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Plate I. Vertical aerial photograph of Kleybolte Peninsula that forms the northwestern extremity of Ellesmere Island. The type sections of Emma Fiord Formation and Audhild Formation are indicated by solid stars. Dotted and dashed line marks angular unconformity between basal beds of the Sverdrup Basin and rocks of the underlying Franklinian Geosyncline. Geology by R. Thorsteinsson and H.P. Trettin. bc, Bourne Complex, slaty siltstone, shale, tuffaceous (?) green phyllite, volcanic flows, and hornfels of uncertain age, but probably pre-Silurian. The complex is cut by numerous diabase intrusions of unknown age; IPh1, thermally metamorphosed shale, siltstone, sandstone and limestone with dioritic intrusions, probably Middle or Late Devonian age; Ce, Emma Fiord Formation; Cb, Borup Fiord Formation; Ca, Audhild Formation; and CPn, Nansen Formation.

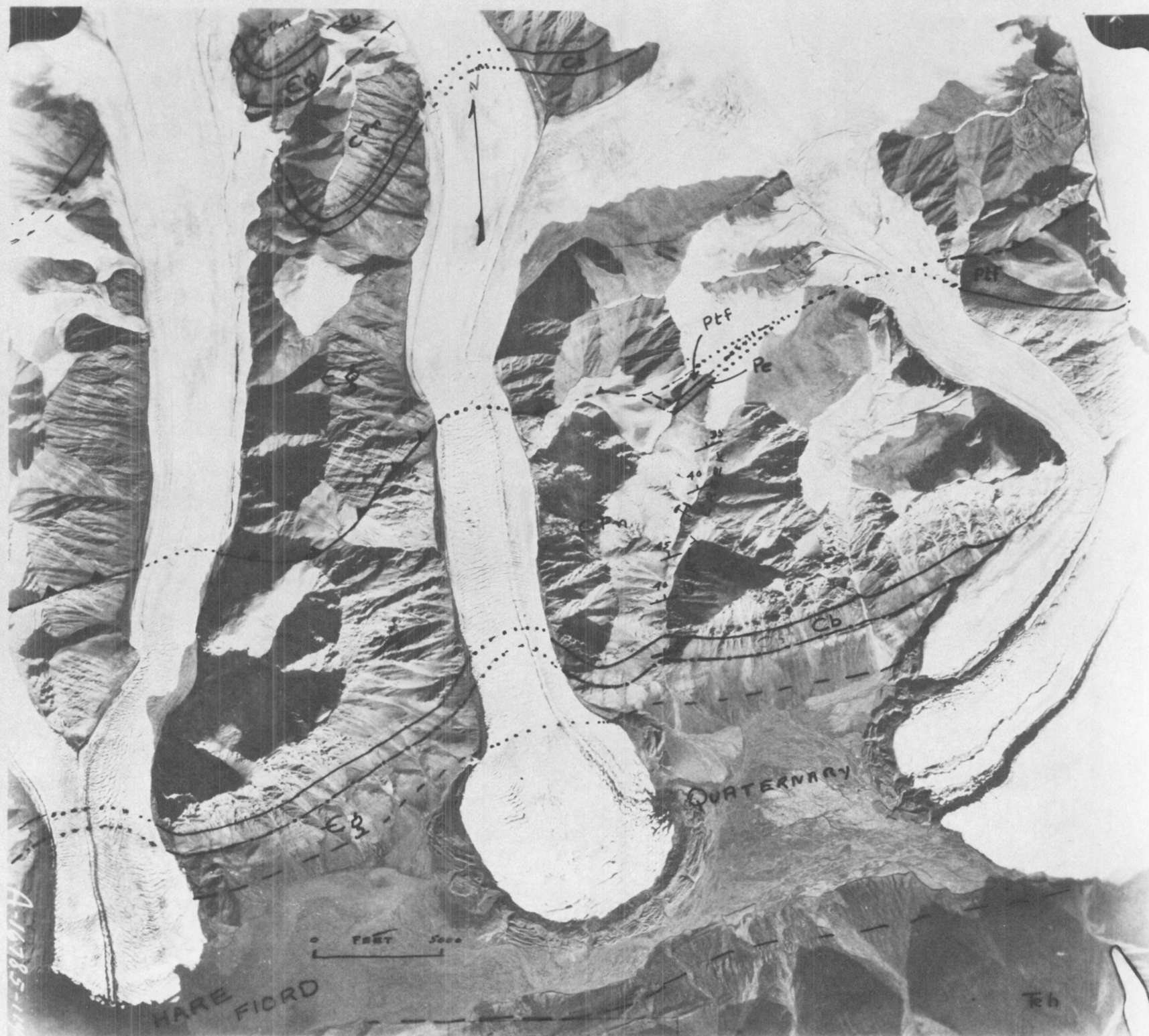
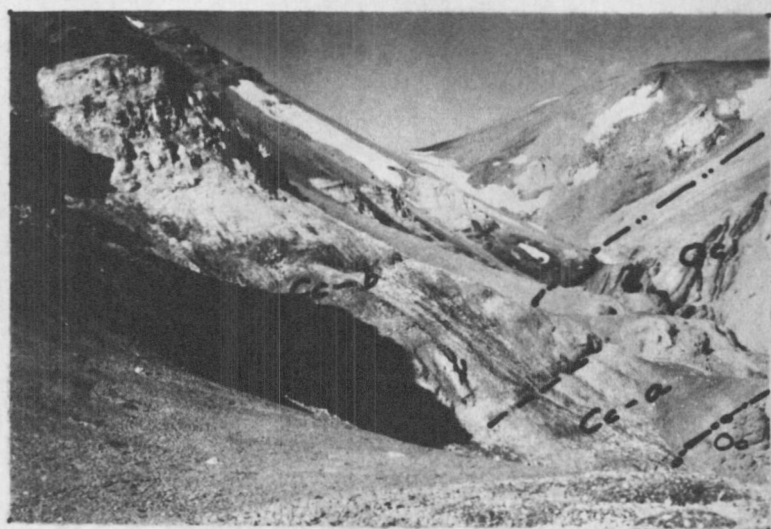


PLATE II

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Plate II. Vertical aerial photograph of thrust faulted, mountains north of head of Hare Fiord in northwestern Ellesmere Island showing type section of Nansen Formation. Crossed hammers are located at approximate centre of traverse along which stratigraphic column 68 in figure 3 was measured. Dotted and dashed line marks angular unconformity between basal beds of Sverdrup Basin and rocks of underlying Franklinian geosyncline. Geology by R. Thorsteinsson and H.P. Trettin. Eg, Grant Land Formation, Early Ordovician and/or Cambrian age; Cb, Borup Fiord Formation; CPh, Nansen Formation; Pe, Esayoo Formation; Ptf, Troid Fiord Formation; and Rh, Heiberg Formation, Upper Triassic.



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Plate III. Type sections of Otto Fiord Formation (Co) and Hare Fiord Formation (CPh) about three miles east of van Hauen Pass in northwestern Ellesmere Island. The view is west towards the pass. The Otto Fiord is composed mainly of anhydrite and gypsum and is characteristically light coloured. It also contains interbeds of limestone that stand out as dark layers. The Otto Fiord thrust over the Middle and Upper Triassic, Blaa Mountain Formation (Tba). The Hare Fiord comprises dark coloured, impure limestone, siltstone and shale and is typically dark weathering.

