

University of Kentucky
College of Arts and Sciences

KENTUCKY GEOLOGICAL SURVEY
Lexington

In Cooperation With
AGRICULTURAL AND INDUSTRIAL
DEVELOPMENT BOARD OF KENTUCKY
Frankfort

SERIES IX

BULLETIN — NO. 12

Regional Subsurface Stratigraphy of the
Cambrian and Ordovician in
Kentucky and Vicinity

By
Louise B. Freeman



Printed by the Authority of the State of Kentucky

LEXINGTON, KENTUCKY

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Reprinted 1960, 1969

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KENTUCKY GEOLOGICAL SURVEY

ARTHUR C. McFARLAN, Director
DANIEL J. JONES, State Geologist

THE AGRICULTURAL AND INDUSTRIAL
DEVELOPMENT BOARD OF KENTUCKY

GEORGE W. HUBLEY, JR., Executive Director
PHIL M. MILES, Chief, Maps and Minerals Division

LETTER OF TRANSMITTAL

March 12, 1953

Dean M. M. White
College of Arts and Sciences
University of Kentucky

Dear Dean White:

The Kentucky Geological Survey, in cooperation with the Agricultural and Industrial Development Board, is issuing Bulletin No. 12, by Louise Barton Freeman. It deals with Ordovician and Cambrian formations which have been penetrated by the drill in Kentucky and which offer possibilities of deeper lying commercial oil and gas.

It is a detailed regional interpretation of stratigraphy and the relationship of known production to it. It is a sample study of the subsurface and is accompanied by a large reference file of sample logs used by the author in this study. Many of the sample sets are incomplete but they are all there are. Some of the author's views on stratigraphic classification are not in harmony with accepted usage but are printed as given.

It is a valuable reference for the oil and gas operator searching for the deeper pays and there is much activity in this effort.

Respectfully submitted,

Arthur C. McFarlan, Director
Kentucky Geological Survey

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PART I

INTRODUCTION

Some time ago a short paper was published on the regional aspects of the Cambrian and Ordovician subsurface stratigraphy in Kentucky (Freeman, 1949a, pp. 1655-1681; 1949b, pp. 118-165). This was done as a direct answer to the papers in the Appalachian Basin Ordovician Symposium (1948, pp. 1395-1657) in which it was apparent that many geologists working in the Appalachian area regarded the Cincinnati arch as the western boundary of the Appalachian Basin of deposition and as a source of sediments during a part of that time. Subsurface studies in Kentucky and Tennessee indicated that the Cincinnati arch as such had less effect than did the Ozark uplift on sedimentation and preservation of sediments in the Central Interior Basin during the Cambrian and Ordovician. A more accurate picture may be formed of the sedimentary problems of these older formations if this whole area is considered a continuous basin of deposition locally affected by positive promontories from the main land mass, such as the Ozark, Llano, Wisconsin, and Blue Ridge uplifts. It seemed important then to point out as quickly as possible this fact so that the eastern geologists could use that information to aid in the interpretation they were making of Appalachian formations, since it thus became necessary to find a source for clastics other than the Cincinnati arch.

This paper presented all the subsurface information available at that time. During the past three years very few wells have been drilled into these older strata in the Central Interior to add details to the picture, and the few additional data necessitate only minor changes in the original maps. The plan now is not only to bring this paper up to date with the additional information on Kentucky, but also to make a comparison of the Knox section in Kentucky with the Ellenburger where it is productive of much oil in west and north-central Texas, and with the Arbuckle of Oklahoma and Kansas (fig. 1). An attempt will be made to determine the reasons for production in these areas and to try to determine whether similar conditions might be expected in Kentucky. In pursuance of this aim the writer spent some time in Texas and Oklahoma examining samples and cores from wells and sampled sections of outcrop over the Llano uplift¹ and the Arbuckle Mountains², but principally talking with the geologists who have studied the Ellenburger and Arbuckle from both the stratigraphic and commercial points of view.

