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THE OCCURRENCE OF BARITE IN THE LEAD AND ZINC DISTRICT OF IOWA, ILLINOIS AND WISCONSIN.

W. D. SHIPTON.

INTRODUCTION.

According to the reports of the Iowa, Illinois, and Wisconsin Geological Surveys natural crystals of barite are found rarely in the Lead and Zinc District of Iowa, Illinois, and Wisconsin. On account of the rarity of distinct crystals, considerable interest attaches to the finding of these crystals in this region at Hanover, Illinois. In the possession of Mr. T. D. Shipton of Hanover, are sixty or more well defined crystals of barite; it is to him that the writer is indebted for the material from which this paper was prepared.

OCCURRENCE.

Keyes refers to barite as commonly associated with the lead and zinc ores in the Dubuque region. He reports good crystallization of tabular form, and bluish tints as of not infrequent occurrence.¹ White refers to barite as having been found only in minute quantities in Iowa. It was detected in the lead caves of Dubuque.² Cox reports that no well defined crystals have been found in the lead and zinc district of Illinois, although barite has been found at all horizons from the bottom of the oil rock to the top of the Maquoketa shale.³ Henry W. Nichols, Assistant Curator of Geology in the Field Museum, Chicago, reports these crystals from Hanover as being the first that he had ever seen from the state of Illinois. According to Volume I, page 213, of the Wisconsin Geological Survey, barite or heavy-spar is found occasionally with calcite in the lead-bearing crevices; but only a small amount of this mineral has ever been found, and there are comparatively few places where it occurs at all. At one locality, near Scales Mound in Illinois, in a position where no lead has been found, and at the very summit of the Galena limestone, there is a thin bed of dolomite with numerous geodic cavities in which, in connection with pyrites and

¹Iowa Geological Survey, Volume I, page 194.

²Iowa, Geology of, Volume II, 1870, page 305.

³Illinois Geological Survey, Bulletin 21, page 33.

brown spar, well formed crystals of barite are found. They are small and few of them are as much as an inch in length. Grant has noticed that barite, where it occurs at all, appears in the main in the vicinity of the oil rock. It is not common, but in certain of the mines it is abundant.⁴ A. J. Williams of the Department of Geology of the University of Iowa reports having found one well defined crystal of barite in a quarry well within the southwest city limits of Dubuque. He also reports crystalline barite, which has been, much water worn, as having been found in the stream beds in the vicinity of Dubuque. The crystals upon which this paper is based, are found, perfectly developed, at or just below the contact of the Maquoketa shale and the upper thin bedded member of the Galena dolomite.

CHARACTERISTICS OF THE BARITE FROM HANOVER, ILLINOIS.

General Character.—The specimens of barite examined by the writer occur in three different forms. The first is the white massive form, which is embedded in a matrix of hard compact dolomite. It is opaque to transparent and shows good cleavage. The second form occurs as an aggregate of crystals. The third form is present in distinct crystals varying from seven-tenths of an inch to three inches in length along the c-axis. These crystals are in some cases found embedded in the limestone, and since this is harder than the barite the crystals of the latter are removed with difficulty. Or they are found in small pockets or cavities, from which they are readily removed. Upon examination of the crystals several striking features are noticed. First is their drusy appearance and paralld growth. In some specimens the entire crystal is studded with numerous fine crystals. In other specimens the drusy appearance is seen only on certain faces, and in such cases the macropinacoid faces usually are free from the minute crystals. The parallel growths are very common and are present in the form of tabular or platy crystals parallel to the macropinacoid face. These crystals are exceedingly thin and show domes and prisms. The prisms are usually very long and linear. Their edges have a crested or cocks-comb-like appearance, due to the projection of distinct crystals; in a few specimens this form of edge may make up the entire prism face. Another interesting feature of the crystals

⁴U. S. Geol. Survey Bulletin 294, Lead and Zinc Deposits of the Upper Mississippi Valley, page 52.

is their splendid play of colors. Many of the crystals are very iridescent and the light reflected from their surfaces is of many colors, due to the fine cleavage-lamellae, in the light reflected from which interference of the incident and reflected waves takes place.

