CANADA
DEPARTMENT OF MINES AND RESOURCES
HON. T.A. CRERAR, MINISTER; CHARLES CAMSELL, DEPUTY MINISTER
MINES AND GEOLOGY BRANCH
JOHN McLEISH, DIRECTOR
BUREAU OF GEOLOGY AND TOPOGRAPHY
F.C.C. LYNCH, CHIEF
ISSUED 1938

GEOLOGICAL SURVEY — SHEET II F/2 (East Half)

TOPOGRAPHY

The northern part of the map-area is a lowland, underlain by Carboniferous strata, that flanks the north side of the Cobequid upland. It varies in elevation from a few feet above sea-level along Wallace river to about 200 feet above sea-level. The surface of the lowland in places undulates in a wave-like succession of broad, rounded ridges, which with the intervening valleys trend easterly with the rock structure. In other places the country is rolling and without perceptible pattern. Wallace river drains the greater part of the map-area northward to Northumberland strait and flows across the trend of rock structure and ridges. Its tributaries tend to follow rock structure.

The transition from the lowland to the Cobequid upland occurs abruptly at the boundary between the Carboniferous and pre-Carboniferous rocks. The upland is a rolling plateau with a few, isolated, sugar-loaf summits, is deeply incised by V-shaped valleys, and stands about 900 feet above sea-level. Wentworth valley and its continuation to the south, occupied by Folly lake, provide a low pass across the upland.

GEOLOGY

The pre-Carboniferous rocks consist of altered sediments and volcanics cut by granite, augite diorite, and basic intrusives. The sediments near Wentworth contain a small Silurian fauna (*Monograptus (?) sp., Chonetes sp., Anoplotheca hemispherica*, and *Orthis tenuidens?*), and it is probable that all the pre-Carboniferous rocks (1) are of Palaeozoic age.

The Windsor strata (2) are the oldest Mississippian rocks in the map-area, are much distorted, very imperfectly exposed, and are only sparingly fossiliferous. The uppermost Windsor fauna, of a few species only, so far recognized in the area or surrounding districts, includes *Flemingia disperza* and *Nodaxinella priscilla* and is accordingly referred to Zone C of the type Windsor sections at Windsor, N. S. (Bell, W. A. Horton—Windsor District, Nova Scotia, Geol. Surv., Canada, Memoir 155, pp. 66-67.)

The Mississippian—Pennsylvanian boundary is not clearly definable because a thick series of non-fossiliferous red beds of continental origin separates the uppermost Windsor fauna from the Pennsylvanian flora (*Whittleseya desiderata—Neuropteris schlehani* flora) of the Boss point formation. The red beds in Oxford map-area are divided lithologically into the Middleborough (3) and Claremont (5) formations. The Middleborough strata on Wallace river immediately north of the map-area have an estimated thickness of 2,500 feet, but are not fully exposed. Their lithology and stratigraphic position suggest that they may be a non-fossiliferous continental facies of Upper Windsor age. The Claremont formation is apparently conformably above the Middleborough formation on Wallace river, but on the north side of Claremont hill, in the West Half of Oxford map-area, it either overlaps, or is faulted against Windsor strata and the Middleborough formation is seemingly absent. The close conformity of the Claremont to the Boss Point, rather than to the Middleborough, strata suggests that the Claremont beds are a coarse, basal part of an overlapping Pennsylvanian series of which the Boss Point formation forms the upper part.

The Boss Point formation (6) contains the *Whittleseya desiderata—Neuropteris schlehani* flora at one locality near Pugwash river in the West Half of Oxford map-area. This early Westphalian (Lower Pottsville) flora correlates the Boss Point formation of the map-area with the type Boss Point section, at Boss point, Chignecto bay, and with the Parrsboro formation on the south flank of the Cobequid upland. The Cumberland series (7 and 8) rests unconformably on the Boss Point strata and overlaps onto pre-Carboniferous rocks in the West Half of Oxford map-area. The lithology, structure, and flora (Middle Westphalian or Upper Pottsville) of the Cumberland series in Oxford map-area correspond quite closely to that of this series in Springhill map-area to the west. Along the north flank of the Cobequid upland the series consists mainly of conglomerates that pass northward into sandstone and shale with subordinate conglomerate. The series is divided into two formations that may be in part contemporaneous, although distinct from one another in lithology. The great thickness of Cumberland strata in Springhill and Joggins areas diminishes eastward in Oxford map-area and the strata of this series apparently disappear completely beneath the Pictou series a short distance east of Wallace river. The Pictou strata of the map-area are a westward extension of the thick assemblage of predominantly red beds that underlie the northern part of Pictou county. The typical Pictou flora (Upper Westphalian) with *Ptychocarpus unitus* occurs at several places on Wallace river. The Pictou strata rest unconformably on the Cumberland strata, though an angular discordance is imperceptible except at Black brook, 6 miles southwest of Oxford. This discordance may be of local significance only.