1. Surface sections collected and prepared by Virgil E. Barnes, Bureau of Economic Geology, Austin, Texas.

2. Surface sections collected and prepared by William E. Ham, Oklahoma Geological Survey, Norman, Oklahoma.

CORRELATION CHART

RECOMMENDED CLASSIFICATION	PRESENT CLASSIFICATION	CENTRAL TEXAS	SOUTHERN OKLAHOMA	MISSOURI	CENTRAL KENTUCKY	UPPER MISSISSIPPI VALLEY	VIRGINIA	CENTRAL PENNSYLVANIA	SOUTHWEST ADIRONDACKS
	U. ORDOVICIAN CINCINNATIAN		Sylvan Fernvale		Richmond Maysville Eden	Maquoketa	Juniata Martinsburg	Queenston Reedsville	Queenston Lorraine
MIDDLE ORDOVICIAN	TRENTON		Viola Bromide	"Thebes Maquoketa's" Kimmiswick	Cynthiana Lexington	Dubuque	Eggleson	Antes Gap Coburn Salona Nealmont	Holland-Potent (U. Utica) Cobourg Shoreham Kirkfield Rockland
LOWER ORDOVICIAN	MIDDLE ORDOVICIAN CHAZY-BLACK RIVER		Simpson Tulip Creek McLish Oil Creek Joins	Plattin Joachim St. Peter Everton	Tyrone Oregon Camp Nelson St. Peter (Wells Creek)	Decorah Platteville	Moccasin Witten Bowen Wardell Graham Benbolt Peery Ward Cove Thompson Valley Lincolnshire Five Oaks Rockford	Curtin Benner Hatter Lordsburg	Chaumont (Lowville Pamelia)
Unconformity									
UPPER CAMBRIAN	LOWER ORDOVICIAN BECKMANTOWN	Honeycut	West Spring Creek Kindblade	Powell Cotter Jefferson City Theodosia Rich Fountain Roubidoux	Cotter Jefferson City	Shakopee	Mascot Kingsport	Beliefonte Axeman	
		Gorman	Cool Creek	Gasconade Van Buren	Gasconade Van Buren	New Richmond	Longview	Nittany	
		Tanyard Stoendebach	McKenzie Hill	Eminence	Eminence	Oneota	Chepultepec	Stonehenge	Tribes Hill
		Wilberns San Saba (Pedernales)	Buttery (Signal Mt.) Royer	Potosi Elvins Derby Doe Run Davis	Potosi Elvins	Trempealeau	Copper Ridge	Mines Gatesburg	Little Falls Theresa
	UPPER CAMBRIAN CROIXIAN	Point Peak Morgan Creek Welge Riley Lion Mountain Cap Mountain Hickory	Fort Sill (Signal Mt.) Honey Creek Reagan	Bonneferre Lamotte	Bonneferre	Franconia Dresbach Eau Claire Mt. Simon Jacobsville?	Nalichucky	Warrior	Potsdam
		Pre - Cambrian				Pre - Cambrian			
	M. CAMBRIAN				"Spears Sand"		Maryville Rogersville Rutledge	Pleasant Hill (Elbrook)	
	LOWER CAMBRIAN						Rome	Rome (Waynesboro)	

References

— Region —

Texas
Oklahoma

Jefferson City in
Missouri
Appalachians

— Authority —

Cloud, P. E., Jr., Barnes, V. E.
Ham, W. E.; Dott, R. H.;
Decker, C. E.
Cullison, J. S.

Swartz, F. M.; Fettke, C. R.; Prouty, C. E.

FIGURE 1

ACKNOWLEDGEMENTS

Much of the original work on the Cambro-Ordovician was done while the writer was working on a special project for the California Company, under whose sponsorship she was able to spend much time with the Missouri and Tennessee geological surveys. The personnel of these organizations were very cooperative in making the samples from the wells of their respective states available. Samples have been borrowed from many companies operating in the surrounding states, and the aid of these organizations is greatly appreciated.

This further study of the Knox problem with relation to oil accumulation was sponsored by the Kentucky Geological Survey, the staff of which has been very cooperative in helping to prepare the material for publication. Dr. A. C. McFarlan, Director of the Survey, has spent considerable time in reading the manuscript, discussing the problems involved, and making helpful comments, and the writer is appreciative of this help.