Crystallography of the barite.—The general characteristics of the barite have been given. The faces represented on the crystals are as follows:

Pinacoids

 Macropinacoid

 Brachypinacoid

 Basal pinacoid

Prism

 Brachyprism

Domes

 Macrodomes

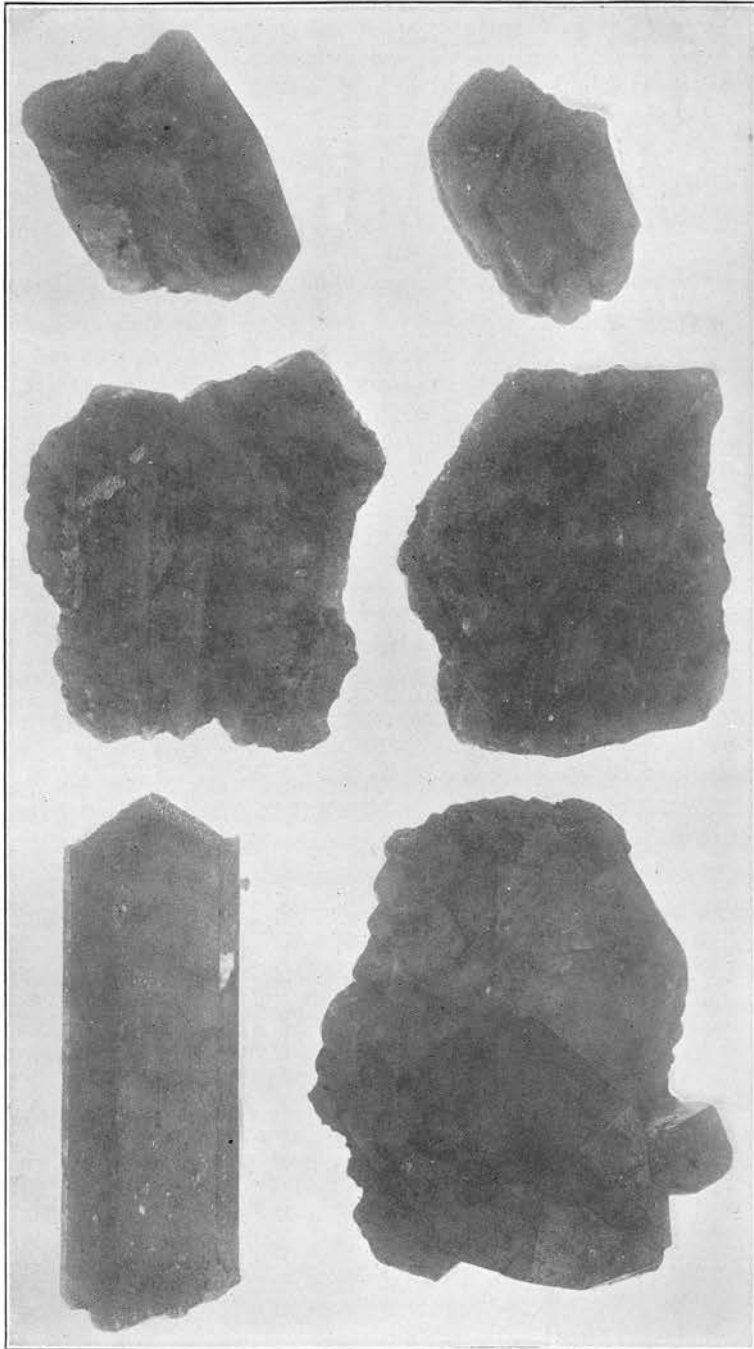
 Brachydomes

Pyramid

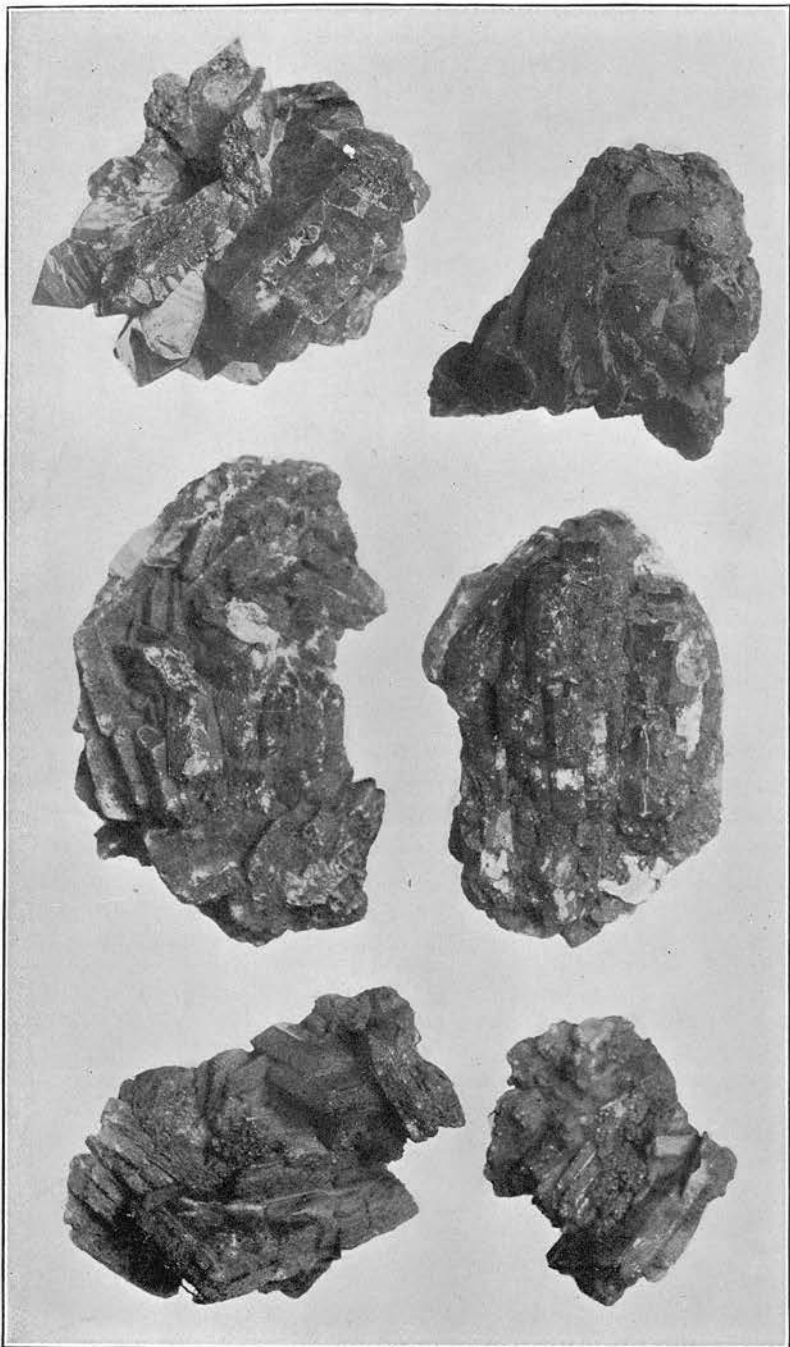
(not common)

These faces occur in several common combinations. The macropinacoid, brachydome, macrodome, and brachyprism