CANADA

DEPARTMENT

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MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

PAPER 52-25

GEOLOGICAL NOTES ON LOCALITIES IN JAMES BAY, HUDSON BAY, AND FOXE BASIN VISITED DURING AN EXPLORATION CRUISE, 1949

By

C. A. Burns

INCLUDING LISTS OF COLLECTED FOSSILS
IDENTIFIED BY Alice E. Wilson

(Report and Figure)

OTTAWA

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INTRODUCTION

During the summer and autumn of 1949, the writer accompanied a party from the Geographical Bureau under the leadership of T. H. Manning, on the M. V. Nauja, sailing northwards from Moosonee, Ontario, through James Bay, along the east coast of Hudson Bay, through Hudson Strait and Foxe Channel to Foxe Basin, then southwards by way of Frozen Strait, Roes Welcome Sound, and the west coast of Hudson Bay to Churchill, Manitoba. Several islands and places were visited while travelling to and from Prince Charles and Air Force Islands, which were discovered recently.

The writer wishes to thank the members of the party for assistance received.

The accompanying map (Figure 1) shows the route of the Nauja and the localities visited.

JAMES BAY

Gasket Shoals

The Gasket Shoals comprise a low, treeless, drift-covered, triangular-shaped island and several shoals that extend from the north side of the island. Pebbles and boulders on the gently sloping beaches are mostly of limestone and slaty and volcanic rocks, but include granitic gneiss, granite, and micaceous schist. The limestone float differs from that seen at Moosonee.

Solomons Temple Islands

The Solomons Temple Island group is composed of twelve islands, of which eight contain outcrops of lavas, and four are drift covered. The largest and centrally located island is 110 feet high, and has rounded, glaciated hills, with raised beaches to 85 feet above sea-level. Drift-covered islands of the group are 50 feet or less in height. They have conspicuous raised beaches; the most southerly one is drift covered, mostly by gravel, with large boulders near the beaches and over the tidal area.

On the central island, well exposed, southerly facing lava flows strike easterly to northeasterly and dip southerly at 65 to 80 degrees. The flows are of four main types: (1) fine-grained, green, and pillowed, (2) massive, or (3) porphyritic, andesitic or basaltic lavas, and (4) coarse-grained amphibolite. Included in the massive andesite are cobbles and small boulders of granitic-textured gneiss and quartzite. A few dykes of andesite, hornblende porphyry, and amphibolite cut the lavas.

A pyritic zone 6 feet wide extends across the island from east to west. Also, iron-stained rocks on adjacent islands to east and west appear to be on the strike of this pyritic zone. On the central island, the zone is exposed for a length of 1 mile, is almost parallel with the flows, and occurs along the upper contact of one flow for much of its length. A chip sample taken across the zone assayed 0.005 ounce of gold and 0.28 ounce of silver a ton.

South Twin Island

South Twin Island is flat topped, drift covered, and approximately 125 feet high. It is composed of unconsolidated marine beds of gravel, sand, and clay. Raised beaches reach nearly to the top of the northeastern part of the island.

South Twin Island appears to be similar to the North Twin and several small islands nearby.

Bear Island

Bear Island has low rounded hills, one of which is 60 feet high. Effects of glaciation are pronounced. Rock surfaces are polished, and in places fluting is 3 feet deep, the northern end of the island being more grooved and striated than the southern part. Raised beaches reach to the top of the highest hill, but are not prominent.

Bedrock comprises nearly flat-lying sedimentary strata, which locally have dips of 15 to 30 degrees and northeasterly strikes. These sedimentary rocks are green weathering, thinly bedded argillaceous quartzite, slightly iron-stained greenish greywacke, and thinly bedded intercalations of limy sandstone.

At least three southerly striking faults were identified.

Sunday Island

Sunday Island, which lies 15 to 20 miles east of Bear Island, is about $\frac{1}{2}$ mile long from north to south, and $\frac{1}{2}$ mile wide from east to west. Sedimentary strata dip gently north, forming small scarps facing southwards. The rocks comprise thin-bedded, blue weathering limestone; buff, sandy limestone; and an underlying buff weathering, ripple-marked limy sandstone. Some of the limestone beds contain algal-like structures, which are concentric in plan. These forms have been observed at Long Island, Hudson Bay, and in many places in Proterozoic-type rocks on the Canadian Precambrian Shield.

The attitude and lithology of these rocks suggest that they form a part of the Proterozoic series of rocks that fringe the south and southeast shores of Hudson Bay.

Glacial polishing, striae, and grooves are prominent. The grooves strike south 25 degrees east.

