


ILLINOIS STATE GEOLOGICAL SURVEY



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ILLINOIS STATE GEOLOGICAL SURVEY
Urbana, Illinois
John C. Frye, Chief

ILLINOIS
INDUSTRIAL MINERAL NOTES

Number 4, September 1, 1956

Prepared by the Industrial Minerals Division
J. E. Lamar, Head

New Publications

Since the last issue of Industrial Minerals Notes in March, two Survey publications have appeared which, among others, have interest to Illinois producers of industrial minerals.

Report of Investigations 195, "Preliminary Report on Portland Cement Materials in Illinois," includes a chart showing the succession of the various rock strata in Illinois, a generalized geologic map indicating the distribution of the bedrock formations, a concise discussion of the various Illinois limestone, dolomite, and shale formations, and typical chemical analyses. Thus, aside from its primary purpose, the report also affords an over-all picture of much of the geology of Illinois.

Educational Series 4, "A Guide for Beginning Fossil Hunters," contains drawings of many fossils found in Illinois rocks and describes in nontechnical language the character and life habits of the animals from which the fossils were formed. For those who have been curious about the fossils found in the deposits they are operating, this booklet will answer many questions.

A single copy of either report is available for only postage charges (4 cents for the fossil guide and 5 cents for the cement report) to residents and taxpayers of Illinois until October 1, 1956. Thereafter there will be a charge of 25 cents per copy for either report.

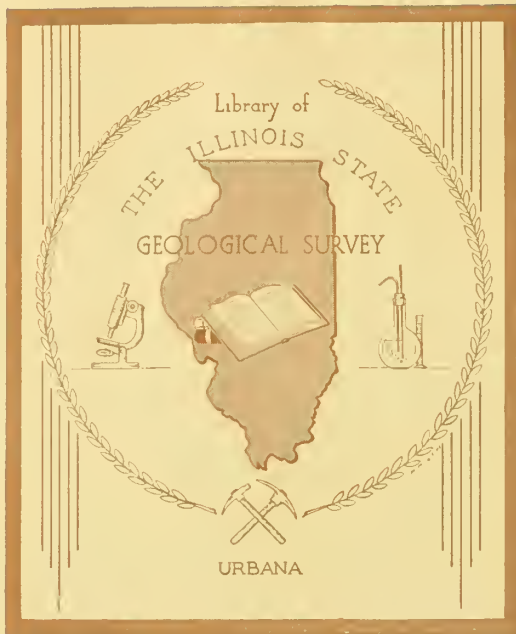
CAPSULE REPORT

SUBSURFACE DOLOMITE IN
LAKE, MCHENRY, AND PART OF NORTHWESTERN COOK COUNTIES
Meredith E. Ostrom

Lake, McHenry, and northwestern Cook counties contain no limestone or dolomite quarries except near Garden Prairie in ~~extreme north~~ northwestern McHenry County. Because the area comprised by these counties is adjacent to the Chicago metropolitan district and presumably might therefore be favorable for quarries, the Survey is often asked for information regarding limestone or dolomite outcrops in the area and for data on those areas where such rocks are at shallow depths. Therefore available data, chiefly the records of wells, were studied, and significant results follow.

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Outcrops

The only known outcrops in the area occur in the vicinity of Garden Prairie. An old geological report¹ records shallow occurrences of limestone in the NW $\frac{1}{4}$ sec. 1 and the NW $\frac{1}{4}$ sec. 31, T. 44 N., R. 7 E., in the NE $\frac{1}{4}$ sec. 36, T. 44 N., R. 10 E., in the NE cor. sec. 17, T. 44 N., R. 9 E., and in the SW part of sec. 21, T. 44 N., R. 6 E., but attempts to substantiate these reported outcrops have been unsuccessful. The well data for the specific areas involved suggest that outcrops of bedrock are unlikely.

Rock Formations

The bedrock of the Lake-McHenry-Cook County areas is overlain by unconsolidated deposits of clay, silt, sand, or gravel in varying amounts. These deposits are principally of glacial origin. Their thickness varies because both the surface of the bedrock and the ground surface are uneven.

The bedrock immediately underlying the unconsolidated deposits consists of dolomites of Niagaran and Alexandrian age, the Maquoketa shale, and the Galena-Platteville dolomite. Niagaran and Alexandrian rocks underlie all the area except small tracts in the southwestern and extreme northwestern part of McHenry County, where Maquoketa shale occurs, and a small area in extreme northwestern McHenry County where the bedrock is Galena dolomite. This distribution of formation results because the bedrock strata rise gently to the west as shown in figure 1.