Plate IV. Aerial view of type sections of the formations, Otto Fiord (Co), Hare Fiord (CPh), van Hauen (Pv), and Degerbøls (Pd), which are represented graphically as section 69, in figure 3. The view is to the east from above van Hauen Pass. The formations dip steeply to north. The arrow points to a prominent ravine shown above dog sledge in photograph reproduced above as plate III. Tbl, Blind Fiord Formation, Lower Triassic.

Plate V. Basal strata of the Canyon Fiord Formation (Cc) lying with angular unconformity on the Cornwallis Group (Co) on the west side of Trolld Fiord, western Ellesmere Island (see locality 137, Eureka Sound South). Cc - a, basal unit of conglomerate and redbeds, 45 feet thick; Cc - b, anhydrite and gypsum, 200 feet thick; and Cc - c, limestone containing Moscovian fusulinaceans. The latter unit clearly belongs to the Canyon Fiord, but units Cc - a and Cc - b, are only tentatively assigned to that formation. These two units may in fact, represent the Lower and Upper Carboniferous Otto Fiord Formation that crops out extensively in eastern Axel Heiberg Island and northwestern Ellesmere Island.



Plate VI. View looking west from valley bottom at head of Hare Fiord in northwestern Ellesmere Island. The type section of Nansen Formation (Cp), a uniform sequence of light weathering limestone, was measured on ravine seen in right foreground. Dotted and dashed line marks angular unconformity between Borup Fiord Formation (Cb), and Cg, Grant Land Formation, Early Ordovician and/or Cambrian age. This figure supplements photograph reproduced as plate II.

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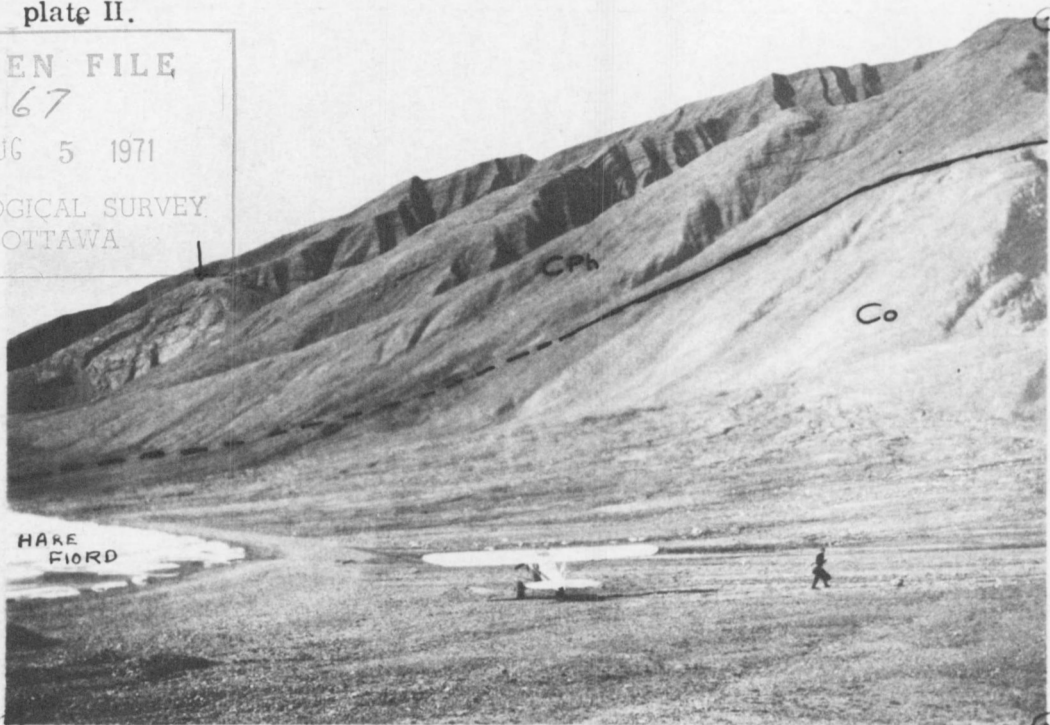


Plate VII. Characteristic exposures of anhydrite and gypsum of the Otto Fiord Formation (Co), overlain by dark grey to black shale, siltstone and impure limestone of Hare Fiord Formation (Cp). Arrow points to small bioherm in basal Hare Fiord beds from which R.L. Christie and W.W. Nassichuk collected an ammonoid fauna of early Moscovian age (see Nassichuk and Furnish, 1965). View is to west from delta of Stepanow Creek. About 24 miles separate this locality and the locality shown in plate VI. The Otto Fiord Formation and Hare Fiord Formation are correlative with the Nansen Formation.

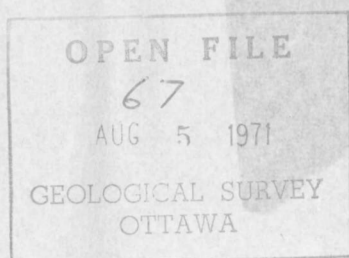
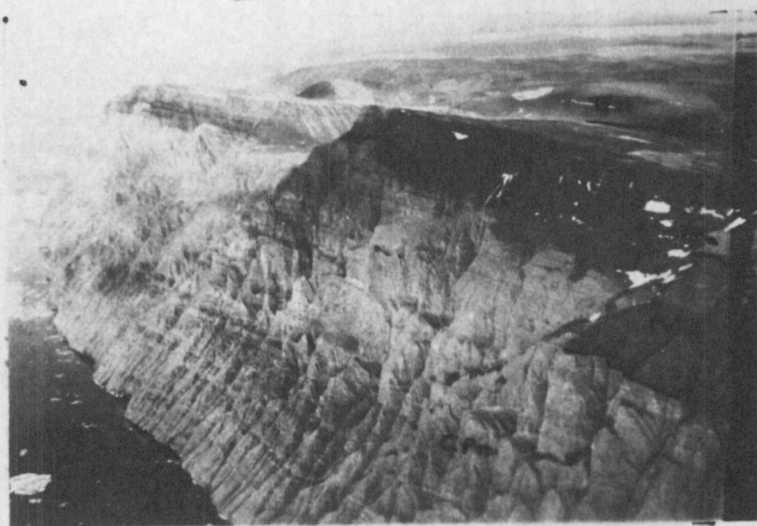


Plate VIII. Aerial view looking southeastward over spectacular limestone masses in basal part of Hare Fiord Formation (CPH), that is thrust over Lower Triassic Blind Fiord Formation (Tb1), in Blue Mountains between Hare Fiord and Greely Fiord in northwestern Ellesmere Island. Crossed hammers are positioned on locality that yielded the Lower Permian ammonoid, *Paragastrioceras* n. sp., described by Nassichuk, Furnish and Glenister (1965, p. 18). Section 70b in figure 3, was measured in ravine to right of crossed hammers. Arrow points to prominent cuesta developed in van Hauen Formation (Pv), the upper surface of which marks Permian and Triassic boundary.