HUDSON BAY (Eastern part)

Long Island and Islands in Long Island Sound

Long Island is 24 miles long, 2 to 4 miles wide, and rises to between 100 and 150 feet above sea-level. An almost continuous scarp, or 'cuesta', facing south, is subparallel with and near the south shore. Raised beaches are seen at many places, and an old shoal line marks the highest part of the island.

The islands in Long Island Sound are both drift covered and rocky. They are less than 50 feet high.

Long Island has a capping of lava flows on sedimentary rocks (Bell, 1877; Low, 1902, p. 79). The volcanic and sedimentary rocks are conformable for the most part; but at two places an angular unconformity of a few degrees was seen where minor flexures in the underlying sedimentary rocks are bevelled. Generally the formations dip northerly towards Hudson Bay at 5 to 10 degrees, and strike north 50 degrees east at the west end of the island, and north 70 degrees east at the east end.

The flows are columnar-jointed, medium-grained, brownish weathering, greenish diabase. At the western part of the island the lava overlies cherty quartzite, limy sandstone, and quartzite, and an argillaceous rock containing iron carbonate and chert. The rocks outcropping near the shore on the eastern half of the island are dense, blue weathering limestone, buff weathering sandy limestones, and limy sandstones. Most of the beds are thinly stratified. Some of the sandy members are ripple-marked; and in some others there are algal-like structures, although these are not as well developed as those on Sunday Island. Crossbedding is seen in limy sandstone.

Faulting on Long Island has been slight. At the eastern end of the island, fractures strike both transverse to and parallel with the strike of the strata. On one of the small islands, a fracture strikes nearly parallel with the beds, which are brecciated across a width of 50 feet. A chip sample collected from silicified and pyritized rock in the brecciated zone assayed 0.005 ounce of gold and 0.13 ounce of silver a ton.

Outcrops on the islands in Long Island Sound are of similar rock types to those on the eastern part of Long Island. Ripple-marks, crossbedding, and concentric structures were seen in several places.

Surface effects of ice-movement on the rocks are pronounced. Chatter marks indicate movement from north to south, and the northern sides of outcrops are polished most, which also suggests a southerly movement of the ice.

Long Island to Portland Promontory

The mainland from east of Long Island to Great Whale River is low near the coast, but rises gradually inland to rounded hills about 500 feet high. Drift cover is generally slight. Small islands, including Bear Island and parts of the low coast as far north as Black Whale Harbour, are underlain by nearly flat-lying sedimentary rocks. They strike parallel with the coast and dip gently seaward. At the mouth of Great Whale River there are extensive gravel beds about 30 feet thick.

The Manitounuk Islands comprise sedimentary rocks, with a columnar-jointed lava capping. Like all the younger rocks south of Portland Promontory, these dip seaward, forming a cliff or cuesta that faces inland. These rocks form the shore of the mainland north of Manitounuk Sound, extending north to Nastapoka River. A few miles inland are hills formed by rocks of early Precambrian age.

The small islands west of the Manitounuk Islands are low, and all appear to be drift covered. Data taken from the ship's depth recorder indicate that these islands are the top of easterly facing, underwater cliffs, which are the extension of a scarp that, farther north, forms the easterly face of the Nastapoka Islands.

At Langland River, on the mainland, the rock is a migmatite, and, at Kikkerteluk River, it is a granitic gneiss.

Elsie Island

Rounded, glaciated hills about 200 feet high in places carry raised beaches of gravel and boulders nearly to their tops. The rock is in part a medium- to coarse-grained granite-gneiss, and in part a salt-and-pepper coloured metamorphic rock. The gneissosity trends northwesterly and dips vertically. These rocks are cut by a northwest striking diabase dyke that dips 80 degrees southwest.

Cape Smith

The rocky, rounded hills of Cape Smith are between 500 and 600 feet high, with intervening drift-covered valleys up to 50 feet in height. Exposures are all of lava flows 10 to 30 feet and more thick. Most of the flows show well-developed north-facing pillow structures, which strike north 75 degrees east and dip steeply north and south. Some of them show columnar jointing.

Evidence of glaciation on rock surfaces has almost disappeared, due to weathering. Remaining striae bear northwesterly. Raised beaches are seen on the lower parts of the hills.

Cape Smith to Peck Inlet and Cape Wolstenholme

The mainland from near Kovik River to Peck Inlet is low, with a maximum relief of less than 100 feet on knolls near Peck Inlet. Northward, the relief increases to Cape Wolstenholme, where the cliffs and hills rise to 800 and 1,000 feet.

At Peck Inlet, the rock is a granitic gneiss, interlayered with mica paragneiss, both of which are cut by pegmatite. Gneissosity trends northeasterly and dips 55 degrees to the northwest.