The geologists to whom the writer talked were extremely cooperative and interested in the problems. Much time was spent at Austin, Texas, in examining samples in the Well Sample Library and in discussing problems of correlation and general geological philosophy with Virgil E. Barnes of the Texas Bureau of Economic Geology. He has studied the Ellenburger over the Llano uplift and, with Cloud, has made a masterful contribution in the report on the Ellenburger of Texas. The writer spent some time in Oklahoma examining surface sections made by William E. Ham of the Oklahoma Geological Survey and discussing with him problems of the Arbuckle. He has in manuscript a very important contribution on the Arbuckle of Oklahoma and was generous in permitting the writer to examine it and discuss it with him.

Others who generously gave time for discussion were John Emery Adams of the Standard Oil Company of Texas at Midland, Samuel P. Ellison, Jr., of the University of Texas, Leo Hendricks of Southern Methodist University at Dallas, E. W. Vanderpool of the Residue Research Lab at Midland, and Ralph E. Taylor of the Humble Oil Company in Houston.

NOTES ON STRATIGRAPHY IN THE TEXAS-OKLAHOMA AREA

From Cloud and Barnes (1946, pp. 30-42) and Bridge, Barnes, and Cloud (1947, pp. 109-124) the section through their Cambrian and the Ellenburger can be summarized as follows:

ELLENBURGER

Honeycut

Thickness 0 to 678 feet; irregular thickness due to post-Ellenburger erosion.

Similar lithologically to Gorman below. Limestones more thinly bedded and more intimately interbedded with dolomite. Microgranular to very fine grained dolomites of Honeycut, pale-colored, light-gray to yellowish-gray, pale-beige, flax and old ivory, as contrasted to the more vivid shades of rose and beige characterizing the Gorman. Chert as cannonballs and siliceous limestone typical of Honeycut but uncommon below. Sand locally common in basal 50 feet. Ceratopea zone.

Gorman

Thickness 430 to 500 feet. Except in northwestern corner of the uplift the lowest microgranular dolomite in significant quantities in outcropping Ellenburger rocks is at base of Gorman and occurs intermittently to top of Ellenburger. In eastern part microgranular to very fine grained dolomites are varicolored in yellowish, pinkish, and brownish tones such as beige, yellow beige, rose beige, rose, cinnamon pink, tan, old ivory and nutria, but in southwest less vivid tones predominate. Gorman is predominantly dolomitic below zone of *Archaeoscyphia* and calcitic above, but measurements show dolomitic facies range from 80 to 240 feet thick. Calcitic facies principally sublithographic, thickly to thinly bedded limestone with locally interbedded microgranular to fine-grained dolomite. Limestone is mostly pearly gray to woodash gray, grading to old ivory and brownish-gray and locally with mottles of pinkish or yellowish tones such as cinnamon pink or beige. Top of Gorman is unusually pure and thickly bedded limestone for 40 to 60 feet. Chert in lower part is layered, porcelaneous, white to woodash gray with scattered dolomolds¹ and quartzose matter, irregularly interlayered with quartz druse. More arenaceous than any other part of Ellenburger, but still one must search for sand grains.

Tanyard

Thickness 520 to 660 feet; thinnest toward the west. Predominantly fine- to coarse-grained, commonly vuggy to porous, light yellowish-gray to woodash gray and pearl gray, irregularly bedded dolomites and sublithographic, pearl gray to woodash gray and old ivory, thickly to thinly bedded limestones. Both essentially nonglauconitic. Only traces of sand.

Staendebach member; thickness 229 feet in west to 456 feet in east. Usually upper one- to two-thirds of this member is limestone in northeastern part of Llano region, but in southeast and west dolomite predominates and limestone is rare or absent. Contains abundance of sparingly dolomoldic, porcelaneous to semiporcelaneous, and chalcadonic to semichalcadonic chert; some chert is oolitic to crypto-oolitic and pseudospicular.

Threadgill member; thickness 91 feet in east to 294 feet in west. Usually limestone in west, grading eastward to dolomitic facies. Chert vuggy or spongy masses of highly dolomoldic or cellular chert interlaced with quartz druse.