forms are the most common combinations. Another form consists of the macropinacoid, brachypinacoid, brachyprism, macrodome, and brachydome. The macropinacoid, brachyprism, and macrodome forms also occur. Other more uncommon forms are present. The habit of the crystals is very variable. There seems to be no relation between the size of the faces and the size of the crystals.

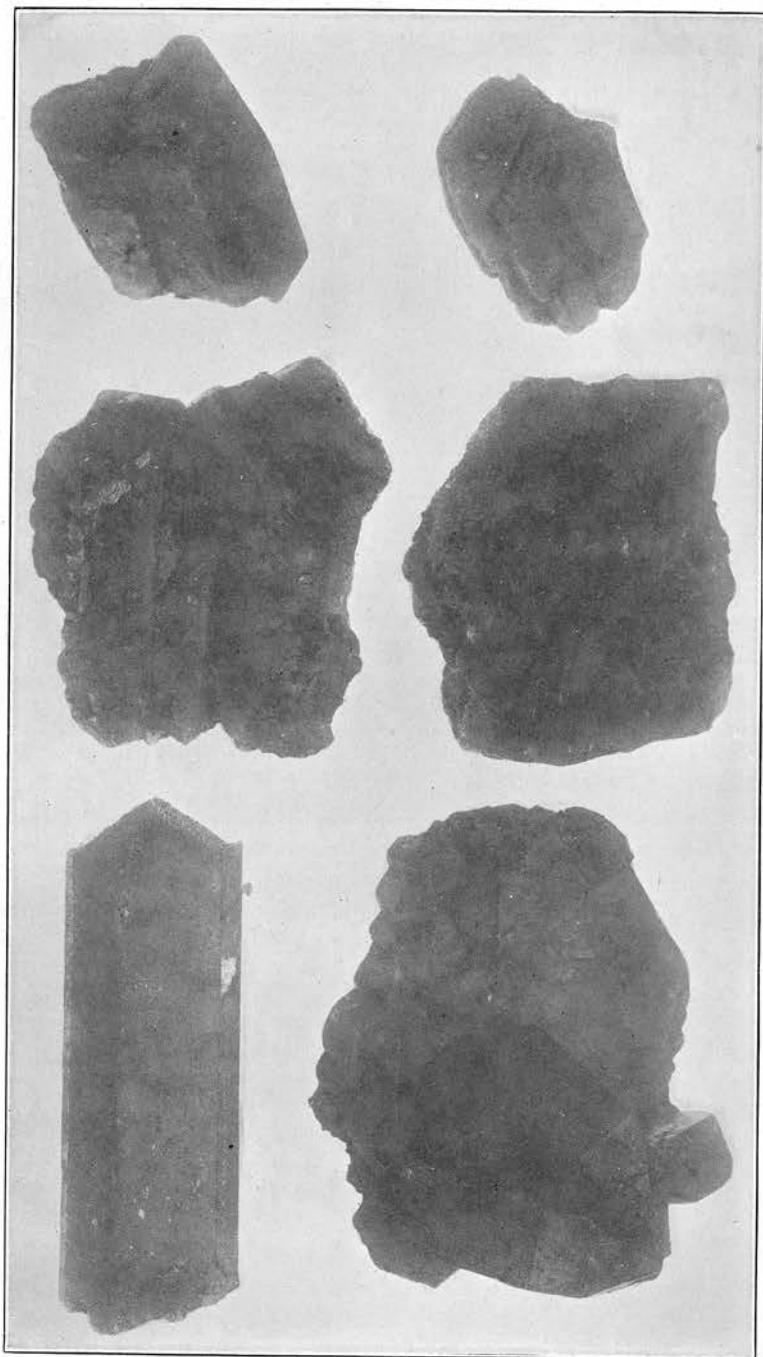
GEOLOGICAL LABORATORY,
UNIVERSITY OF IOWA.