At East Digges Island, the cliffs rise for 400 feet from the water, and the rounded hills above rise to elevations of 750 and 800 feet. Small cirques carved into the top of the island feed small streams. The rocks are well-layered gneisses, the gneissosity trending north of east and dipping steeply.

Some effect of shearing was seen on East Digges Island. Opposite, on the mainland, one prominent layer of iron-stained material strikes north 70 degrees east.

HUDSON STRAIT

Nottingham Island

The southwest part of Nottingham Island is 100 to 200 feet high, with rounded hills. The rocks seen comprise a pink weathering granitic type of gneiss, with a grain size of 1 to 3 mm., and a porphyritic granitic gneiss.

The northwest part of the island has a similar topography. Rocks there are metamorphic schists and gneisses. The strike of the folded rocks is easterly, and dips are relatively steep. These metamorphic rocks are mainly siliceous, with layers varying from feldspar-biotite-epidote gneiss to a white, biotitic and garnetiferous, slightly gneissic rock.

From a distance, the eastern part of the island is seen to be much higher than the western part.

Putnam and Mill Islands

Where measured, Putnam Island has rounded hills up to 250 feet in height, and Mill Island up to 350 feet. Lineaments are parallel with the channel between the islands. Attitudes vary from northeasterly to southeasterly, depending upon the part of a fold that is observed. The islands are underlain by pinkish weathering granitic gneisses, from 1 to 3 mm. in grain size, and some biotite gneiss. Rounded, and irregular-shaped bodies of graphic granite are up to 100 feet across. Near the northeast end of Mill Island a small bleb of sodic-plagioclase pegmatite contains a little bornite.

Glacial striae on Putnam Island strike north 70 degrees east. Poorly developed chatter marks suggest an easterly movement.

King Charles Cape, Baffin Island

Rounded hills in the vicinity of King Charles Cape are up to 450 feet in height. Raised beaches of nearly pure white quartz sand were measured to an elevation of 235 feet.

Rocks in the vicinity comprise folded, impure quartzites, micaceous schists, and pink and grey weathering granitic gneisses. All these are cut by simple granitic pegmatites. The regional trend of the relatively small folds is northerly to northwesterly. Dips are up to 50 degrees. These formations resemble rocks of the Grenville series.

FOXE CHANNEL

West Coast of Foxe Peninsula, Baffin Island

The relief along the west coast of Foxe Peninsula decreases northward. At Cape Enaoulik, hills are possibly 100 feet high, whereas at Cape Dorchester the relief is less. Inland, a low, south-facing escarpment, probably the Weston Escarpment, trends southeasterly.

FOXE BASIN

Prince Charles Island

The maximum relief of Prince Charles Island, which is surrounded by very shallow water, is probably between 30 and 50 feet. At the southwest corner, the shoreline is an old shoal line. Stagnating, shallow, salty lagoons lie between the shoreline and other old shoal lines farther inland. The only relief on the southwestern part of the island appears to be these old shoals, 5 to 7 feet high. From $\frac{1}{4}$ mile inland, towards the centre of the island, areas between the old shoals are grassy meadows and marshes, and extremely shallow sloughs or ponds. In places, water covers half the area.

In the southwest part of the island, the beaches and old shoals are composed of limestone fragments, most of which are angular. One piece of shale was seen. Rounded boulders, 2 to 3 feet in diameter, are mostly of granitic-textured rocks, and most of them lie near or on the present beach and old shoals. No outcrops were found in the vicinity.

Fossils are fairly plentiful, if not well preserved, in the limestone rubble. Loose fossils collected on the beach included Diplograptus foliaceus cf. vespertinus Ruedemann, an Ordovician species that occurs both in Utica and Lorraine beds. It was found in the only piece of shale observed and is probably of Utica age as no Lorraine fauna has yet been reported in this region. The following list represents a Silurian fauna:

Fucoids
Streptelasma sp. - tips only
Favosites gothlandicus Fought
F. niagarensis Hall
Phaenopora keewatinensis Whiteaves
Trimerella sp.
Stropheodonta sp. nr. S. acuminata Prout
S. sp.
Strophomena sp.
Brachyprion sp. A (form compared by Teichert to B. philomela)
Schuchertella sp.
Parmorthis sp. nr. P. elegantula (Dalman)
Pentamerid - a new form
Rhipidium sp. (See Teichert's citation)
Virgiana sp. cf. V. decussatum Whiteaves
V. n.sp.
Stricklandinia sp. nr. S. canadensis (Billings)
Whitfieldella sp.
Reticularia bicostata var.
Crispella sp.
Rhynchospira lowi Whiteaves
Coelospira cf. hemispherica (Sowerby)
Atrypina? sp.
Eospirifer cf. radiatus (Sowerby)
Modiolipsis sp. nr. M. leightoni Williams
Loxonema sp.
Solenospira sp.
Hormotoma sp.
Euomphalus sp.
Euemphalopteris sp.
Trilobite fragments
Leperditia cf. hisingeri var.
L. cf. alta var.
L. sp.
cf. Aparchites sp.