WILBERNS

San Saba-Pedernales

San Saba limestone member; thickness 280 feet. Upper boundary chosen by appearance of glauconite. Stromatolitic bioherms

1. These have commonly been referred to as "dolocasts" but they are molds, not casts.

in upper part. Limestone is microgranular to sublithographic, in part a fine pellet limestone; greenish to brownish-gray to woodash gray or light-yellow, in part with yellowish argillaceous films. Dolomite is very fine grained to microgranular, brownish to yellowish-gray. Marked facies changes from place to place. To southwest is more granular and fossiliferous. Sandstone and calcareous sandstone common near Llano River but not persistent.

Pedernales dolomite member; thickness 224 feet. Dolomite facies of San Saba limestone and increases to east. Upper and lower fine-grained zones and middle coarse-grained dolomite. Faunal evidence for correlation with San Saba, and lateral gradation.

Point Peak

Thickness 25 to 270 feet; variation in thickness attributable to facies change. Well-bedded, soft, greenish, calcareous shales and subordinate amounts of fine-grained, compact dolomite; medium- to fine-grained glauconitic limestone; intraformational conglomerates; and near the top occasional beds of oolitic limestone and commonly extensive to scattered stromatolitic bioherms.

Morgan Creek

Thickness 70 to 160 feet. Medium- to coarse-grained, abundantly glauconitic, well-bedded limestone. Lower beds in contact with Welge sandstone are somewhat sandy. Lower portion commonly reddish, the red tones becoming less pronounced and finally grading upward into gray or greenish-gray limestone. In some sections there is a shaly zone in upper part. Thin stromatolitic bioherms in upper part of Morgan Creek limestone near Pedernales River.

Welge

Thickness 9 to 35 feet. Brown, mostly nonglauconitic sandstone which grades upward into the Morgan Creek limestone. Most of the quartz grains have recomposed faces.

RILEY

Lion Mountain

Thickness 20 to 50 feet. Highly glauconitic sandstone, having some limestone lenses essentially composed of trilobites and some highly glauconitic limestone beds containing phosphatic brachiopods. Grades into limestone below.

Cap Mountain

Thickness 135 to 455 feet; variation due principally to lateral gradation to sandstone of the lower beds. Alternating impure, dark-brown limestones and calcareous sandstones which become more calcareous upward, finally grading into the fairly pure, granular limestones that comprise the bulk of the member.

Hickory

Thickness 0 to 800 feet; variation due to irregular pre-Cambrian surface on which it was deposited. Noncalcareous, non-glaucinitic, yellow, brown, and red. Individual sand grains are angular to subrounded.

PRE-CAMBRIAN

These writers, admitting that it is not a clear-cut line, draw the Cambrian-Ordovician contact at the top of the Wilberns. Near that position there is considerable interfingering of faunas and lithology. Ellenburger fossils are described in rocks of Wilberns lithology at the west end of the uplift, which is not startling when the Wilberns is interpreted as the foreland facies in a transgressing sea with the land mass to the west and northwest. The same relationship should be observed in the west Texas area near the south Colorado-New Mexico land area, and the Bliss sandstone, which has been called basal sand and Wilberns on the basis of lithologic studies, does, according to Barnes (personal communication), contain Ellenburger fossils. Thus, if the Cambrian-Ordovician contact is determined within the carbonate section on the east of the Llano uplift region and the faunal contacts are established, as the old shoreline is approached the shore facies is certain to rise in time, and the lithologic-faunal relationship must be different.

Crowley (1946, pp. 191-195) and Crowley and Hendricks (1945, pp. 413-425) established zones for correlating the Ellenburger in the north-central Texas area. They state that because of diastrophism and erosion following deposition all units are present only in a few places. For instance, they recognized their zone A only where the Ellenburger was overlain by Simpson. Their unit D is absent in some places where units that normally lie next above and below it are present. To explain this they suggest a period of erosion following deposition of D. They further suggest that this may mark the contact between Cambrian and Ordovician. This is probably only an apparent unconformity due to the change in facies from east to west. Unit D occupies the position of the Potosi-Eminence, which thins out in the Ozark section because of rise in Elvins (Wilberns) lithology to the west (toward the source of sediments), just as the Wilberns lithology over the Llano uplift rises in the section to the west.

Crowley (1946, pp. 191-195) and Crowley and Hendricks (1945, pp. 413-425) also noted great variations in the thickness of their unit F, which is apparently Wilberns, due to irregularities in the pre-Cambrian surface, associated with some lateral gradation of sandstone to sandy dolomite and to limestone. This thickness variation in the lower sediments was observed everywhere information is available and is, of course, due in part to the irregular surface on which the sediments were deposited and in part to the transgressive nature of the sea.

