered in the Woodchopper Volcanics, in Coonrad, W.L., ed., The United States Geological Survey in Alaska--Accomplishments during 1980: U.S. Geological Survey Circular 844, p. 53-56.

[8] Lane, H.R., and Ormiston, A.R., 1976, The age of the Woodchopper Limestone (Lower Devonian), Alaska: Geologica et Paleontologica 10:101-108, 2 figs., 1 table, 1 pl.

[9] Fossil information from unpublished fieldnotes and maps of J.H. Dover and R.T. Miyaoka, and from U.S. Geological Survey fossil reports.


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