Plate IX. Aerial view looking east and supplementing photograph reproduced in plate VIII. The x on this plate and that of plate VIII mark corresponding localities.

Plate X. Aerial view looking east along fiord wall that rises to an elevation of 2,900 feet above sea level on south side of Otto Fiord in northwestern Ellesmere Island. Standing in this imposing line of cliffs are the formations; Nansen (CPn), van Hauen (Pv), and Degerbøls overlain on backslope by Lower Triassic Blind Fiord Formation (Tb1). Dark layers in Nansen limestone are interbeds of shale and siltstone that reflect proximity to region of facies change with the predominantly clastic, Hare Fiord Formation that occurs a few miles to south.

PLATE XI

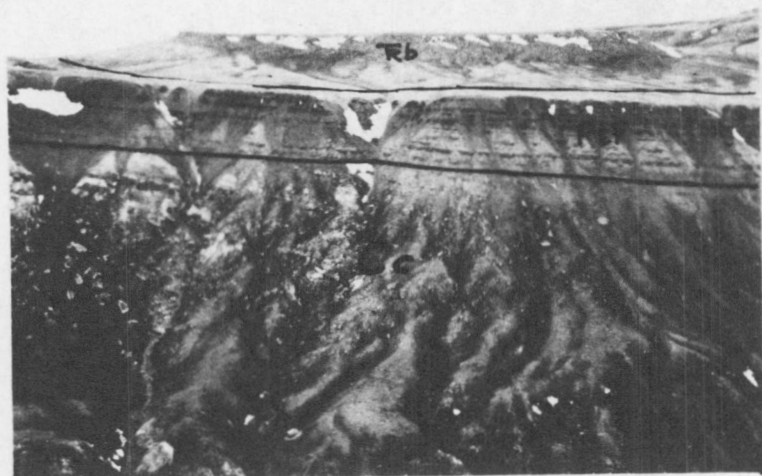
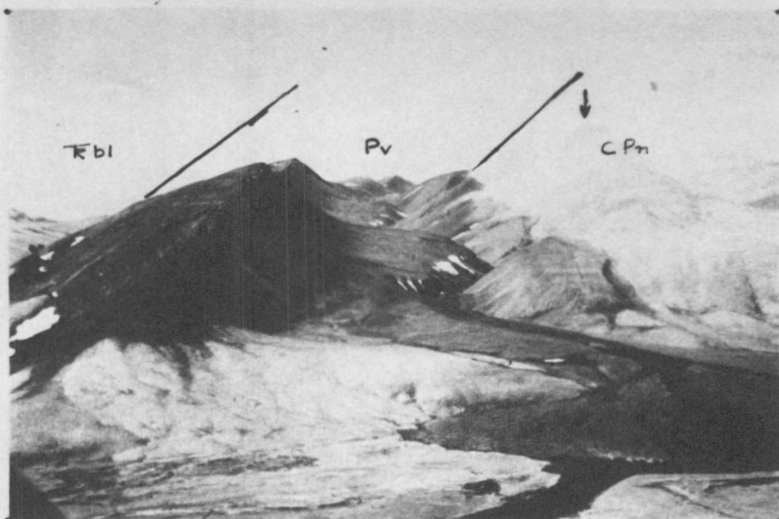


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Plate XI. Aerial view of Nansen Formation (CPn), van Hauen Formation (Pv) and Lower Triassic, Blind Fiord Formation (Tbi), on west side of Blind Fiord in western Ellesmere Island. View is to north and along the strike of the van Hauen. All three formations dip fairly steeply to the west. Note the contrasted topographic expressions of the lower shale and siltstone member and the upper chert member of the van Hauen.

Plate XII. Green beds of the Trolld Fiord Formation (Ptf) lying on redbeds of the Canyon Fiord Formation (Cc), and overlain by redbeds of the Lower Triassic, Bjorne Formation^(Tb). This locality is about 1 mile west of Trolld Fiord in west-central regions of Ellesmere Island, and some 4 miles south of the head of the fiord. View is to south and across the ravine in which was measured stratigraphic column 64 in figure 2. Note the angular relations of the Canyon Fiord-Trolld Fiord contact.

Plate XIII. Aerial view of the same territory shown above in plate XI. The arrow here and in plate XI point to one and the same reefoid mass of Permian age. In this region the Nansen Formation is characterized by alternating hard units of limestone and softer units of mainly calcareous siltstone which impart a pronounced banded appearance to the formation, especially when viewed from a distance.