The only other part of Prince Charles Island visited was the small, northerly projecting peninsula at the northwestern end. There the maximum height of land is about 25 feet. The surface is partly rocky, covered with limestone fragments, and partly meadow and slough. Raised beaches can be seen in places, and spits and shoals along the shore suggest that the beaches are formed, in part at least, by the landward progression of gravelly shoals over the shallow basin floor.

Inland, the generally flat surface is interrupted by a very few low knolls or hummocks, 3 to 4 feet high, of clay containing a few pebbles. Some outcrops of buff weathering dolomitic limestone and a consolidated breccia-type of similar dolomitic rock were seen, the latter probably a result of cementation of material that was fractured and slightly disturbed, but not transported.

A loose fossil picked up on the beach was identified as Receptaculites cf. arcticus Etheridge, an Ordovician, Richmond form.

Some striae were seen on outcrop surfaces. Three strike directions were recorded: north 65 degrees east, south 55 degrees east, and south 35 degrees east. Glacial grooves, which are larger than striae, trend north-south. The writer believes that pebbly sea-ice, when pushed over limestone surfaces, may produce striae. Thus, striae on these soft rocks may not be indicative of flow by continental glaciers. A similar conclusion was made by some members of the Putnam Expedition to Foxe Basin. It is doubtful, however, if sea-ice could form grooves.

Air Force Island

Air Force Island, except for a small area south of the Tweedsmuir Islands, much resembles Prince Charles Island. Granitic-textured rocks outcrop along the north-trending shore south of the Tweedsmuir Islands, as well as on ridges, 100 feet high, almost ½ mile back from the shore. The ridges and outcrops end to the south where the shoreline changes from a southerly to an easterly trend. A few miles inland, south of the granitic ridge, are three small hills of granite about 130 feet high. These are surrounded by flat meadows. Ridges of limestone rubble were not seen as on Prince Charles Island. Eastward from the ridges of granitic rocks, the north shore of the island is flat and bordered by a very broad tidal flat. The shore is strewn with limestone rubble. Along the east coast the island also is flat, but huge boulders cover the ground for 1 mile to 2 miles inland.

Outcrops of buff weathering dolomitic limestone were seen at the northeast point of the island. Furthermore, the shallow water along the north and east shores is bottomed by uniformly flat rock, probably limestone. A loose fossil picked up on the beach, where granitic-textured rocks outcrop, was identified as Receptaculites cf. arcticus Etheridge, an Ordovician, Richmond form.

The granitic-textured rocks have a grain size of 2 to 20 mm. They are partly gneissic and predominantly leucocratic, with garnets constituting from 1 to 5 per cent of them. Biotite is a minor constituent. A vertically dipping diabase dyke, 100 to 200 feet wide, cuts the granitic-textured rocks on a strike of north 40 degrees west.

Apparently the ridges of Precambrian rocks existed prior to the deposition of the flat-lying, undisturbed, Palaeozoic rocks about them.

Signs of glaciation are not marked on top of the ridges. In one place striae trend south 5 degrees east. Raised beaches extend along part of the sides of the ridges and along the northerly trending shoreline.

Tweedsmuir Islands

The chain of islands that extends northerly from Air Force Island about parallel with the coast of Baffin Island, are from a few feet to 300 feet high. Generally, the height of the rounded hills increases northward.