The Niagaran dolomite and some of the Alexandrian dolomite formations are extensively quarried as sources of crushed or broken stone for a variety of commercial purposes in northeastern Illinois in the Chicago, Joliet, and Kankakee areas. The quarry at Garden Prairie is producing stone from Alexandrian dolomite. The Galena-Platteville dolomite is quarried commercially at many places in northern, central, and northwestern Illinois. The Maquoketa formation contains relatively thin limestone and/or dolomite beds but these have been used commercially only in a very small way.

The maximum thickness of Niagaran rocks penetrated in the area being considered is about 337 feet, the Alexandrian dolomites about 100 feet, the Maquoketa shale roughly 210 feet and the Galena-Platteville dolomite about 308 feet. The Maquoketa formation, although principally shale, contains one or more limestone or dolomite beds which reach a maximum thickness of about 50 feet but usually range between 10 and 20 feet thick.

Areas of Shallow Bedrock

Figures 2, 3, and 4 show the location of wells which encounter bedrock at depths of 0-50, 50-100, or 100-150 feet. The bedrock encountered is dolomite except in those wells indicated on the maps as entering the Maquoketa formation where the depth figure indicates the depth to the first limestone or dolomite found in the Maquoketa formation. Mostly the data regarding depths and the character of the bedrock encountered have been provided by the drillers of the wells; a few well records result from studies of samples collected during the drilling of the wells and subsequently studied by Survey geologists.

In Lake County (fig. 2), the shallowest bedrock occurs along and adjacent to DesPlaines River and Lake Michigan, with the shallowest areas north of Half

¹Banister, H. M., Geol. Survey of Ill., vol. 4, p. 131-132, 1870.

Day and at Waukegan. Mostly the bedrock is Niagaran dolomite. The maximum thickness penetrated was 337 feet.

One outcrop of dolomite occurs in the southwestern part of McHenry County in sec. 31, T. 44 N., R. 5 E. (fig. 3). The exposed rock is Alexandrian dolomite and has been quarried for some years. Eighteen to 61 feet of similar dolomite was penetrated by wells in the southwest part of the county at depths of less than 65 feet. In the northwest part of the county in the vicinity of Chemung several wells found 25 to 75 feet of stone, mostly Alexandrian dolomite, at a depth of less than 50 feet.

In neither of the two areas mentioned is the thickness of rock penetrated necessarily the total thickness of the dolomite present. Niagaran dolomite was encountered at depths from 61 to 78 feet in the vicinity of Algonquin in the southeast part of T. 43 N., R. 8 E. along Fox River. The depth to rock increases away from the river because of the greater thickness of glacial material in the river bluffs.

The shallowest bedrock in northwestern Cook County (fig. 4), occurs in the eastern part of the area. One well near DesPlaines encountered bedrock less than 50 feet below the surface. The bedrock is of Niagaran age and the greatest thickness penetrated is 275 feet but this is probably not the total thickness of the Niagaran dolomite.