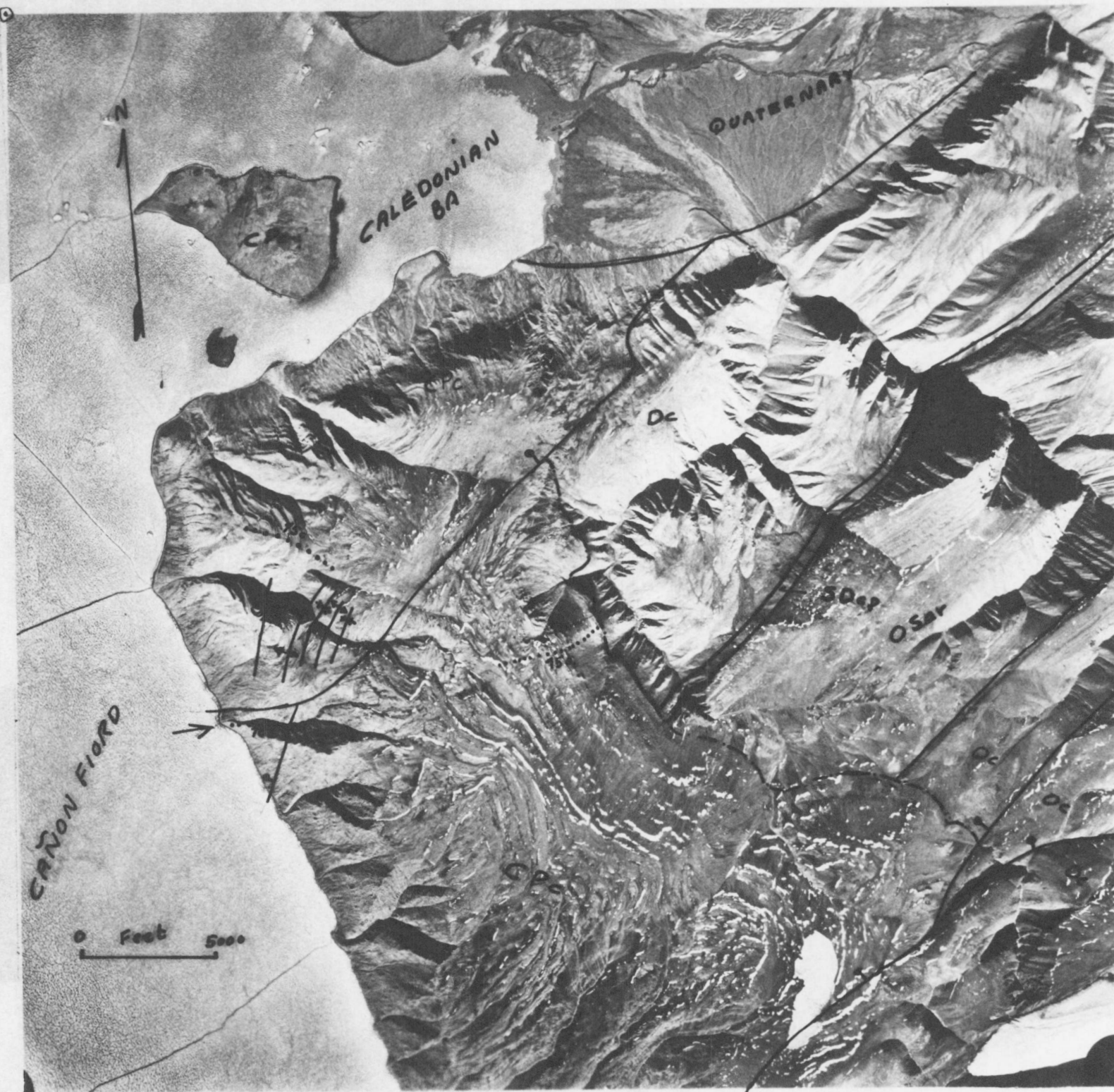


Plate XIV. Vertical aerial photograph showing type section of Canyon Fiord Formation on northeast side of Cañon Fiord in western Ellesmere Island. The three dotted lines indicate traverse line along which composite section 75 on figure 3 was measured. Dotted and dashed line marks angular unconformity between rocks of Sverdrup Basin and Franklinian geosyncline. Arrow points to ravine designated by J. C. Troelsen (1950) as the type locality of the Canyon Fiord Formation and illustrated as figure 9 in his report. Geology by J. W. Kerr and R. Thorsteinsson. Oc, Cornwallis Group, Middle Ordovician; OSar, undivided Allen Bay - Read Bay Formations, Upper Ordovician to Upper Silurian; SDep, Cape Phillips Formation, Upper Silurian and Lower Devonian; Dc, unnamed Devonian clastic sediments; and CPc, Canyon Fiord Formation. In this part of Ellesmere the Canyon Fiord includes both Carboniferous and Permian rocks.

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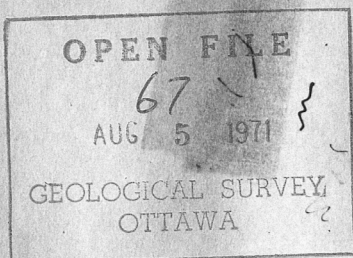
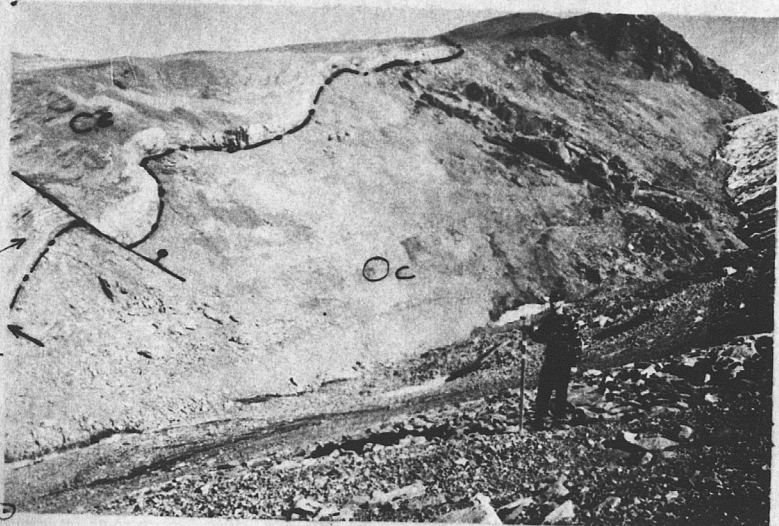
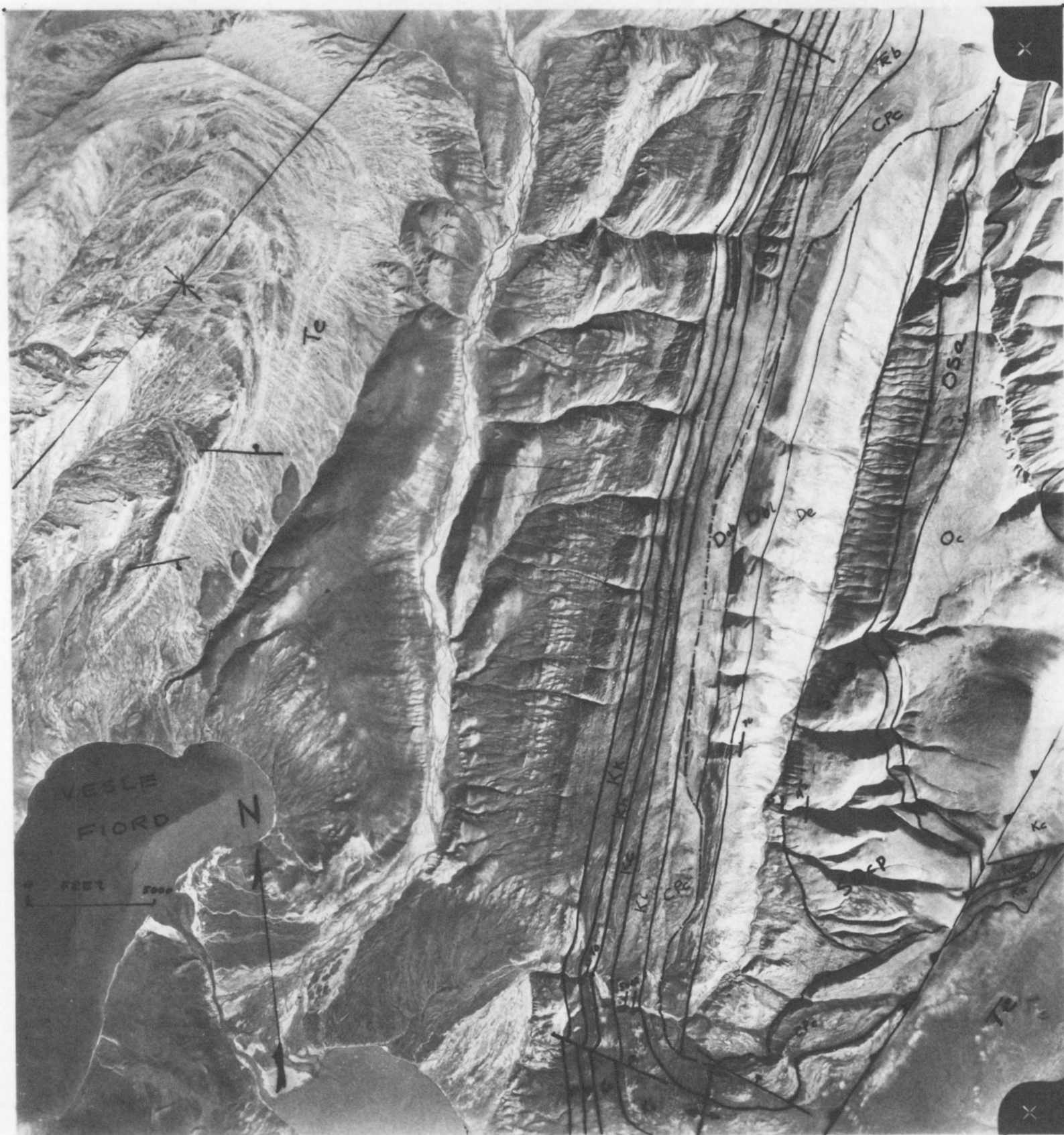


Plate XV. Exposures of Canyon Fiord Formation (CPc) overlain by Trolld Fiord Formation (Ptf), on south side of Cañon Fiord, western region of Ellesmere Island. These exposures are depicted as column 76 of figure 3. In this part of Ellesmere Island the Canyon Fiord includes strata of both Carboniferous and Permian ages.