STRUCTURE

The Mississippian strata lie in an anticline that begins near Springhill and extends eastward across the northern part of the map-area to Malagash point where it disappears beneath Northumberland strait. The south limb of this anticline dips steeply south and the north limb is in places overturned and possibly faulted. The Mississippian strata along the axis are contorted, in contrast with the more regular dips of the Pennsylvanian strata on either limb. The Pennsylvanian strata lie in synclinal structures on either side of the anticline. Only a part of the more northerly syncline is present in the northwest corner of the West Half of Oxford map-area. It is asymmetrical, with a gently dipping north limb and steeply dipping, possibly faulted south limb. The more southerly syncline arches at Polly brook (West Half Oxford map-area) and plunges gently from the arch westward toward Springhill and eastward toward Wallace river. The easterly plunge of the Pictou strata in this syncline is quite apparent, but whether the Cumberland strata continue to plunge in this direction, also, is not known.

Faulting is probably prevalent along the anticlinal structure, but cannot be readily determined due to the scarcity of outcrops. A cross fault can be recognized at Pugwash river where Boss Point and Windsor strata are in contact. Whether the fault disrupts, or is overlapped by, Pictou strata is not known.

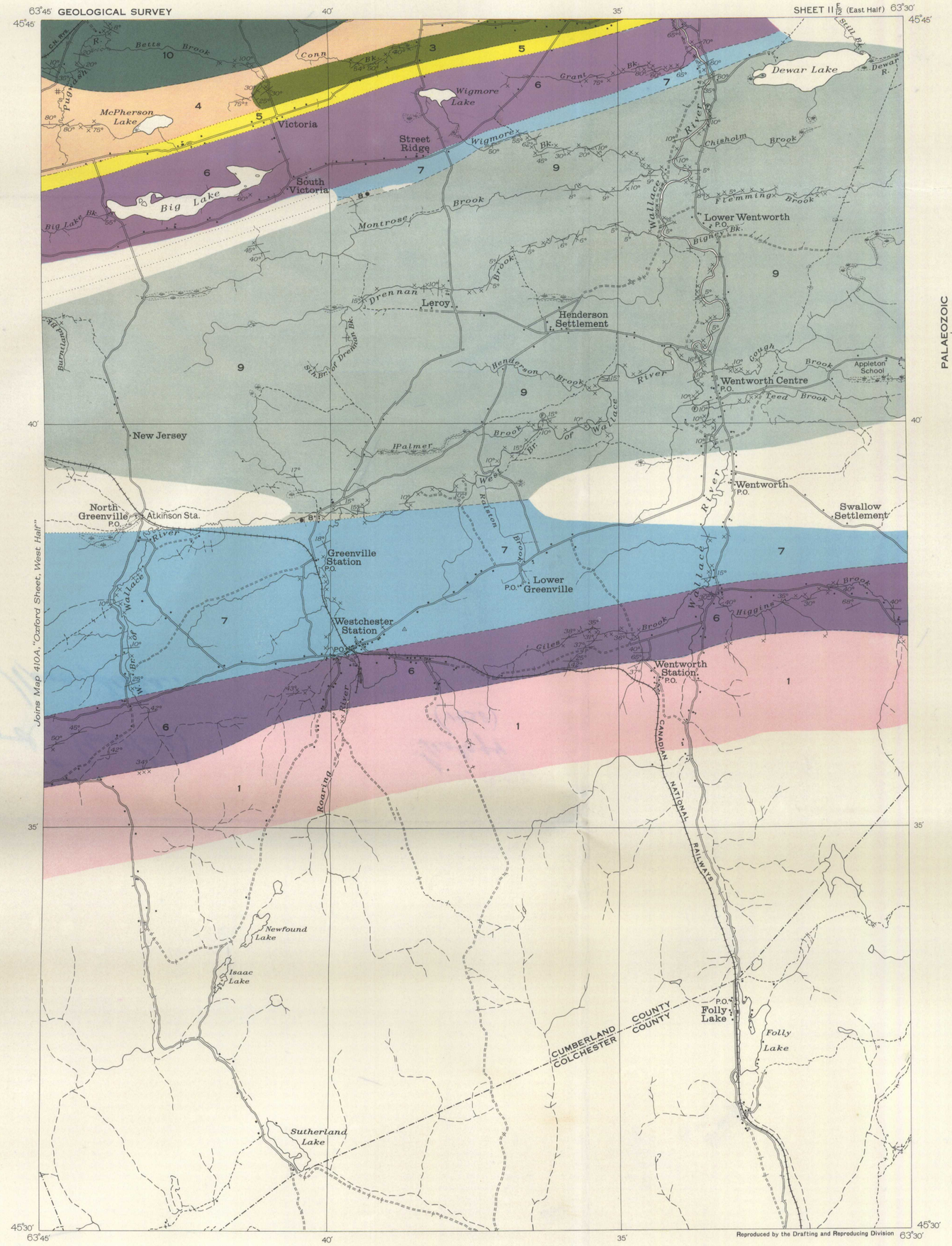
ECONOMIC GEOLOGY

Although deposits of gypsum and coal occur particularly in the West Half of Oxford map-area, the gypsum is situated disadvantageously for the most part in low-lying areas and the coal seams are thin. Other non-metallic deposits present are narrow barite veins in the Cumberland conglomerate north of Westchester, building stone, gravel, and probably salt in the Mississippian strata.

The presence of salt in the Mississippian strata of the map-area is suggested by concentrated brine springs and by the occurrence of salt in Mississippian strata at Malagash and at the Imperial Oil Company's well near Amherst that the salt lies in the lower part of the Mississippian strata of the district, and would, therefore, occur nearest to the surface where anticlinal structures are most deeply eroded or where the salt has been upfaulted.

