

TYPICAL ROCKS AND MINERALS OF MICHIGAN

Prepared by the Michigan State Civilian Conservation Corps under the direction of the Geological Survey Division of the Department of Conservation

1936

This set of minerals and rocks is intended to supply teachers of high school and lower grades with illustrative material to be used as an aid in teaching science, natural history, geography and other subjects which treat of the earth. It has been prepared for the purpose of acquainting the student with the more common types of minerals and rocks found in Michigan.

In such a set it is not only impossible but likewise impracticable to include samples of all varieties of minerals and types of rock found in the State. An attempt has been made, however, to include specimens similar to those which might be found either in ledge rock, as field stones, or in gravel pits, throughout various sections of Michigan. Included in the set are representatives of most of the minerals and rocks which are mined or quarried in the State for commercial uses.

Residents in the western half of the Northern Peninsula are particularly fortunate in having available for field study an abundance of rock outcrops in which a great variety of minerals may be found. In the eastern half of the Northern Peninsula and throughout the Southern Peninsula, outcrops are more widely separated. The bed rock in these areas is largely obscured under a blanket of "glacial drift." Except in local areas, the student living in Southern Michigan does not have much opportunity to study rock formations. However, a gravel pit or boulder strewn field is accessible to practically everyone. Many of the pebbles and boulders represent types of rock very similar to those found outcropping in various parts of the State, and supply excellent material for study. It is suggested that the samples contained in the tray may be found convenient for comparative study in determining specimens which may be collected in the field. In this way a general knowledge of the common types of rocks may be obtained.

Acknowledgements are due several persons and firms for valuable assistance in the assembly of the material for the sample sets.

Dr. R. A. Smith, State Geologist, suggested the preparation of the sets as a project for submission to the Michigan Civilian Conservation Corps. Professor S. G. Bergquist, head of the Department of Geology and Geography at Michigan State College, made valuable suggestions concerning the minerals and rocks to be assembled. Professor W. A. Seaman, of the Michigan College of Mining and Technology, gave indispensable aid in the collection of minerals and rocks from the iron and copper mining districts. Selection and assembly of the bulk material was in charge of O. F. Poindexter, Economic Geologist of the Michigan Geological Survey.

The samples were prepared at Michigan State CCC Camp Houghton Lake, about fifteen miles north of Harrison, Michigan. Sam Cline, Project Superintendent, was in general charge of the project, while Norman W. Billings, Senior Engineering Aide, was in direct charge of the CCC crew assigned to the project.

Allerd W. Bergquist, Junior Geologist for Michigan State CCC assisted in assembly of the bulk material and supervised technical phases of the project. Plans for the exhibiting cases were prepared by H. Underbill, of the Michigan Geological Survey. The cases were constructed by war veterans at CCC Camp Presque Isle, near Atlanta, Michigan.

In most instances, material for making the samples was obtained from road cuts, abandoned quarries or mine dumps. In some cases, however, it was necessary to obtain material from active mines or quarries. Cheerful cooperation was encountered in every instance and several firms secured and placed selected material at our disposal.

Following is a list of active mines and quarries which supplied material:

Place	Company	Material obtained
Rogers City	Michigan Limestone and Chemical Company	Limestone
Petoskey	Petoskey Portland Cement Company	Limestone, shale
Grand Rapids	Grand Rapids Plaster Company	Gypsum
Alabaster	United States Gypsum Company	Gypsum
Rockwood	Michigan Silica Company	Glass sand
Detroit	Detroit Rock Salt Co. (Division of International Salt)	Rock salt
Ramsey	Castile Mining Company	Iron ore
Mancelona	Antrim Iron Company	Iron ore
Negaunee	Republic Steel Corporation	Iron ore
Ahmeek	Calumet & Hecla Consolidated Copper Company	Copper ore

GEOLOGICAL SURVEY DIVISION
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KEY TO COMMON MICHIGAN ROCKS AND MINERALS

Igneous Rocks

Name of rock or mineral	Locality	County
1. Granite	Foster City	Dickinson
2. Granite	Felch	Dickinson
3. Porphyritic Granite	Republic	Marquette
4. Pegmatite	Foster City	Dickinson
5. Syenite	Marquette	Marquette
6. Diabase	Marquette	Marquette
7. Gabbro	Negaunee	Marquette
8. Basalt	Negaunee	Marquette

Sedimentary Rocks

9. Sandstone (Marquette Brownstone)	Marquette	Marquette
10. Sandstone (Portage Redstone)	Jacobsville	Houghton
11. Sandstone (Marshall Sandstone)	Grindstone City	Huron
12. Sandstone (Ionia Sandstone)	Ionia	Ionia
13. Sandstone (Sylvania Glass sand)	Rockwood	Wayne
14. Shale (Antrim shale) with pyrite	Paxton	Alpena
15. Shale (Ellsworth shale)	Ellsworth	Antrim
16. Limestone (Trenton limestone)	Trenary	Alger
17. Limestone (Fiborn limestone)	Fiborn quarry	Mackinac
18. Dolomite (Engadine Dolomite)	Engadine	Mackinac
19. Limestone (Dundee limestone)	Rogers City	Presque Isle
20. Limestone (Traverse limestone)	Petoskey	Emmet

Metamorphic Rocks

21. Gneiss	Randville	Dickinson
22. Quartzite	Negaunee	Marquette
23. Slate	Arvon	Baraga
24. Mica Schist	Republic	Marquette
25. Chlorite schist containing garnet and martite crystals	Michigamme	Marquette
26. Talc Schist	Ishpeming	Marquette
27. Amphibolite	Republic	Marquette
28. Verde Antique Marble	Ishpeming	Marquette
29. Marble with Tremolite	Randville	Dickinson
30. Jaspilite	Ishpeming	Marquette

Name or rock or mineral	Locality	County
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Ores and Minerals Associated with Igneous and Metamorphic Rocks

31. Iron ore (hematite)	Ramsey	Gogebic
	Ishpeming-Negaunee	Marquette
32. Specular hematite	Champion	Marquette
33. Magnetite	Michigamme	Marquette
34. Copper in amygdaloid	Ahmeek	Keweenaw
35. Copper in conglomerate	Calumet	Houghton
36. Epidote (Epidosite)	Houghton	Houghton
37. Vein quartz (gold bearing)	Ishpeming	Marquette

Minerals Associated with Sedimentary Rocks

38. Rock salt (common mine run variety)	Detroit	Wayne
39. Rock salt (cleavable mass found in pockets in 38)	Detroit	Wayne
40. Gypsum	Grand Rapids	Kent
41. Gypsum	Alabaster	Iosco
42. Bituminous Coal	St. Charles	Saginaw
43. Chert		Arenac
44. Fossil coral (Prismatophyllum)	Petoskey	Emmet

Materials found in Glacial Drift

45. Marl		Kalkaska
46. Bog iron and manganese ore	Manistique	Schoolcraft
47. Peat		Kalkaska
48. Weathered gneiss with "gold colored" Mica	Lansing (gravel pit)	Ingham