Hendricks¹ has a paper in press in which an attempt has been made to correlate the subsurface zones with the surface sections.

Samples from a water well drilled at the city of Brady, McCulloch County, Texas, were examined by Hendricks and the writer and correlated with a nearby surface section described by Barnes with these

1. Hendricks, Leo, manuscript in press with Bureau of Economic Geology, Austin, Texas.

results (fig. 2): The well started in Ordovician in Hendricks' unit B₂ which is Barnes' Gorman, or the Roubidoux of the Missouri section. Unit C₁ included part of the Gorman and half of the Staendebach member of the Tanyard. The lithology was similar to the Van Buren-Gasconade of the Missouri section. Unit C₂ consisted of the lower half of the Staendebach and the upper quarter of the Threadgill member of the Tanyard. The upper part of the Threadgill looked like a thin section of Potosi-Eminence greatly shortened by Elvins-type lithology riding up. Unit D was not present. Unit E included the lower three-fourths of the Threadgill and half of the San Saba limestone member, which lithologically is Elvins. The San Saba limestone is a facies of the Pedernales dolomite of the east part of the Llano uplift. Unit F included the lower half of the San Saba and the Point Peak and lithologically resembled the Elvins of Missouri. The Missouri Bonneterre thus was limited to less than 100 feet above the basal sand (Hickory or Lamotte).

An unconformity has been placed within the section in the Ozark area, because the Potosi and Eminence apparently were lost in the section toward the west of the uplift. This was actually shoreward. Thus, in the Ozarks, there is a duplication of the conditions on the Llano uplift -- the rise of Elvins (Wilberns) lithology toward the west or shoreward, displacing Potosi-Eminence lithology. In other words, a faunal-lithologic relationship chosen as representative in one place will not hold through another, even within reasonably short distances. This is most apparent in the area of marked transgression. This is true so far as the Cambrian (including Knox, Ellenburger, and Arbuckle) is concerned in the areas which received late Cambrian deposition but were land during the deposition of the lower and middle Cambrian in the embayments. See isopachous map (pl. 1) showing position of the foreland facies.

DEFINITION OF CAMBRIAN

In the earlier paper (Freeman, 1949a, p. 1657) the writer suggested that the entire Knox sequence be regarded as Cambrian, as no distinct orogenic break occurs within that sequence. There is such a break at the close of the sequence everywhere but in the great geosynclines, which, if the sediments were not too deformed, would probably show continuous sedimentation from pre-Cambrian into Cambrian also.

"Thus far in the study of subsurface Knox dolomite, no appreciable break has been recognized in the entire Knox section. Correlations of parts of the section can be made but nowhere is there evidence of orogeny and a long period of erosion in the Cincinnati arch area. At the close of the Knox, however, there was a major break resulting in a marked change in the relations of land areas to basins of deposition. It is extremely difficult for a student of subsurface stratigraphy to see why a major systemic break should be inserted into a long sequence of siliceous dolomites, when a break of such importance occurs over a tremendous geographic area at the close of this period of accumulation. For purposes of interpreting the stratigraphic sedimentology in this paper the entire Knox section is considered as a unit and is referred to as Cambrian."

Further study in the southwest has indicated that the problem is the same everywhere so far as picking a Cambrian-Ordovician contact within the Knox is concerned. Apparently there was no orogenic activity at that time, and the depositional history was one of slowly transgressing seas over the edges of a great land mass where pre-Cambrian metamorphic and igneous rocks were exposed. Upper Cambrian sediments accumulated around the numerous granite hills, which furnished local sources for additional clastics. For the reasons given here the writer again suggests that the Cambrian-Ordovician contact be marked by this post-Knox, post-Ellenburger, post-Arbuckle orogeny, which brought these sediments up to the zone of weathering except in the deepest embayments of the Appalachian and Cordilleran geosynclines.