Plate XVI. Angular unconformity between Canyon Fiord Formation (Cc) and the Middle Ordovician Cornwallis Group (Oc), at locality described below under plate XVII. Hammer rests on unconformity. Basal 4.5 feet of the Canyon Fiord is composed of interbedded, light coloured limestone, pebble conglomerate and quartzose sandstone. Strata in upper half of photograph consist of mainly thick-bedded conglomerate that normally characterizes base of formation. Crossed hammers are located on limestone that has yielded foraminifera dated as early Bashkirian.

Plate XVII. Canyon Fiord Formation (Cc) unconformably overlying Cornwallis Group (Oc) at headwater of Tschernyschew River, Hamilton Peninsula in western Ellesmere Island. View to north. Icefield of Albert and Victoria Mountains barely visible to right of photograph. Arrow points to outcrops (just off photograph) shown above in plate XVI, and which constitute basal beds of measured section shown as section 74 in figure 3.



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Plate XVIII. Vertical aerial photograph of territory northeast of head of Vesle Fiord in western regions of Ellesmere Island. Dotted and dashed line marks angular unconformity between basal strata of Sverdrup Basin and rocks of the underlying Franklinian geosyncline. The territory shown here is of particular interest in depicting the complex structural relationships that characterize formations in near-shore regions of the Sverdrup Basin. Note pinch out of Bjorne Formation and Canyon Fiord Formation owing mainly to transgressive nature of the Isachsen Formation. Geology by J.W. Kerr, R. Thorsteinsson and E.T. Tozer. Oe, Eleanor River Formation; Lower Ordovician; Oc, Cornwallis Group, Middle Ordovician; Osa, Allen Bay Formation, Lower Ordovician and Lower Silurian; SDcp, Cape Phillips Formation, Middle Silurian to Lower Devonian; De, Eids Formation, Lower and Middle Devonian; Dbl, Blue Fiord Formation, Middle Devonian; Dob, Okse Bay Formation, Upper Devonian; Cc, Canyon Fiord Formation; Tb, Bjorne Formation, Lower Triassic; Ki, Isachsen, Lower Cretaceous; Kc, Christopher Formation, Lower Cretaceous; Kh, Hassel Formation, Upper Cretaceous; Kk, Kanguk Formation, Upper Cretaceous; and Te, Eureka Sound Formation, Tertiary.

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Plate XIX. Vertical aerial photograph of environs of Eids Fiord, southwestern Ellesmere Island. Dotted and dashed line marks angular unconformity between basal strata of Sverdrup Basin and underlying Franklinian geosyncline. Crossed hammers are located at approximate centre of traverse along which was measured section 50 in figure 1. Bedded character of Canyon Fiord Formation results from alternating soft and harder units of quartzose sandstone; that of Belcher Channel Formation is the result of resistant units of limestone that alternate with softer units of quartzose sandstone. Geology south of Eids Fiord by J.W. Kerr. Geology north of Eids Fiord by R. Thorsteinsson. De, Eids Formation, Lower and Middle Devonian; Dbl, Blue Fiord Formation, Middle Devonian; Cc, Canyon Fiord Formation; CPbc, Belcher Channel Formation; Pa, Assistance Formation; and Ki, Isachsen Formation, Early Cretaceous.

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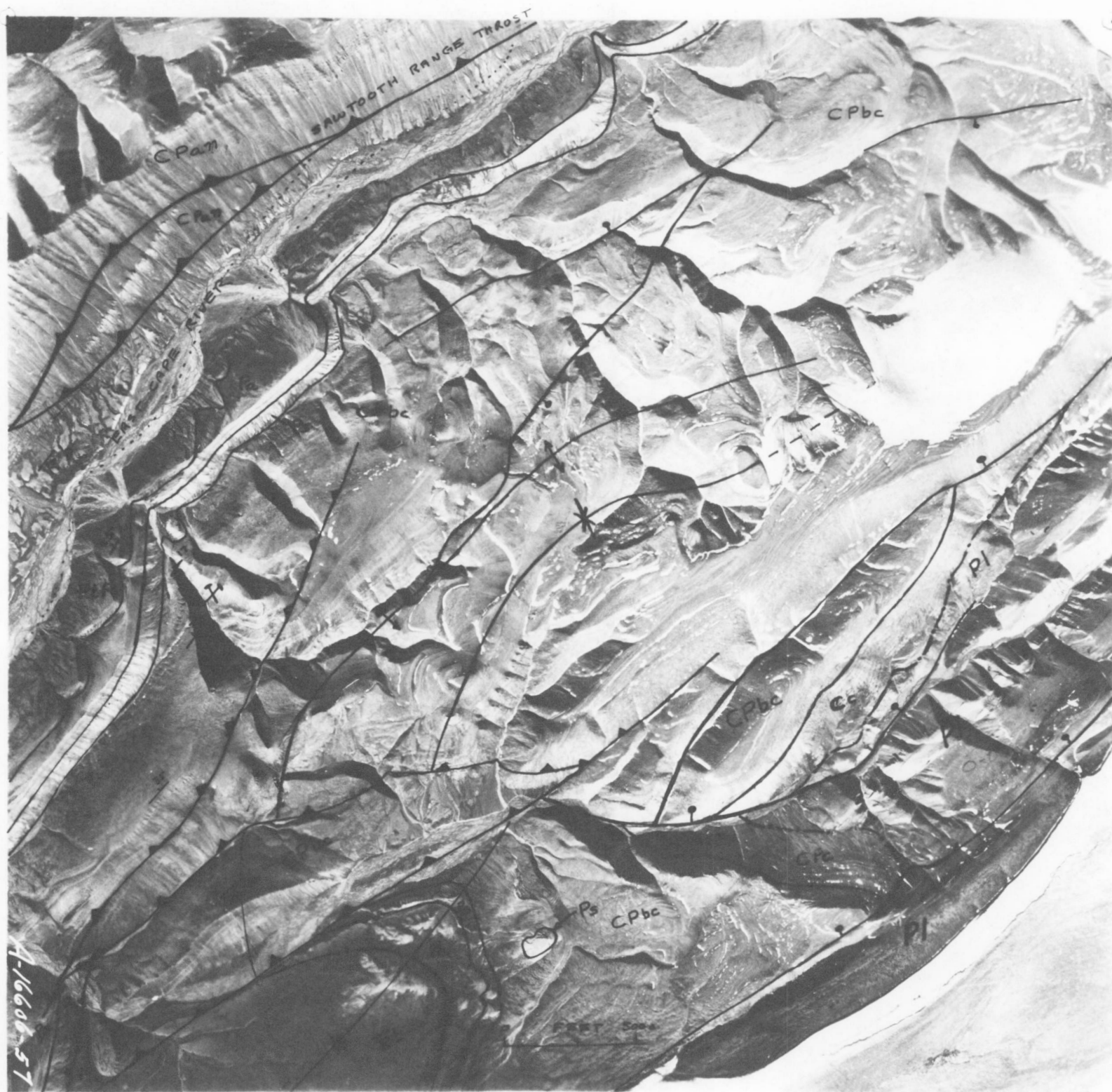


Plate XX.

