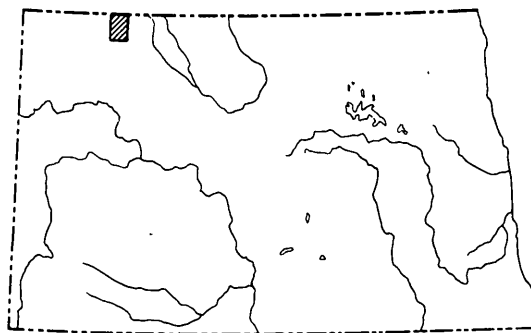


DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
W. E. WRATHER, DIRECTOR

GEOLOGIC
QUADRANGLE MAPS
OF THE
UNITED STATES
GEOLOGY
OF THE
PORTAL QUADRANGLE
NORTH DAKOTA
By
R. C. Townsend



INDEX MAP OF NORTH DAKOTA

PUBLISHED BY THE U. S. GEOLOGICAL SURVEY
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The present series of Geologic Quadrangle Maps of the United States continues the project of geologically mapping the entire country, begun with the folios of the Geologic Atlas of the United States, which were published from 1894 to 1945. The new series consists of geologic maps, supplemented where possible by structure sections, columnar sections, and other graphic means of presenting geologic data and accompanied by the minimum of explanatory text required to make the maps useful for general scientific and economic purposes. Full description of the areas shown on these maps and interpretation of the geologic history are reserved for publication in other channels, such as the Bulletins and Professional Papers of the Geological Survey.

Where additional types of geologic maps are required, separate maps of the same areas, covering bedrock, surficial, engineering, and other phases of geology, may be published in the geologic quadrangle map series. Each edition is issued in two forms—flat for filing in large map cases and folded for convenience in filing and for use in the field.

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