CAMBRIAN

In order to explain the Cambrian, and indeed any period of sedimentation, it is necessary to start with the last big orogeny. There is some discussion now among students of the pre-Cambrian in the Piedmont area as to just where to put the boundary between the pre-Cambrian and the Cambrian. Possibly there is no unconformity in the deepest part of the original basin of deposition and sedimentation was continuous, but there is certainly a great break over most of the present continent of North America at the beginning of Cambrian time. The information now available makes it difficult to outline the pre-Cambrian continents accurately, but probably they corresponded to the present continent without the coastal plain areas and without the folded areas now bordering the continent. The folded areas were probably thrust over the edges of the original continent. The Cambrian continental mass would then correspond roughly with that part within the late Paleozoic folded belts.

Plate 2 indicates in general the land-sea distribution in the part of the United States covered in this report, either by actual study of well sample sections or by digestion of the studies of others. That the main part of North America was land at that time is indicated by the character of the early Cambrian sediments. There is no indication of a great period of erosion at the close of early Cambrian time, and the sediments are near-shore varieties. In other words, there was a gradual encroachment of the seas from early Cambrian time through the end of Knox time. Sedimentation took place off the edges, forming great lenslike masses thinning toward the source, or landward, and thinning away from the source, or seaward. These deposits gave shape to the great geosynclines formed by differential settling of the ocean and continental masses during isostatic adjustment.

The Cambrian was begun with a large land area composed of original crustal granite, altered sediments, both as apparent metamorphosed sediments and granitized sediments, and some sediments but little altered. The land area was not completely base-leveled, and there were numerous minor topographic irregularities which affected the shape of the coastline at various stages of encroachment. There were embayments along the shorelines where the fairly rapid drainage into the ocean basins had cut deep valleys, just as today. An embayment of this type formed approximately at the north end of the present

Mississippi embayment, extending northward from the Appalachian geosyncline. The central shield had an outline of promontories and embayments which, because of their initial occurrence, tended to be maintained through the Paleozoic, or until folding of the geosynclines. Thus, an initial pre-Paleozoic land area was gradually submerged, and last to be inundated were the promontories -- the Wisconsin lobe, the Algonquin and Adirondack lobes, the Ozark lobe, and the Llano lobe. These lobes affected structure and sedimentation at least through the Devonian.

The products of erosion of these pre-Cambrian rocks accumulated immediately offshore on all sides, in proportions dependent upon the pattern of drainage, then as now. The drainage tended to follow pre-Cambrian drainage patterns except where disturbed by orogeny; that is, it was concentrated in the old embayments. Thus, a great accumulation of sedimentary material formed and helped make the Cordilleran geosyncline on the west, the Appalachian on the east, and the Ouachita on the south. The eastern and southern edges of the Appalachian geosyncline and the west edge of the Cordilleran were defined by distance from source of sediments. Much of the interior of the continent remained high during early and into middle Cambrian. Headward growth of a major drainage system, one draining the Ozark and Wisconsin uplands, caused a northward extension of the Appalachian geosyncline in the area of the present Mississippi embayment. This embayment has persisted through most of geologic time from early Cambrian to Recent. It was only during late Ordovician and again in late Devonian, so far as pre-Carboniferous is concerned,¹ that it did not receive sediments.

The lithologic units recognized in the Knox of the Ozarks can be traced into central Kentucky and Tennessee by means of well samples. Actual formational boundaries are not easily determined, and it would be unwise to attempt close correlation over this large area with such few data. It is possible, however, to recognize similarities of sequence by keeping in mind the positions of the seas with regard to the basin of deposition at the time and the effect the relative position must have had on lithology and fauna. For instance, the Ozarks were a part of the contributing land mass during the early part of Upper Cambrian while most of Kentucky was a part of an essentially stable platform of deposition, and the Ozarks were receiving foreland deposits while Kentucky, farther from the source of clastics, received stable platform dolomites.

Many wells have been drilled to the granite on the Ozark dome, and in the St. Francois Mountains the pre-Cambrian granites are exposed. Numerous wells have reached "basement" in a relative position with regard to the pre-Cambrian highlands of the Wisconsin and Ontario portions of the main land mass. However, in Tennessee only one well (No. 174) was drilled into granite on the south flank of the Nashville dome, and in Kentucky only one well (No. 69) was drilled into a rhyolite

1. This limit is imposed by the inexperience of the writer with Carboniferous deposition. Thus far, regional studies of this kind have been made only from Cambrian through Devonian.