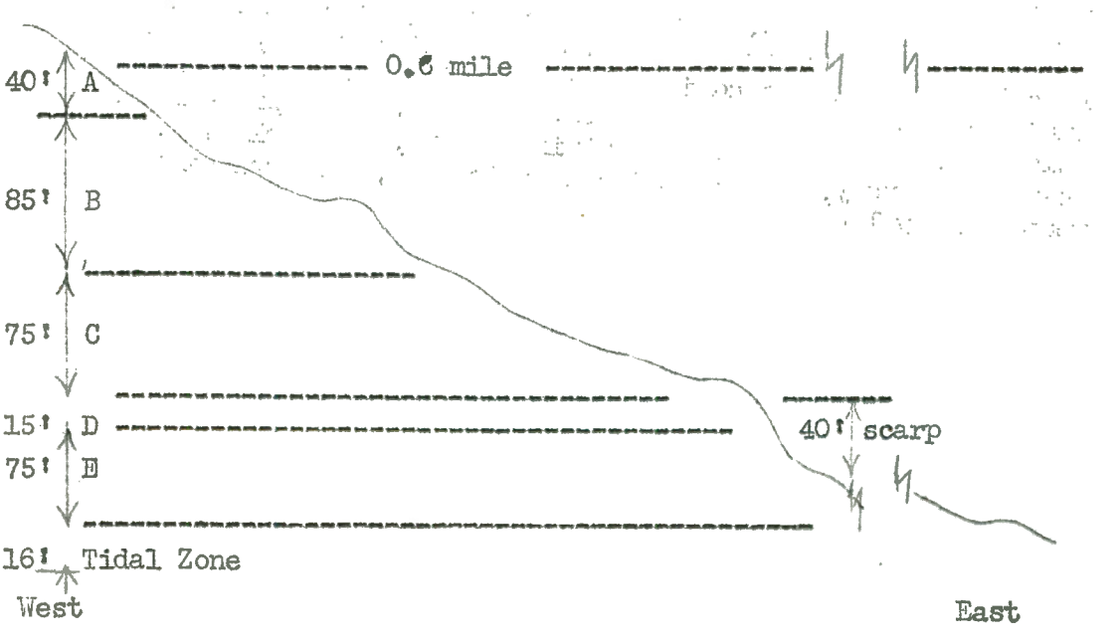
Rocks outcropping on the islands are in part granitic textured and in part metamorphic schists and gneisses of Grenville type. At one point the gneissosity trends north 28 degrees east and dips westerly at 20 to 40 degrees.

Anderson Island

The northeast corner of Anderson Island, nearest Baffin Island, has a low, rocky, irregular shore of gneissic rocks, with large boulders of granitic textured rocks and paragneiss spread from tidewater to the highest point. Both immediately south and west of the point, however, Palaeozoic rocks produce a fairly smooth and regular shoreline. The maximum elevation, at a point about 1½ miles west of the northeast point of the island, is 280 feet. Scarps face east and north, but a gentle, even surface slopes southwesterly. From this high point of the island, cuestas were seen to the south and west.

The southwest and south parts of the island could be seen from the Nauja to be low and flat, covered near shore with many boulders.

The rocks at the northeast corner of the island are medium- to coarse-grained, pink to white weathering granitic gneiss, the gneissosity trending north 70 degrees east. Palaeozoic rocks in the vicinity are dull grey to buff and yellow weathering dolomitic limestone, mustard-coloured dolomitic limestone, and buff weathering, partly sandy dolomitic limestone. Some of these are fossiliferous. The following section was measured there:



Fossils were collected from strata A and D of the above section. Those collected at A include a brachiopod and two ostracod forms, on which further identification was not possible, and some weathered tubes that might represent worms or bryozoa filled with secondary calcite; some indication of pores suggests the latter. They also included a specimen of Labyrinthites? monticuliporoides minor Troedsson, an Ordovician fossil.

The following fossils were collected from strata A and D:

Labyrinthites? monticuliporoides minor Troedsson
Linguloid brachiopod - large
Liospira sp.
Eunema? sp.
cf. Eunema sp.
Eotomaria cf. dryope var.

If these identifications are correct, the forms represent Ordovician rocks. However, the fossils were poorly preserved, and their identification doubtful.

Other fossils collected from these strata are:

Plectorthis sp.
Hesperorthis cf. tricenaria (Conrad)
Sowerbyella cf. sericea (Sowerby) - small
cf. Leurothoceras sp.
Whiteavesites winnipegensis (Whiteaves)
Actinoceras sp. nr. A. websteri Teichert
cf. Spyroceras sp.
Trilobite fragments
Paenaequina levis Teichert
Leperditia sp. A

These forms in the main are from rocks of Ordovician age. The rather poor specimen identified as cf. Spyroceras might be a Silurian form.

It should be noted here that three types of matrix have been observed to contain Ordovician fossils. One, from Prince Charles Island, is a slate, containing a fossil form occurring elsewhere in Utica and Lorraine formations, but as Lorraine is not reported in the north and as Utica is known from Baffin Island and Grenfell Tickle, Labrador, it is probably of Utica age. A second type of matrix is hard, grey dolomite, weathering rusty; and the third type is soft, buff dolomite weathering yellow.

An island, north of Anderson Island, and separated from it by a narrow channel, is 4 to 5 miles long from north to south. It is dome-shaped and about 300 feet high. The rock, which outcrops all over the island, is similar to the granitic-textured gneiss and paragneisses of the Tweedsmuir Island.

Longstaff Bluff and Piling Bay, Baffin Island

The top of the hill at Longstaff Bluff was determined by barometer to have an elevation of 475 feet. Hills along the coast to northward are semi-rounded and about the same height. Inland, along and past Piling Bay for several miles, the terrain is relatively flat meadow land with a few low ridges of rock. Many miles inland, on Baffin Island, a range of hills rises to 500 or 1,000 feet.

