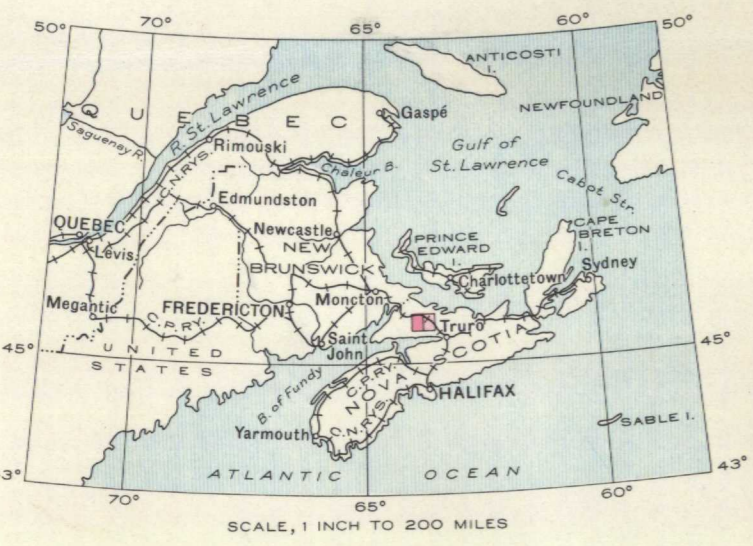
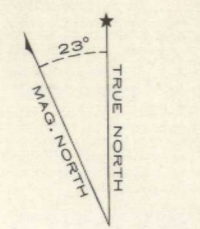


LEGEND

- CARBONIFEROUS**
- PENNSYLVANIAN**
- 9 Red sandstone, shale and conglomerate; some grey sandstone and shale
- 8 Grey sandstone (some with grit lenses) and shale; red shale and sandstone, coal
- CUMBERLAND SERIES**
- 7 Red conglomerate and grit, some red shale and sandstone
- 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 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).....
- Bedrock outcrop.....
- Fault (defined, assumed).....
- Coal seam (defined, assumed).....
- Coal prospect pit.....
- Gypsum outcrop.....
- Salt spring.....
- Fossil locality.....
- Road and buildings.....
- Road not well travelled.....
- Trail.....
- Railway.....
- Church.....
- School.....
- Post office.....
- Abandoned camp-site.....
- Cemetery.....
- Bore-hole.....
- Triangulation station.....
- County boundary.....
- Approximate stream.....
- Flume.....
- Dam.....
- Marsh.....

Surveyed in 1926 and 1927, by the Geological Survey.
 Geology by G.W.H. Norman, 1932, and by W.A. Bell, 1934.



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 Philip river and Pugwash river to 575 feet at Claremont hill which stands out prominently on the west side of the map-area. The greater part lies between 50 and 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 gently rolling without perceptible pattern. Philip river and Pugwash river flow northward to Northumberland strait across the trend of rock structure and ridges, and are joined by tributaries which in part follow, and in part cut across, the 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 is about 500 feet above sea-level.

GEOLOGY

The pre-Carboniferous rocks consist of altered sediments and volcanics cut by granite, augite diorite, and basic intrusives. The sediments near Wentworth in the adjoining East Half of the map-area contain a small Silurian fauna (*Monograptus (?) sp.*, *Clonites sp.*, *Anoplothea hemispherica*, *Orthis tenuis* (?) and it is probable that all the pre-Carboniferous rocks (1) of the area are of Paleozoic 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 dispersa* and *Nodosinella priscilla*, and is accordingly referred to Zone C of the type Windsor sections at Windsor, N.S. (Bell, W.A., Horton-Windsor District, 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 lowest Pennsylvanian flora (*Whitelysia desiderata*-*Neuropteris schucheni* 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 East Half of Oxford map-area have an estimated thickness of 2,500 feet, but are not fully exposed. Their lithology and stratigraphic position suggest that they are a non-fossiliferous continental facies of Upper Windsor age. The Claremont formation is apparently conformably above the Middleborough formation on the map-area, it either overlaps, or is faulted against Windsor strata, and the Middleborough formation, which may be involved with distorted Windsor strata on Philip river, 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 (*Whitelysia desiderata*-*Neuropteris schucheni* flora) at one locality near Pugwash river. 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 at the west side of the map-area. The lithology, structure, and flora (Middle Westphalian or Upper Pottsville) of the Cumberland series in Oxford map-area corresponds quite closely to that of this series in the adjoining 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 red beds that underlie the northern part of Pictou county. The typical Pictou flora (Upper Westphalian) with *Physocarpon sinuatus* occurs at several places on Wallace river, though it has not yet been found in the red beds referred to this series at Oxford. 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 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 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 apparent in the East Half of Oxford map-area, 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 determined readily due to the scarcity of outcrops. A cross fault can be recognized at Pugwash river where Boss Point and Windsor strata are in contact. Its extension as far north as the railway track is confidently inferred from the presence of sink-holes and other indications of Windsor rocks east of the fault throughout this distance. Its extension southward is indicated by the offset of Claremont strata. Whether the fault disrupts, or is overlapped by, Pictou strata is not known.

ECONOMIC GEOLOGY

Although deposits of gypsum and coal occur in the 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, and building stone, gravel, and probably salt in the Mississippian strata.

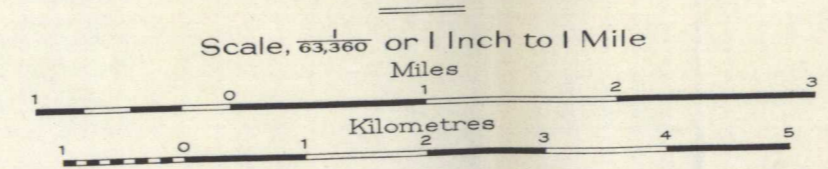
The largest gypsum deposit extends southwest from Oxford in a low area. Its presence is indicated by sink-holes in a belt 500 to 1,000 feet wide and by occasional outcrops of gypsum. The greatest vertical exposure of gypsum noted, 30 feet high, occurs on the side of a sink-hole between the first two lakes west of the road. About 10 per cent of anhydrite is present in the gypsum near the base of this exposure. The deposit north of Claremont hill is indicated chiefly by sink-holes, but a few outcrops of good white gypsum are present. The gypsum deposit at Hansford can be traced for about 800 feet and is about 300 feet wide. The surface of this deposit is deeply pitted by sink-holes and stands about 30 feet above the level of the road to the east.

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, 27 miles east of Oxford. It is assumed from the evidence 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. The Mississippian rocks in the map-area appear to have been most deeply eroded near the lakes south of Oxford. A compressed dome plunging west is suggested there by the distribution of gypsum and sink-hole lakes. The gypsum belt shown on the map between Philip river and Black lake may mark the north limb of the dome and the long narrow lake east of Black lake and the gypsum on Philip river 1 1/2 miles south of Oxford may mark the south limb.

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 persists throughout the shallow syncline east of Polly brook. Several old prospect pits indicate the presence at various points in the syncline of carbonaceous strata and possible coal at approximately the same horizon relative to the ill-defined contact of the two formations of the Cumberland series. The Cumberland sandstone-shale formation in this syncline is estimated to be a few hundred feet thick only.

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.

MAP 410A
OXFORD SHEET
 (WEST HALF)
 CUMBERLAND AND COLCHESTER COUNTIES
 NOVA SCOTIA



NOT TO BE TAKEN FROM LIBRARY
 NE PAS SORTIR DE LA BIBLIOTHEQUE

410A

This map has been produced from a scanned version of the original map
 Reproduction par numérisation d'une carte sur papier