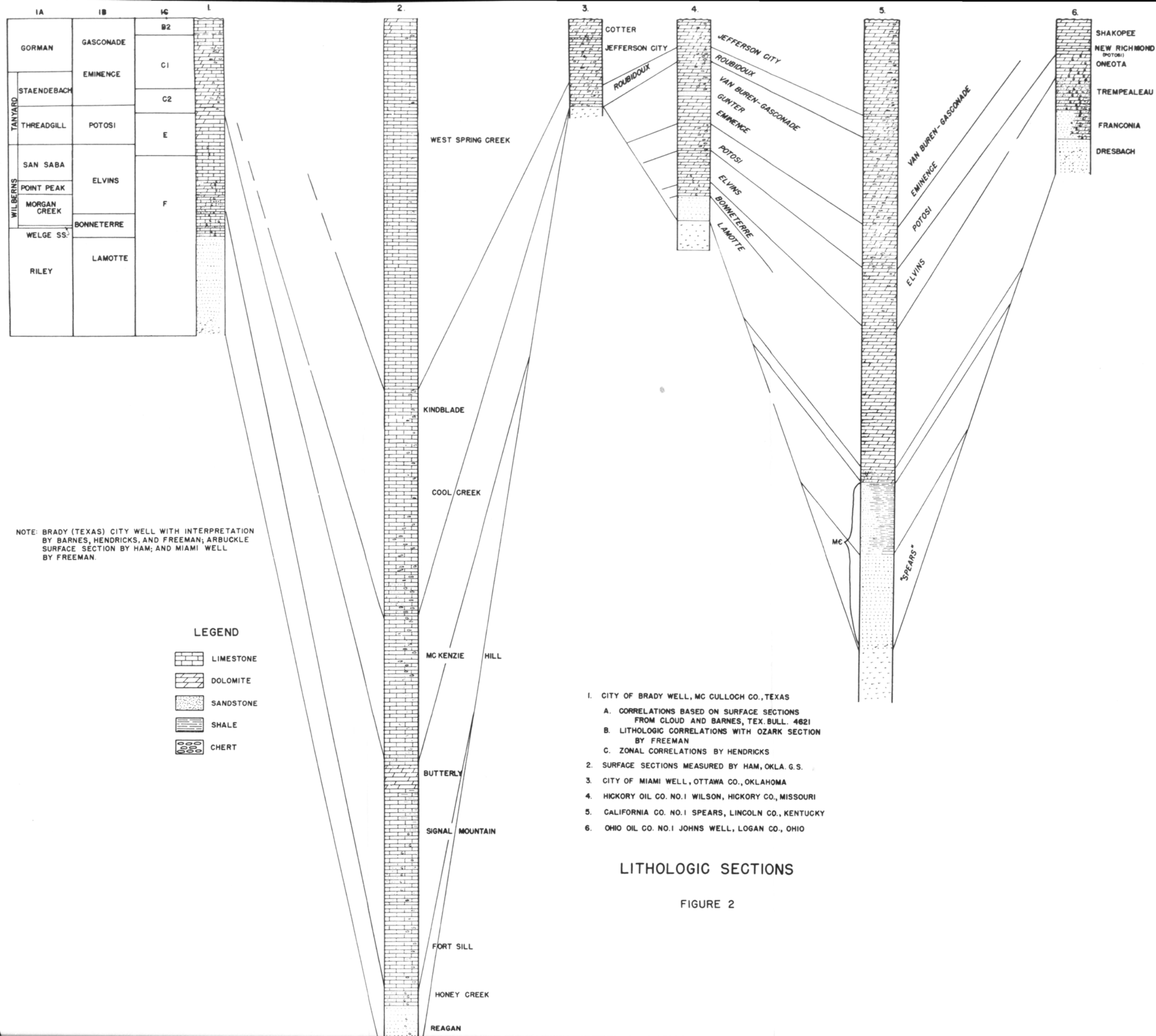
porphyry, presumably pre-Cambrian, on the south flank of the Lexington dome.¹ At this time it is more proper to speak of the separate domes rather than of the Cincinnati arch, which term implies a structural arch essentially as it is today.