Rocks in the vicinity are flaggy, salt-and-pepper textured, biotite-amphibole-quartz meta-sediments, slaty argillites, and micaceous schists. These trend north 60 degrees east. They are cut by northwesterly striking, steeply dipping, diabase dykes.

Rock surfaces are smoothed by glaciation. Striae strike north 30 degrees east. At Longstaff Bluff, well-developed raised beaches end abruptly at an elevation of 295 feet.

Baird Peninsula, Baffin Island

The writer did not visit Baird Peninsula, which is a low, flat land underlain by Palaeozoic rocks. Fossils collected in places in the tidal zone by C. Merrill and D. Coombs, included:

Streptelasma cf. *robustum* Whiteaves
Trochonema coxi Wilson
Maclurites ungava Wilson
Armenoceras sp.
Lambeoceras cf. *princeps* Troedsson
Diestoceras sp.

This is a Richmond (Upper Ordovician) fauna.

Spicer Islands

South Spicer Island was seen only from a distance of ½ mile to 2 miles, because the water surrounding it is extremely shallow. The island is flat and low, typical of areas in Foxe Basin that are underlain by flat-lying rocks of Palaeozoic age. The maximum height of the land along the coast is approximately 25 feet, and outcrops were sighted.

North Spicer Island is lower than the southern island. A landing was effected on the east side, but no outcrops were seen. One-quarter of the surface is covered with water and the remainder is about equally divided between marsh or meadow and fine limestone rubble. A few boulders of limestone and granitic-textured gneisses are scattered about. Identifiable fossils, in loose limestone cobbles collected from the small bay on the east side of North Spicer Island included:

Stromatoporoid
Crinoid stems
cf. Brachyprion? sp.
Rhipidium sp. (See Teichert's citation)

There are several types of matrix, but such fossils as were identifiable are of Silurian age.

Rowley Island

Rowley Island is low and flat, with several low ridges of limestone rubble. The tidal zone on the east side of the island is at least ½ mile wide. There, flat-lying, buff weathering, dolomitic limestone is exposed at low tide. Fossils taken from one of the exposures, very near high-tide mark, indicate that the rocks are of Middle Silurian age. Loose fossils on the beach also are mostly Middle Silurian forms.

At a point 2 or 3 feet below the fossils that were collected in place at high tide, other fossils were collected from exposures on the tidal flat. Most of these, however, indicate an Ordovician age. Therefore, the locality is at the contact between formations of Silurian and Ordovician ages. A breccia-type of rock was seen in some of the exposures. Fragments of limestone, 2 and 3 inches across, are cemented by a buff weathering cement. The breccia may represent a regolith at a disconformable contact. It is similar to the occurrence observed on the northwest part of Prince Charles Island, where no fossils were found in place, but where a loose fossil was identified as of Richmond (Upper Ordovician) age. A somewhat similar rock reportedly occurs on Baird Peninsula near the point where fossils of Richmond age were collected.

One lot of fossils collected in situ on the northeast side of Rowley Island included:

Streptelasma robustum (Whiteaves)
Rhynchotrema n.sp. (form identified by Troedsson as
R. subtrigonale (Hall))
Trochonema coxi Wilson
Lophospira akpatokensis Wilson
L. sp. - fragment
cf. Cyrtogomphoceras sp.
Dowlingoceras? sp.
Cephalopod fragment, might be part of Plectoceras sp.
Isotelus sp.
Bumastus cf. tenuirugosum Troedsson

Most of these fossils are of Ordovician age, but two types of matrix are represented, and it is possible that the doubtful Cyrtogomphoceras and very doubtful Plectoceras are from Silurian rocks.

A second lot of fossils, collected in situ at the same locality but 2 or 3 feet above the latter collection, includes:

Zaphrentis sp.
Favosites cf. niagarensis Hall
F. favosus (Goldfuss)
cf. Lechritrochoceras sp.

They indicate a Middle Silurian age.

A third lot from the same locality but lying loose included:

Streptelasma sp.
Paleofavosites sp. (pores in angles, but larger corallites
than in P. asper)
Favosites hisingeri Ed. and H.
F. favosites (Goldfuss)
Halysites cf. microporus Whitfield
Gastropod - unidentifiable
Armenoceras sp. A
Armenoceras sp. B

The corals indicate a Middle Silurian age for the parent rock, but lacking a more complete specimen it is difficult to be sure whether the Armenoceras species are of Silurian or Ordovician age.

Bray Island

Bray Island was sighted but not visited. It is a low, flat area similar to the other islands that are underlain by Palaeozoic rocks.