Vertical aerial photograph of Hamilton Peninsula in western Ellesmere Island. Dotted and dashed line marks angular unconformity between basal strata of Sverdrup Basin and rocks of underlying Franklinian geosyncline. Note weathering characteristics and topographic expressions of various Carboniferous and Permian Formations. Note also overstep of Troid Fiord Formation from northwest to southeast. Crossed hammers mark approximate centre of traverse along which was measured section 74 in figure 3, Pl, undivided lower Paleozoic rocks; Cc, Canyon Fiord Formation; CPbc, Belcher Channel Formation; CPan, Antoinette Formation; Ps, Sabine Bay Formation; Pa, Assistance Formation; Ptf, Troid Fiord Formation; and Tb, Bjorne Formation, Lower Triassic.

*Make faults thicker lines
than contact lines*

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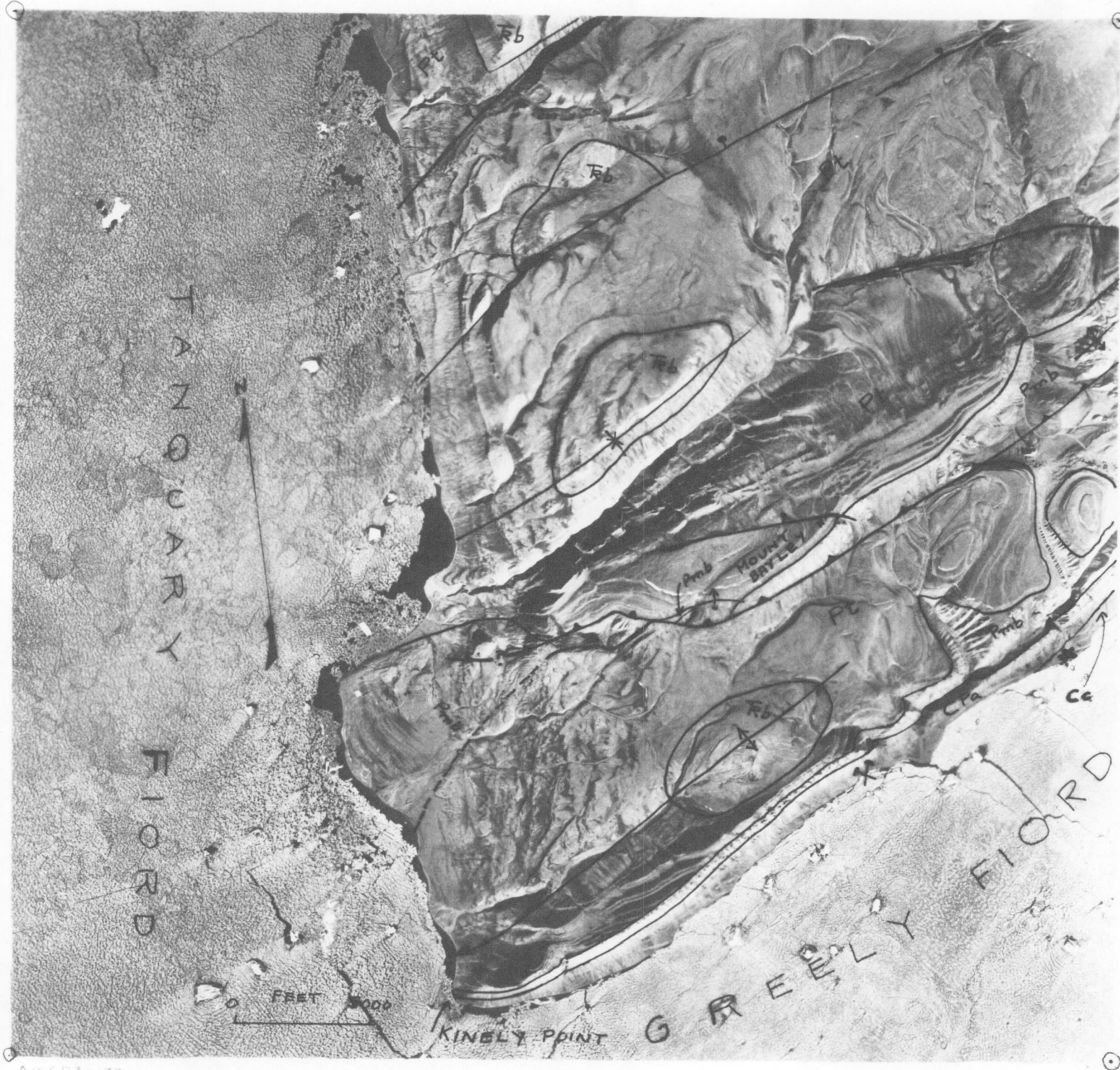
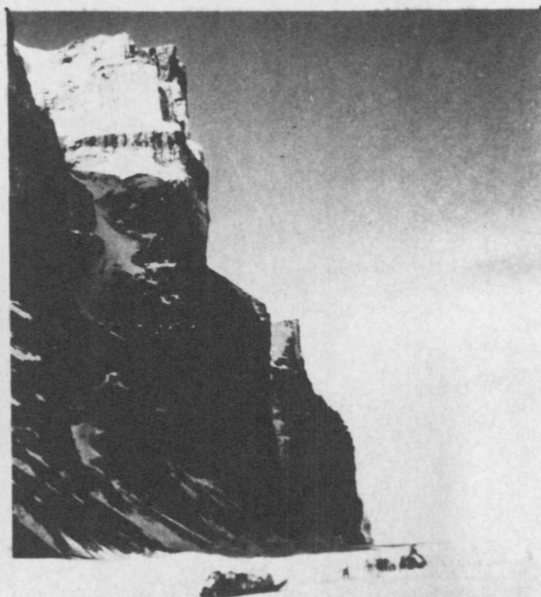


Plate XXI.