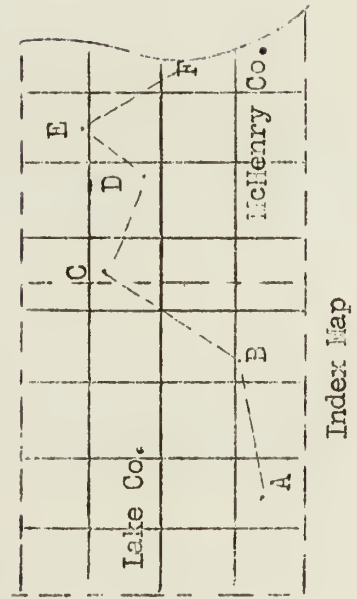
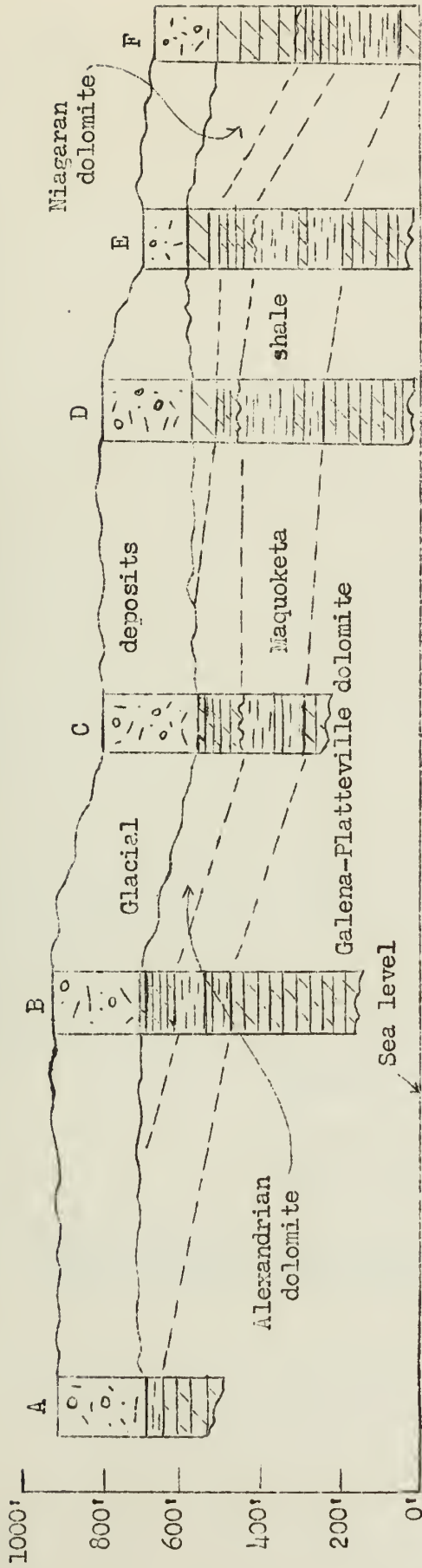


Fig. 1. - Diagrammatic cross section, Lake and McHenry counties.

LAKE CO.