A Bay Northeast of Ignerit Point, Baffin Island

The rocky hills are rounded and reach a height of approximately 700 feet. Hilltops are covered with bouldery ground moraine, the boulders being 1 foot to 2 feet in diameter. Water-sorted, rounded cobbles 2 to 7 inches in diameter are found to an elevation of 300 feet.

Rock exposures in the vicinity show pink weathering, biotite granite.

Koch Island

The north side of Koch Island is low, flat, and apparently drift covered. Half a mile to the north, a small island of gneissic rocks is connected to Koch Island by a shoal.

Calthorpe Islands

This group of islands is underlain by Palaeozoic rocks with low, cuesta-type topography. Gentle flexures are seen in the strata. Loose fossils collected on the beach and others in place may be of Ordovician or Silurian age. Alice E. Wilson considers that the matrix of some of the loose fossils suggests an Ordovician age, as do the following loose fossils:

Rafinesquina sp.
Dinorthis? sp.

An Actinoceras-type of cephalopod, either Spyroceras or Dawsonoceras, but otherwise unidentifiable, might be Ordovician or Silurian in age. The state of preservation, as usual, makes it difficult to designate which of the two above genera is represented, or whether the fossils are from Ordovician or Silurian rocks. The matrix suggests Ordovician, in which case the forms would be Spyroceras.

Igloolik

The southern part of Igloolik Island is underlain by relatively flat-lying rocks of Palaeozoic age. No fossils were found there, but some found by an Eskimo on the beach of Melville Peninsula southwest of Igloolik included:

Streptelasma cf. robustum Whiteaves
(same form found by Soper at Netteling Lake, Baffin Island)
Calapoecia canadensis ungava Cox
Stromatoporoid
Actinoceras sp.

This represents an Ordovician fauna of Richmond age.

Igloolik to Cape Jermaine, Melville Peninsula

Melville Peninsula, from Igloolik to a few miles north of Cape Jermaine, has little relief. Near Cape Jermaine, rounded hills rise to above 500 feet.

Cape Jermaine Area, Melville Peninsula

Cape Jermaine is flat, with raised beaches underlain by flat-lying, buff weathering sedimentary rocks of Palaeozoic age. Loose fossils collected included:

Streptelasma robustum Whiteaves
Maclurina (Maclurites) manitobensis Whiteaves
Maclurites of cuneatus Whitfield
? Endoceras proteiform Hall endosiphon ?

These fossils indicate an Ordovician age.

Favosites gothlandicus (Fought)
Favosites hisingeri Ed. and H.

These two corals are drift from a Silurian locality.

The area near the shore south of Cape Jermaine has raised beaches to the hill tops at an elevation of 340 feet. It is underlain by impure meta-limestone, crystalline limestone, argillites, and quartzites of Grenville type. These rocks are folded and strike north-northeasterly.

Northwest of Cape Jermaine rounded hills rise to an elevation of 530 feet, and raised beaches to at least 460 feet. Buff and yellow weathering Palaeozoic strata reach an elevation of 125 feet. Inland, above an elevation of 125 feet, the rocks are Grenville-type pink marble, black slate, impure limestone, garnet-mica schist, and pink paragneiss. They trend northeasterly.

Barrow River, Melville Peninsula

Relief above sea-level is 210 feet. The rocks are northeast trending garnet-mica gneiss, cut by a vertically dipping, southeasterly striking diabase dyke.

Repulse Bay

Rolling hills in the vicinity of Repulse Bay have a maximum height of 100 feet. The rocks are mostly light weathering, siliceous biotite gneisses.

ROES WELCOME SOUND

Battery Bay, Southampton Island

The area is underlain by nearly flat-lying rocks of Palaeozoic age. About 50 feet of strata are exposed near the shore. The following fossils, weathered out at the surface, were collected from a dense, buff weathering, bedded limestone, 45 feet from the bottom of the section; they are either of Silurian or Devonian age:

Zaphrentis? sp.
Stromatoporoid
Pentamerid fragment

Cape Dobbs to Chesterfield Inlet

The topography is subdued, the relief slight. South of Cape Dobbs, at Fullerton Harbour, and at Chesterfield Inlet, the rocks seen were gneisses.

WAGER BAY

Douglas Harbour

The rounded, rocky hills of Douglas Harbour are 500 feet high just north of the harbour, and 900 to 1,000 feet high a mile back. South of the harbour, they are flatter, with a maximum height of 120 feet. Raised beaches reach an elevation of at least 600 feet. Stream valleys are U-shaped.

Rocks around Douglas Harbour, and apparently eastwards to the mouth of Wager Bay, are pink and dark weathering biotite gneisses and schists, and are cut by pegmatitic dykes. The gneissosity trends easterly. One nearly vertical fault was seen that strikes parallel with the length of Douglas Harbour.

