CONTOUR MAP
OF
CENTRAL MICHIGAN AREA
SHOWING THICKNESS
OF

DUNDEE BEDS ABOVE THE FIRST WATER HORIZON

— SCALE —

MILES
0 1 2 3 4

EXPLANATION

- LOCATION
- OIL WELL
- GAS WELL
- DRY HOLE
- OIL SHOW
- GAS SHOW
- BRINE WELL
- WATER WELL
- ABANDONED WELL

(WELLS NOT USED IN CONTOURING (EVIDENCE INDICATES MOST OF THESE WELLS FOUND FIRST WATER IN UPPER MONROE BEDS))

M - MONROE WATER

B.W. - BLACK WATER

ISOPACH CONTOUR INTERVAL
10 FEET

BY R.B. NEWCOMBE
MAY 1932

N

MICH. DEP'T. CONSERVATION
GEOLOGICAL SURVEY DIVISION

MAP OF AREAL GEOLOGY OF MICHIGAN

SOUTHERN PENINSULA

BY
R.B. NEWCOMBE
1932

STATE OF MICHIGAN
DEPARTMENT OF CONSERVATION
GEORGE R. HOGARTH, DIRECTOR

GEOLOGICAL SURVEY DIVISION
R.A. SMITH, STATE GEOLOGIST

— SCALE —
MILES
0 10 20

EXPLANATION

SEDIMENTARY ROCKS

PENNSYLVANIAN — PERMO-CARBONIFEROUS (?)
- RED BEDS (WOODVILLE ?)
- SAGINAW FORMATION

MISSISSIPPIAN
- GRAND RAPIDS SERIES
- MARSHALL FORMATION
- COLDWATER — SUNBURY — BEREA FORMATIONS

DEVONIAN
- BEDFORD AND ANTRIM FORMATIONS
- TRAVERSE FORMATION
- DUNDEE FORMATION
- DETROIT RIVER FORMATION
- SYLVANIA SANDSTONE

SILURIAN
- BASS ISLAND FORMATION
- MONROE — SALINA (UNDIVIDED)

FAULT
CONTACT APPROXIMATE
CONTACT INDEFINITE

EMMET
CHEBOYGAN
PRESQUE ISLE
CHARLEVOIX
OTSEGO
MONTMORENCY
ALPENA
ANTRIM
LEELANAU
GRAND TRAVERSE
BENZIE
KALKASKA
CRAWFORD
OSCODA
ALCONA
OGEMAW
IOSCO
ROSCOMMON
MANISTEE
WEXFORD
MISSAUKEE
LAKE
OSCEOLA
CLARE
GLADWIN
MASON
ARENAC
HURON
BAY
GENESEE
SAGINAW
MIDLAND
ISABELLA
PETOSKEY
TRAVERSE CITY
MANISTEE
LUDINGTON
CADILLAC
WEST BRANCH
ALPENA