Vertical aerial photograph of unnamed peninsula formed by junction of Tanquary Fiord and Greely Fiord in northern Ellesmere Island. Crossed hammers are located immediately below cliffs that expose type sections of Mount Bayley Formation and Tanquary Formation which are shown as section 80 in figure 4. Solid star is positioned on Canyon Fiord Formation and immediately below type section of Antoinette Formation that is illustrated as section 81 in figure 4. Note characteristic light colour of anhydrite and gypsum represented by Mount Bayley Formation; also the distinctively bedded nature of Tanquary Formation owing to alternating units of resistant limestone and softer units of siltstone and sandstone. Cc, Canyon Fiord Formation. CPa, Antoinette Formation; Pmb, Mount Bayley Formation; Pt, Tanquary Formation; and Rb, Bjorne Formation, Lower Triassic.

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Plate XXII. Svartevaeg Cliffs near northern extremity of Axel Heiberg Island. View looking northwest from the ice of Nansen Sound and towards Arctic Ocean. The cliffs seen here rise to over 1,000 feet above sea level. They consist of nearly flat-lying limestone and lesser amounts of chert that are assigned to the Nansen Formation (CPn). The prominent cleft in cliffs that is visible in centre background may be seen in centre background of a photograph of Svartevaeg Cliffs that is reproduced opposite page 196 in Dr. Frederick A. Cook's narrative, My Attainment of the Pole.

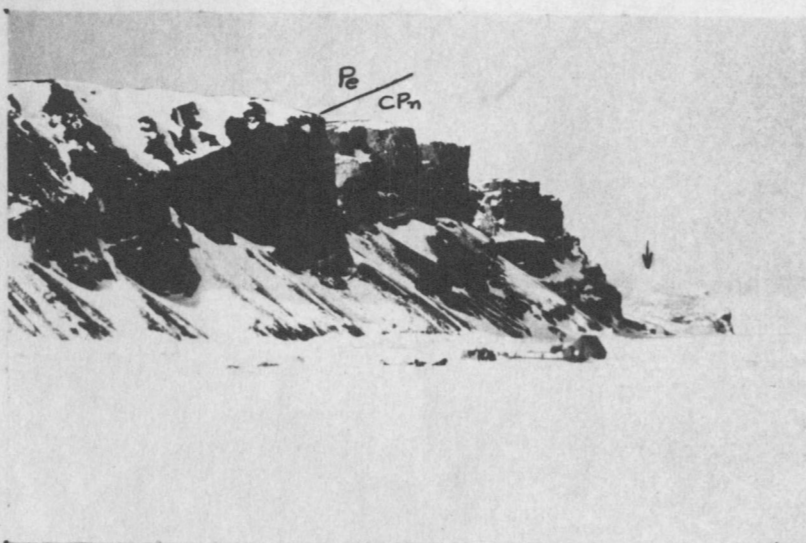


Plate XXIII. Southeastern extremity of Svartevaeg Cliffs showing volcanic rocks of Esayoo Formation (Pe) overlying Nansen Formation (CPn). Arrow points to location of cliffs shown above in plate XXII. The volcanic rocks shown here were discovered by Per Schei (1904, p. 461).

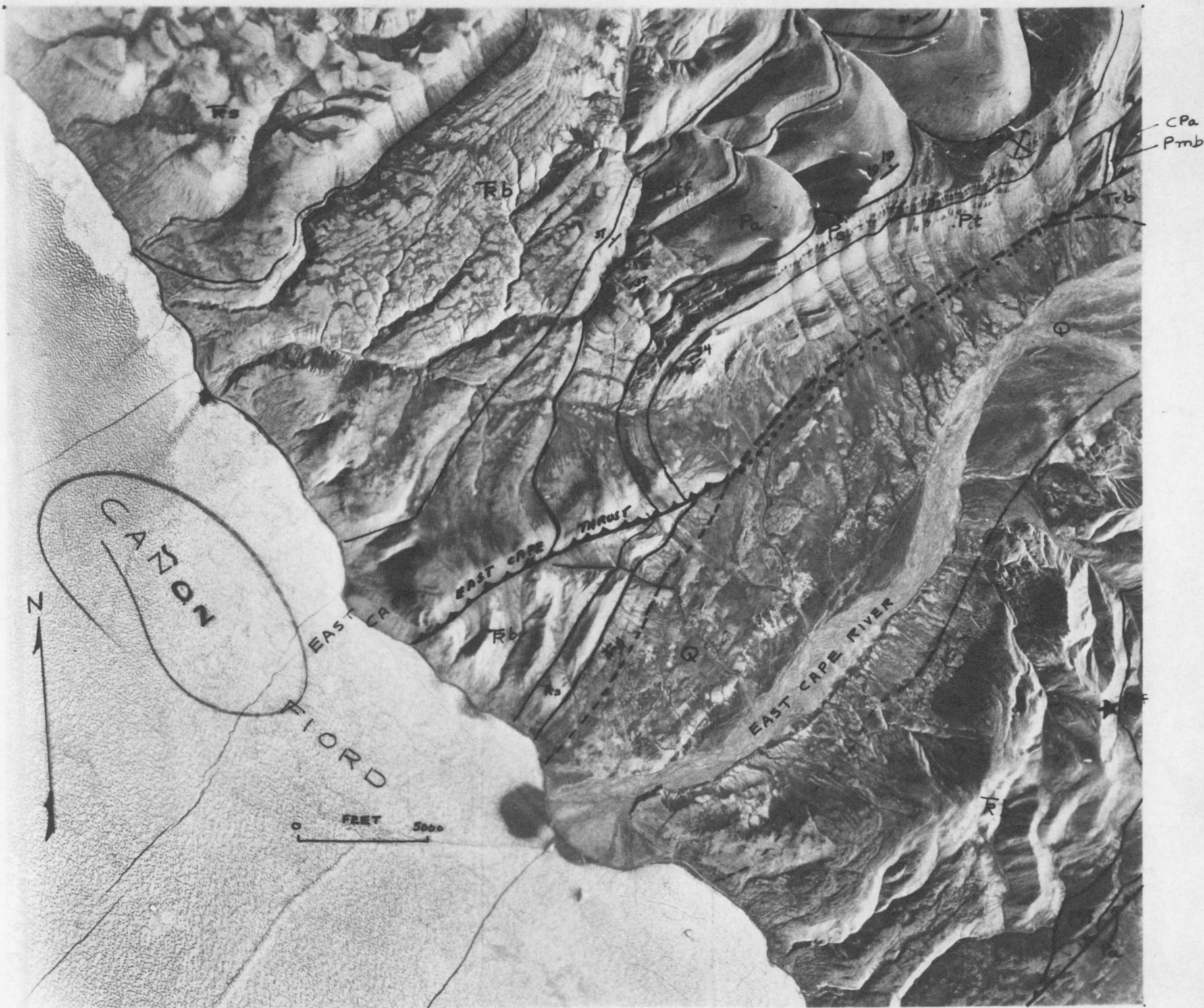


Plate XXIV. Vertical aerial photograph of East Cape and vicinity on the northeast side of Canon Fiord in western Ellesmere Island. Photograph illustrates well the weathering characteristics and topographic expressions of various Carboniferous and Permian Formations. Dark coloured units of rock in Tanquary Formation and Sabine Bay Formation are sills. A dike that cuts Assistance Formation may be seen near centre of photograph. Crossed hammers mark approximate centre of traverse along which was measured section 71 in figure 3. Solid star is positioned on Bjorne Formation immediately to left of type section of Trolld Fiord Formation which is illustrated as section 72 in figure 3. Geology by R. Thorsteinsson and E.T. Tozer. CPa, Antoinette Formation; Pmb, Mount Bayley Formation; Pt, Tanquary Formation; Ps, Sabine Bay Formation; Pa, Assistance Formation; Ptf, Trolld Fiord Formation; Tb, Bjorne Formation, Lower Triassic; Ts, Schei Point Formation; Middle and Upper Triassic; Th, Heiberg Formation, Upper Triassic; and Q, Quaternary.