A small amount of coal has been mined from a seam 28 inches thick, one mile southeast of Oxford Junction. It is not known whether this seam is a stratigraphically persistent member of the Upper Cumberland formation in the shallow syncline east of Polly brook. Several old prospect pits indicate the presence of carbonaceous strata and possibly coal at various points in the syncline at approximately the same horizon relative to the ill-defined contact of the two formations of the Cumberland series. The thickness of the Cumberland sandstone-shale formation in the syncline is estimated to be only a few hundred feet.

The massive grey to brown sandstone beds that occur in the Boss Point formation should be suitable for building stone and have been quarried to some extent on the south side of Claremont hill and near Oxford Junction.



LEGEND

CARBONIFEROUS

PENNSYLVANIAN — PICTOU SERIES

9 — *Red sandstone, shale and conglomerate; some grey sandstone and shale*

CUMBERLAND SERIES

8 — *Grey sandstone (some with grit lenses) and shale; red shale and sandstone; coal*

7 — *Red conglomerate and grit, some red shale and sandstone*

PALAEOZOIC

6 — *BOSS POINT FORMATION: grey to red, interbedded sandstone and shale*

PENNSYLVANIAN (?)

5 — *CLAREMONT FORMATION: red conglomerate and grit, some sandstone and shale*

MISSISSIPPIAN (?)

3 — *MIDDLEBOROUGH FORMATION: red sandstone, shale and grit*

MISSISSIPPIAN
WINDSOR SERIES

2 / 2a — *Red shale, gypsum, limestone, grey shale and calcareous shale; 2a: gypsum-bearing zone*

PRE-CARBONIFEROUS

1 — *Sedimentary and volcanic rocks, intruded by granite, diorite, etc.*

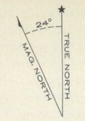
10 — *Unsubdivided Pennsylvanian and Claremont*

4 — *Unsubdivided Middleborough and Windsor*

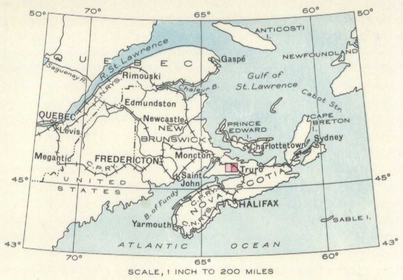
Geological boundary (approximate, assumed)
Bedding (inclined, vertical, horizontal, overturned)
Bedrock outcrop
Gypsum outcrop
Coal prospect pit
Fossil locality
Road and buildings
Road not well travelled
Trail
Railway
Church
School
Post Office
Abandoned camp-site
Cemetery
Triangulation station
County boundary
Approximate stream
Marsh

Surveyed in 1927 and 1932, by the Geological Survey.

Geology by G.W.H. Norman, 1932, and by W.A. Bell, 1934.



Approximate magnetic declination, 24° West.



SCALE, 1 INCH TO 200 MILES

MAP 409A

OXFORD SHEET

(EAST HALF)

CUMBERLAND AND COLCHESTER COUNTIES

NOVA SCOTIA

Scale, $\frac{1}{63,360}$ or 1 Inch to 1 Mile

Miles 1 0 1 2 3

Kilometres 1 0 1 2 3 4 5

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409A

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