Crystals of barite from Hanover, Illinois.

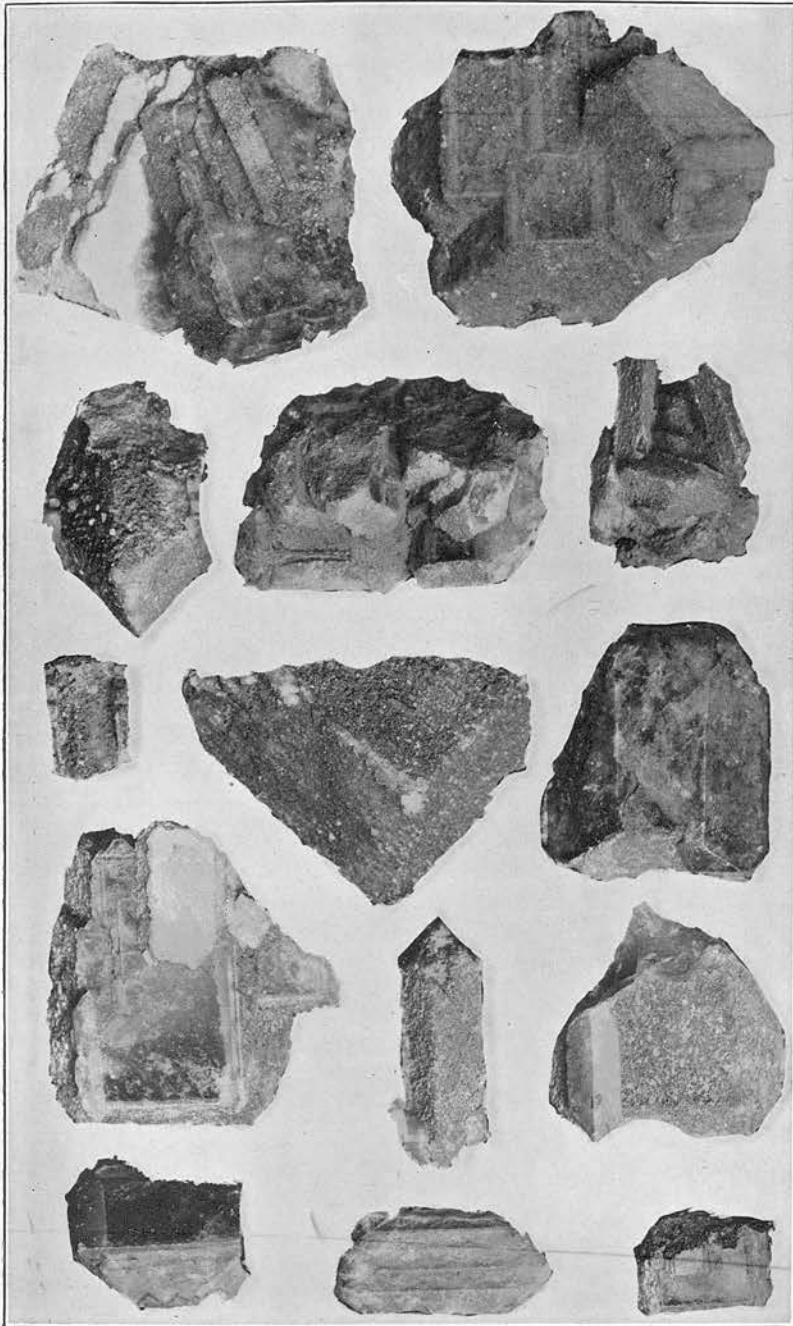


Crystals of barite from Hanover, Illinois.



Crystals of barite from Hanover, Illinois.

PLATE XXX.



Crystals of barite from Hanover, Illinois.