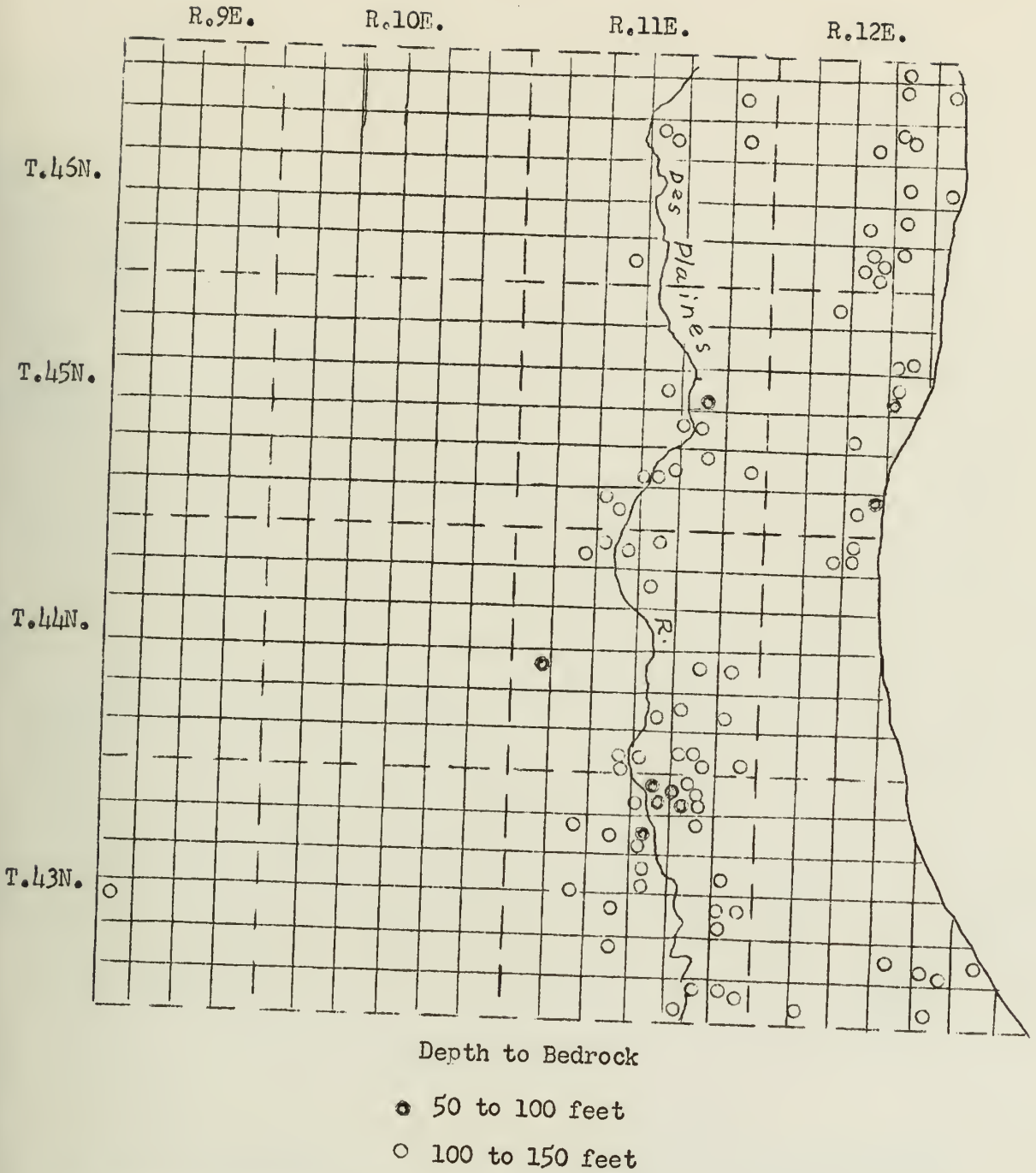


Fig. 2. - Wells in Lake County encountering limestone or dolomite bedrock at depths of 150 feet or less.

MCHENRY CO.