86° 85° 84° 83°
45° 44°

MASON LAKE OSCEOLA CLARE HURON

LUDINGTON

BAY

OCEANA MECOSTA ISABELLA MIDLAND

MT PLEASANT

BAY CITY

NEWAYGO TUSCOLA SANILAC

SAGINAW

SAGINAW

MONTCALM GRATIOT

MUSKEGON

MUSKEGON

GENESEE LAPEER ST CLAIR

FLINT

PORT HURON

43°

KENT

GRAND RAPIDS

OTTAWA IONIA CLINTON SHIAWASSEE

LANSING

MACOMB

OAKLAND

PONTIAC

ALLEGAN BARRY EATON INGHAM LIVINGSTON

DETROIT

KALAMAZOO

BATTLE CREEK

JACKSON

ANN ARBOR

VAN BUREN KALAMAZOO CALHOUN JACKSON WASHTENAW WAYNE

BENTON HARBOR

42°

BERRIEN CASS ST JOSEPH BRANCH HILLSDALE LENAWEE MONROE

86° 85° 84° 83°

MICH. DEPT. CONSERVATION
GEOLOGICAL SURVEY DIVISION

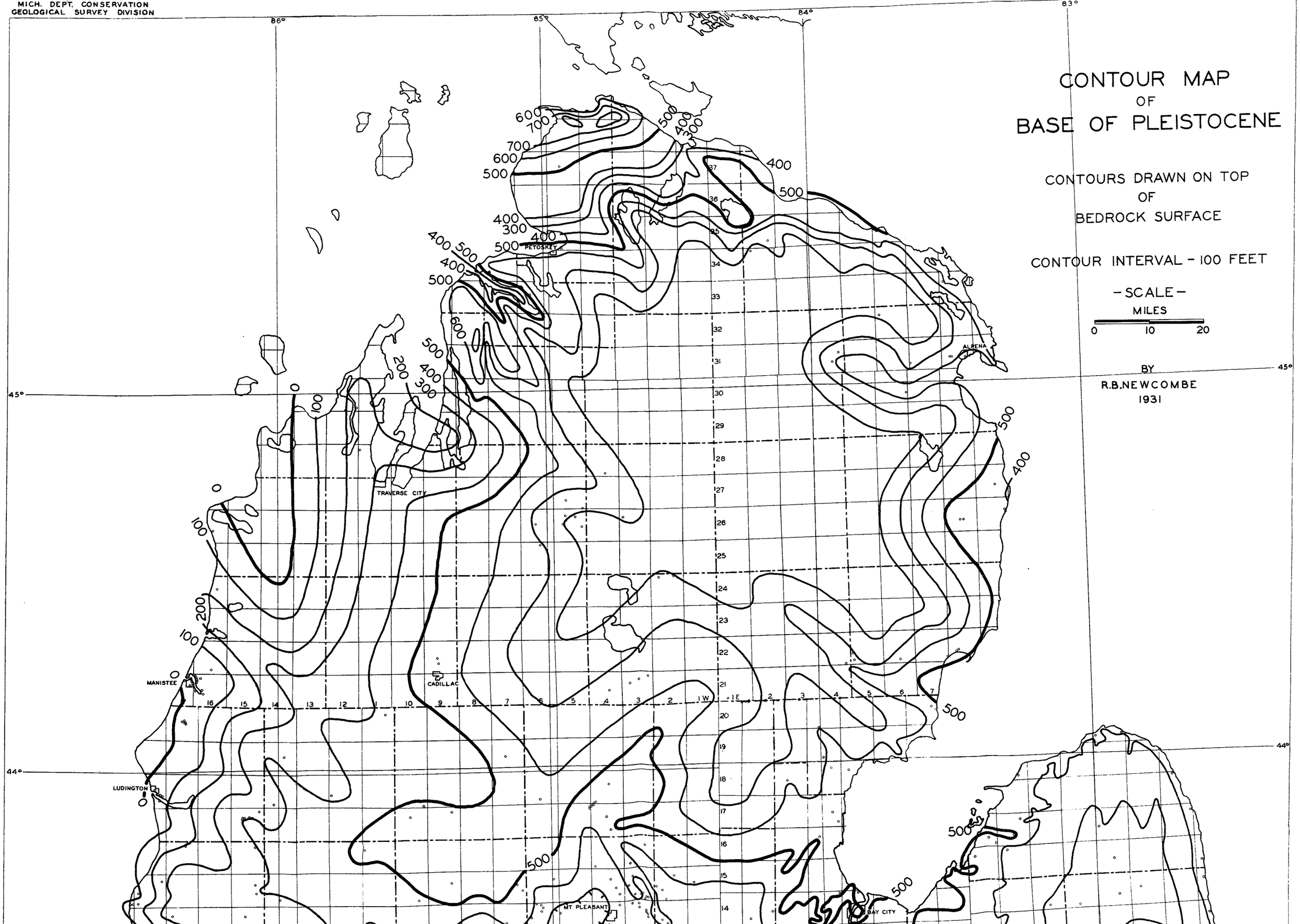
CONTOUR MAP
OF
BASE OF PLEISTOCENE

CONTOURS DRAWN ON TOP
OF
BEDROCK SURFACE

CONTOUR INTERVAL - 100 FEET

- SCALE -
MILES
0 10 20

BY
R.B.NEWCOMBE
1931



LUDINGTON
MUSKEGON
GRAND RAPIDS
MT PLEASANT
BAY CITY
SAGINAW
FLINT
PORT HURON
LANSING
PONTIAC
DETROIT
ANN ARBOR
JACKSON
KALAMAZOO
BATTLE CREEK
BENTON HARBOR
43°
42°
86°
85°
84°
83°