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Plate XXV. Vertical aerial photograph of environs of Mount Bridgman in Sawtooth Range, western Ellesmere Island. Crossed hammers are positioned in approximate centre of traverse along which was measured section 56 in figure 1. Geology by R. Thorsteinsson and E. T. Tozer. Cpan, Antoinette Formation; Pmb, Mount Bayley Formation; Pt, Tanquary Formation; Ps, Sabine Bay Formation; Pa, Assistance Formation; Ptf, Troid Fiord Formation; Tfb, Bjorne Formation, Lower Triassic; Ts, Schei Point Formation, Middle and Upper Triassic; Rh, Heiberg Formation, Upper Triassic, J, undivided, Borden Island Formation, Lower Jurassic, Savik Formation, Lower to Upper Jurassic, and Awingak Formation, Upper Jurassic; Ki, Isachsen Formation, Lower Cretaceous; Kc, Christopher Formation, Lower Cretaceous; Kh, Hassel Formation, Upper Cretaceous; Kk, Kanguk Formation, Upper Cretaceous; and Te, Eureka Sound Formation, Tertiary.

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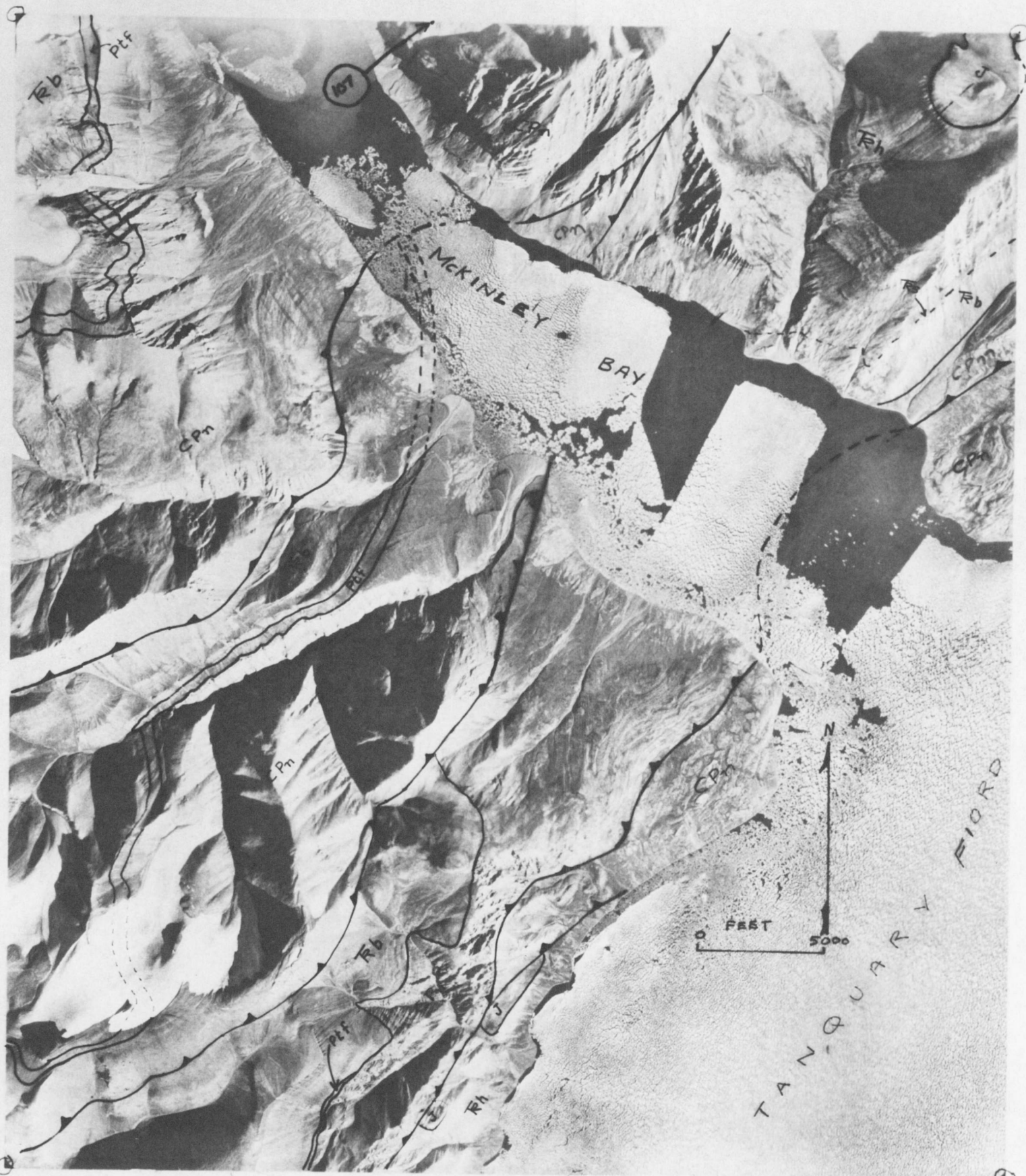


Plate XXVI. Vertical aerial photograph of thrust-faulted mountains in environs of McKinley Bay and Tanquary Fiord in northern Ellesmere Island. Note the distinctly bedded character of Nansen Formation that results from alternating units of hard limestone, and softer units of quartzose sandstone and siltstone. The clastic rocks reflect proximity of this region to the shoreline of the Sverdrup Basin. Note also pinch-out of Troid Fjord Formation in southeastern part of region. Arrow points to locality where *Schwagerina hyperborea* (Salter) was collected in upper 20 feet of Nansen Formation. Geology by R. Thorsteinsson and E.T. Tozer. CPn, Nansen Formation; Ptf, Troid Fjord Formation; Rb, Bjorne Formation, Lower Triassic; Schei Point Formation, Upper Triassic; Rh, Heiberg Formation, Upper Triassic; and J, undivided Jurassic strata. The significance of the uncommonly thin Schei Point section in this region is discussed by Tozer (1963, p. 6).

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Plate XXVII. Vertical aerial photograph of much faulted area on the coast of Bjorne Peninsula in southwestern Ellesmere Island. Crossed hammers mark locality of a Lower Permian, ammonoid fauna collected in the Assistance Formation and described by Nassichuk, Furnish and Glenister (1965, p. 8). The crossed hammers are also located near centre of traverse along which was measured section 52 of figure 1. Ce, Canyon Fiord Formation; CPbc, Belcher Channel Formation; Pa, Assistance Formation; and Pd, Degerbøls Formation.

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