HUDSON BAY (Western part)

Marble Island

Rounded, strongly glaciated hills are 100 to 200 feet high. They consist of glistening white, fairly massive quartzites, only slightly stained in places by weathering of pyrite. The bedding has a general easterly strike.

Morso Island

Morso Island, north of the 62nd parallel, is small, and not more than 50 feet high. The rocks are greenstones.

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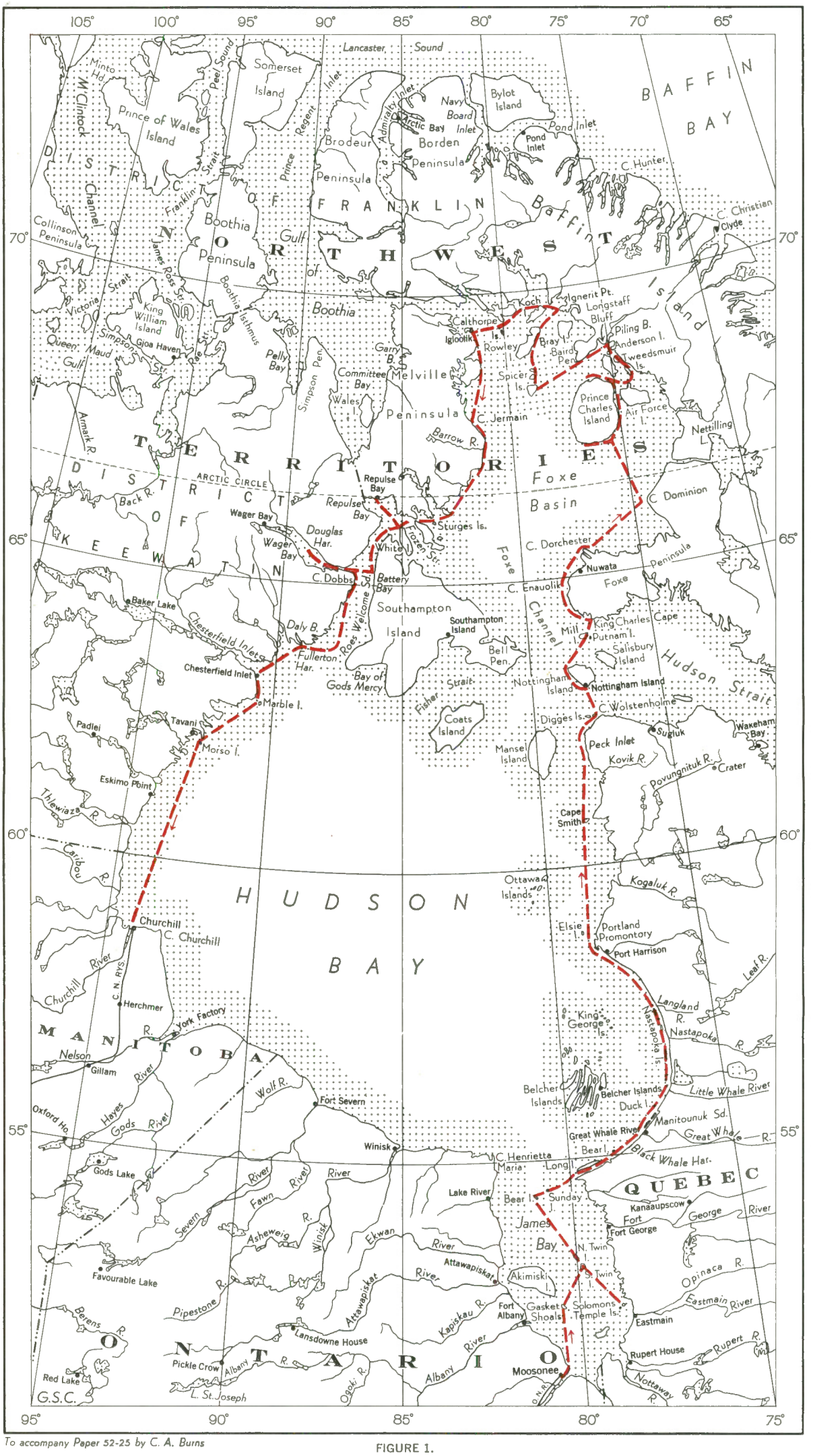

To accompany Paper 52-25 by C. A. Burns

FIGURE 1.

MAP OF HUDSON BAY - FOXE BASIN REGION, EASTERN CANADA, SHOWING ROUTE OF "NAUJA", 1949

Scale of Miles

100 0 100 200 300