MICH. DEPT. CONSERVATION
GEOLOGICAL SURVEY DIVISION

SUBSURFACE STRUCTURAL CONTOUR MAP OF MICHIGAN

CONTOURS DRAWN ON TOP OF TRAVERSE FORMATION

CONTOUR INTERVAL — 100 FEET

- SCALE -

MILES

0 10 20

BY
R.B. NEWCOMBE
1933

EXPLANATION

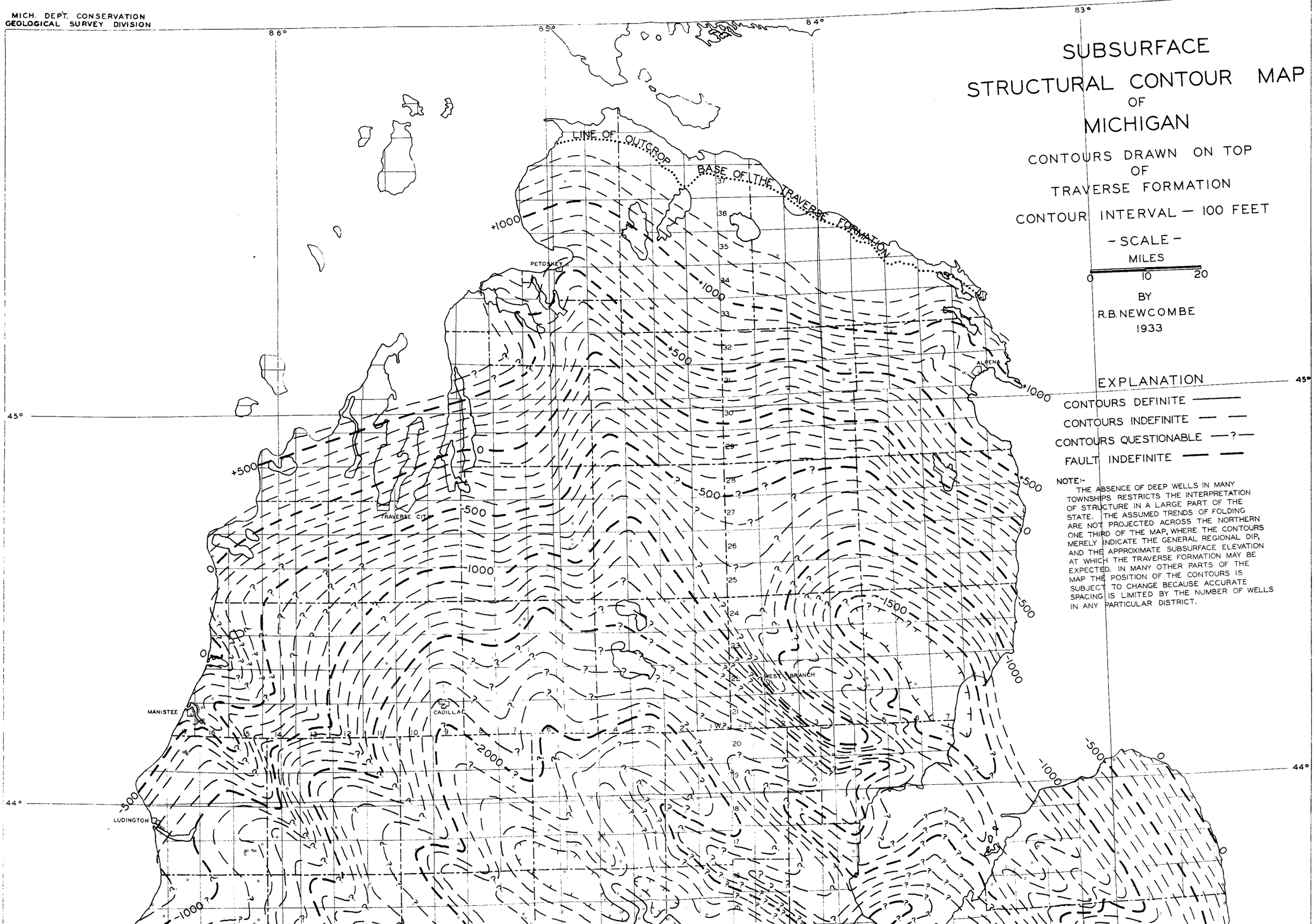
CONTOURS DEFINITE ———

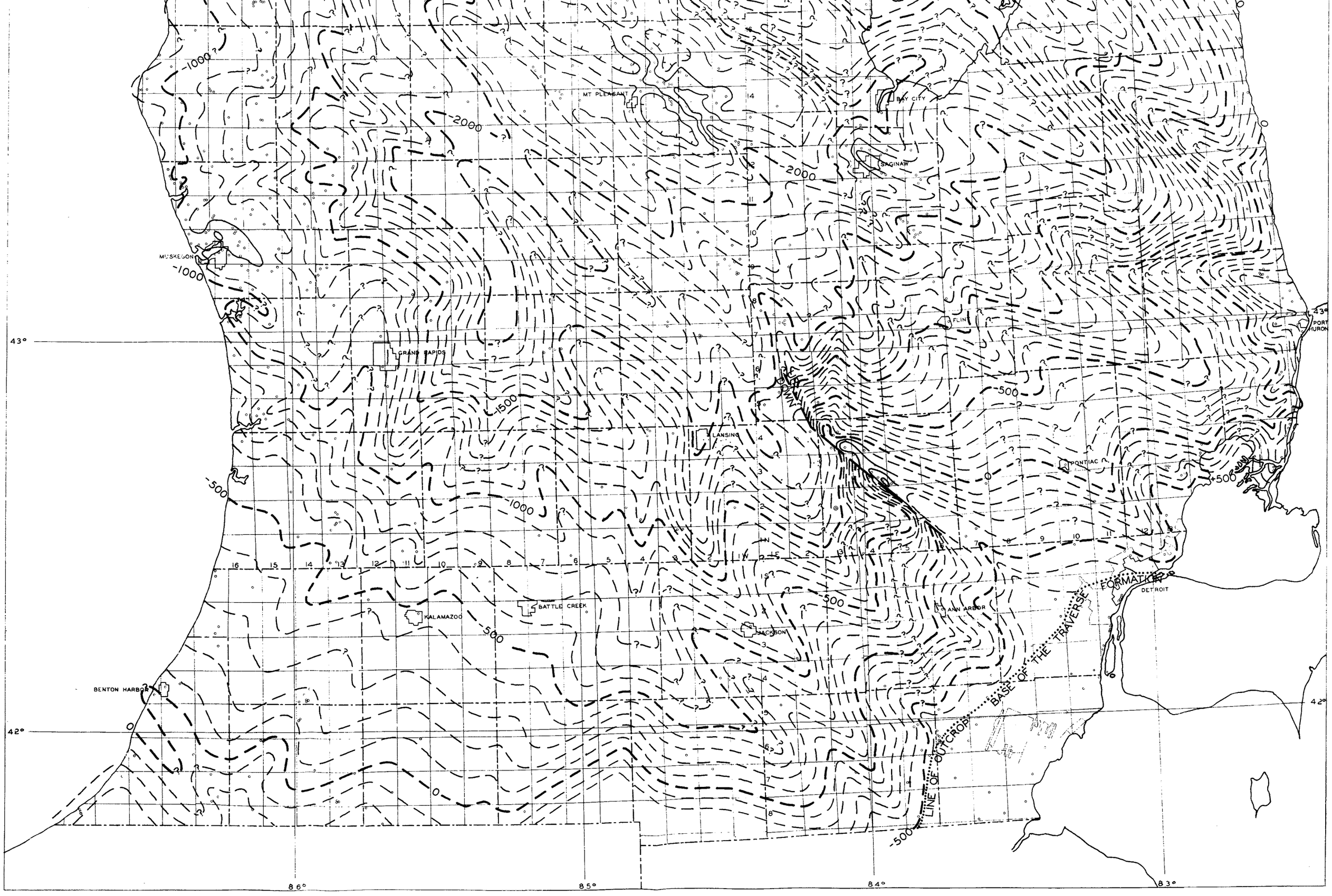
CONTOURS INDEFINITE — —

CONTOURS QUESTIONABLE —?—

FAULT INDEFINITE ——— ———

NOTE:-
THE ABSENCE OF DEEP WELLS IN MANY TOWNSHIPS RESTRICTS THE INTERPRETATION OF STRUCTURE IN A LARGE PART OF THE STATE. THE ASSUMED TRENDS OF FOLDING ARE NOT PROJECTED ACROSS THE NORTHERN ONE THIRD OF THE MAP, WHERE THE CONTOURS MERELY INDICATE THE GENERAL REGIONAL DIP, AND THE APPROXIMATE SUBSURFACE ELEVATION AT WHICH THE TRAVERSE FORMATION MAY BE EXPECTED. IN MANY OTHER PARTS OF THE MAP THE POSITION OF THE CONTOURS IS SUBJECT TO CHANGE BECAUSE ACCURATE SPACING IS LIMITED BY THE NUMBER OF WELLS IN ANY PARTICULAR DISTRICT.





MT PLEASANT
BAY CITY
SAGINAW
MUSKEGON
GRAND RAPIDS
FLINT
PORT HURON
LANSING
PONTIAC
DETROIT
ANN ARBOR
JACKSON
BATTLE CREEK
KALAMAZOO
BENTON HARBOR
LINE OF OUTCROP BASE OF THE TRAVERSE FORMATION
-1000
-2000
-1500
-500
0
+500
43°
42°
86°
85°
84°
83°