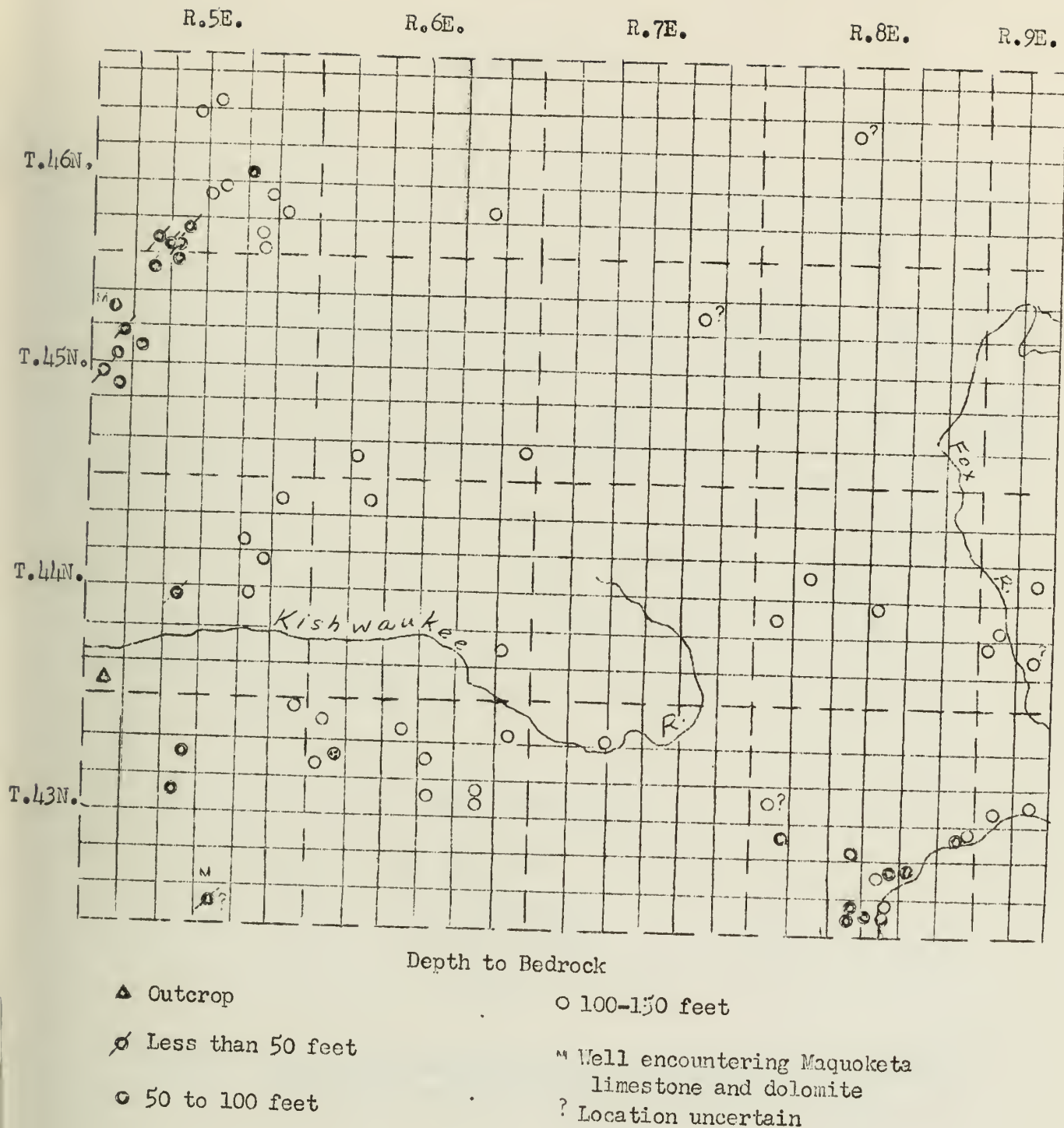
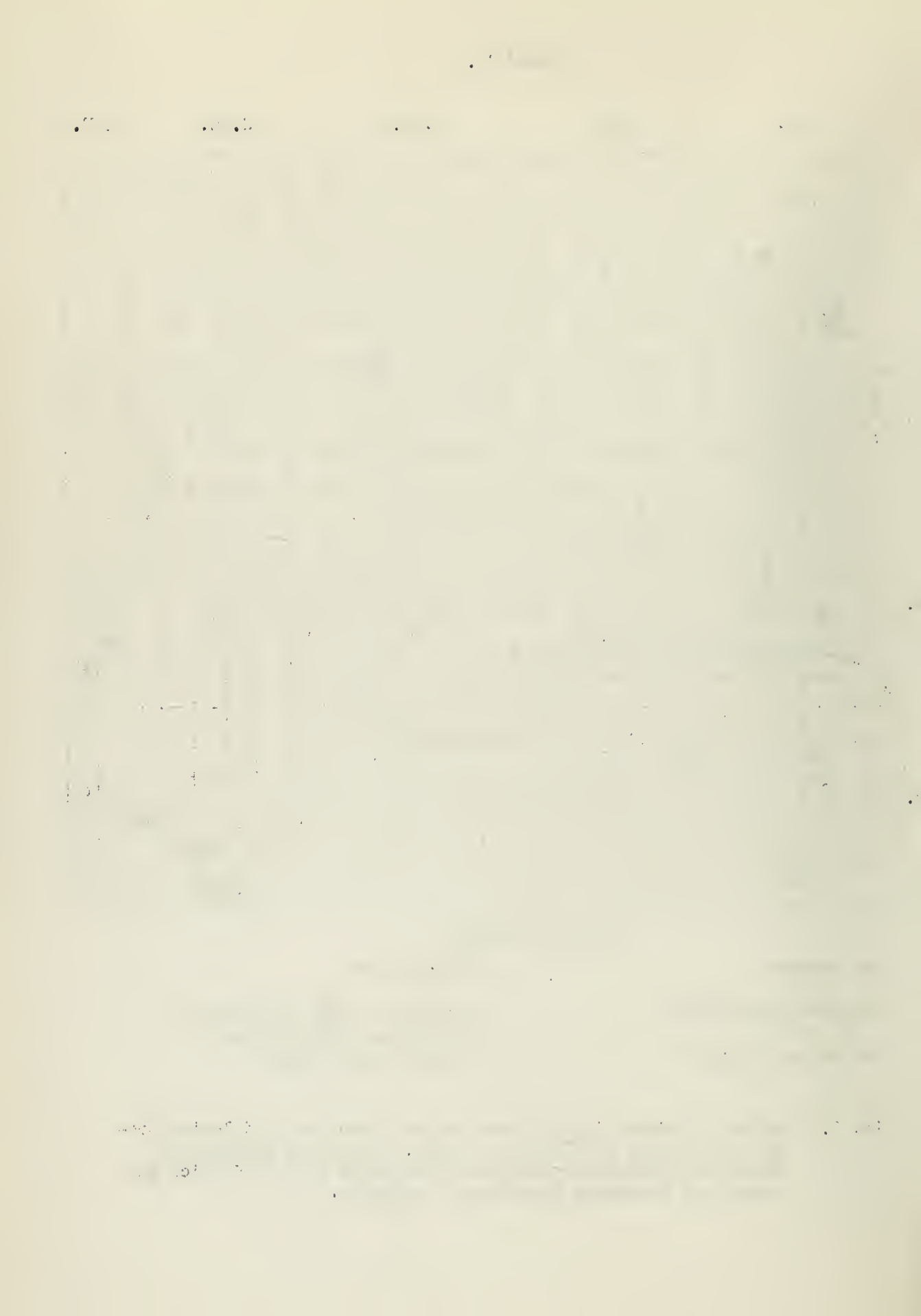
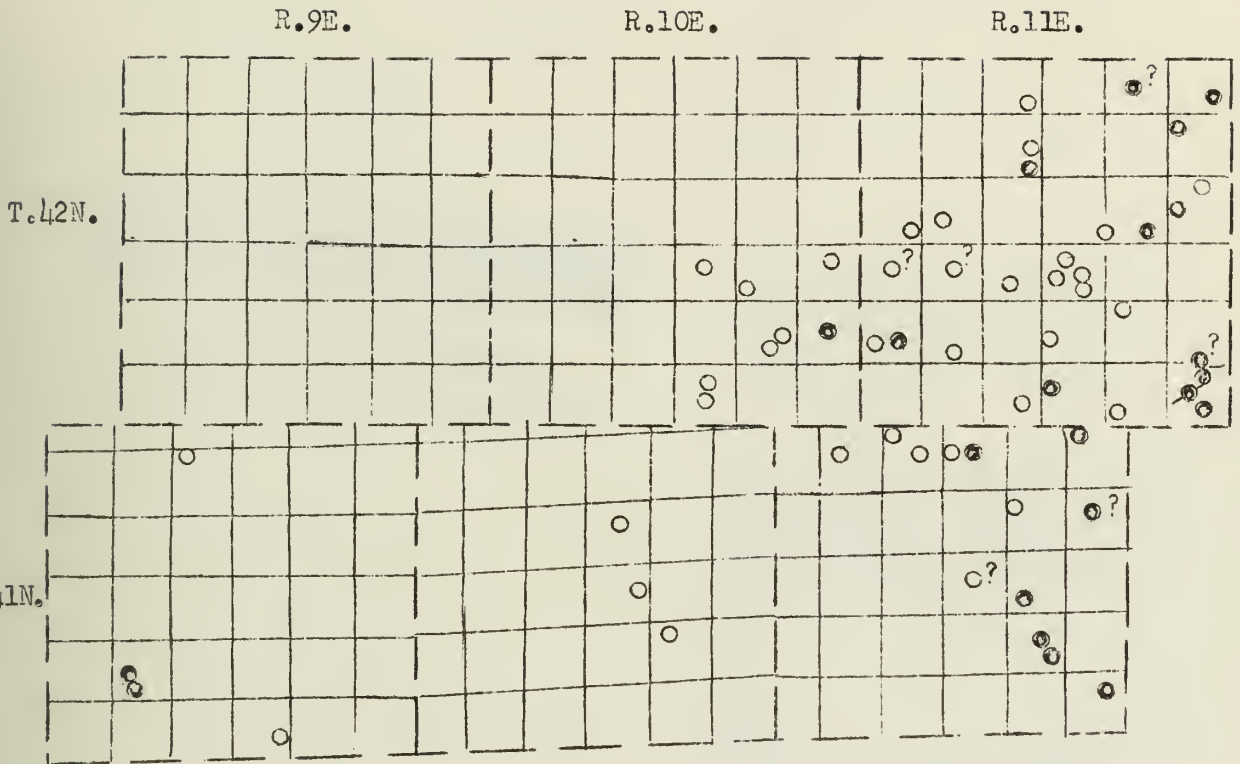


Fig. 3. - Wells in McHenry County encountering limestone or dolomite bedrock at depths of 150 feet or less. All wells encountered Silurian dolomite except those identified by an "M" which encountered Maquoketa limestone or dolomite.



NORTHWESTERN COOK CO.



Depth to Bedrock

- ⊙ 0-50 feet
- 50-100 feet
- 100-150 feet
- ? Location uncertain

Fig. 4. - Wells in northwestern Cook County encountering limestone or dolomite bedrock at depths of 150 feet or less.