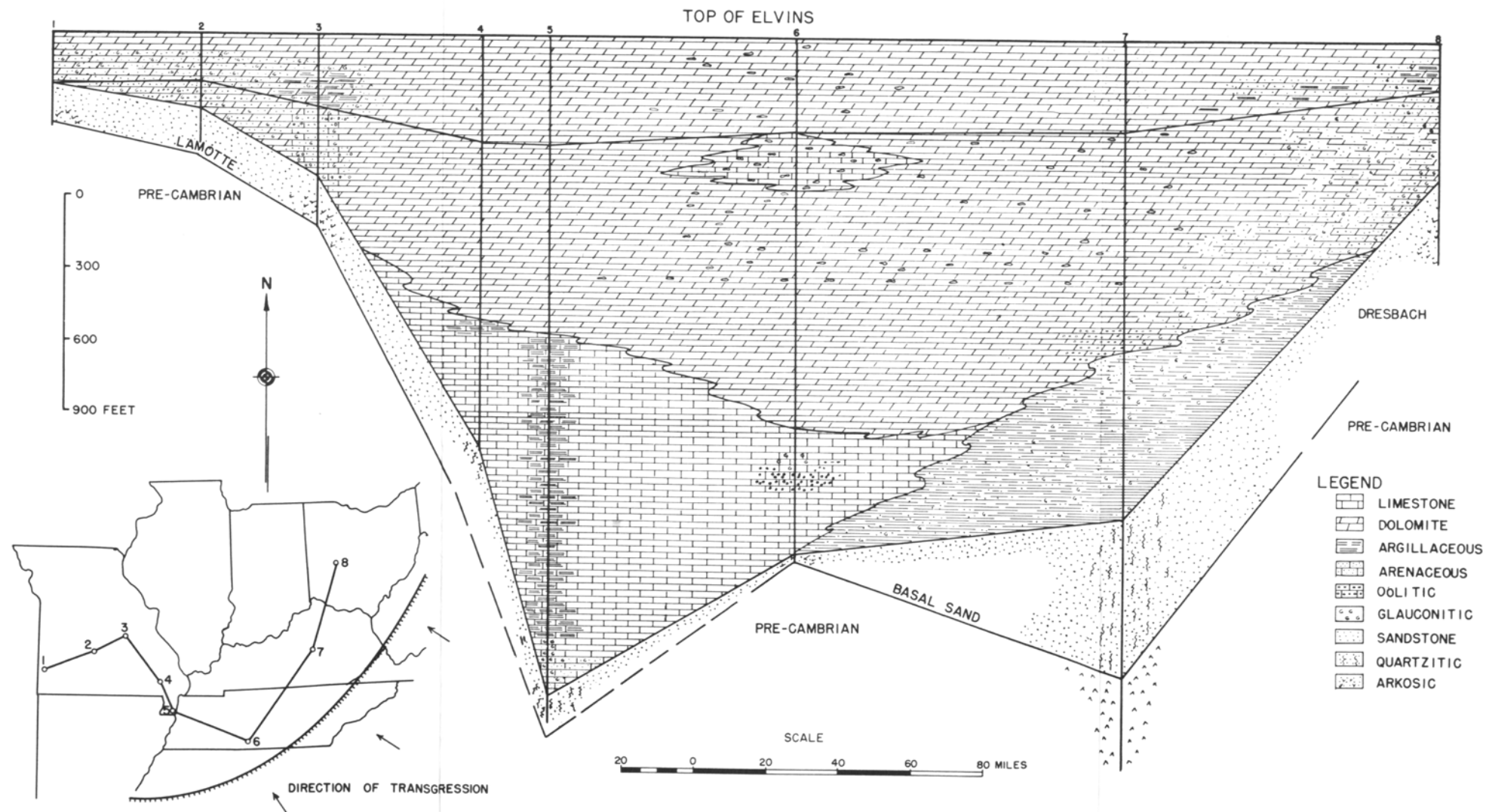
The data on lithology, thickness, and distribution of these formations in the main portion of the Appalachian Basin were obtained from the published reports of Fettke (1948, pp. 1457-1493), Swartz (1948, pp. 1493-1596), Prouty (1948, pp. 1596-1627), and Butts (1940, pp. 22-229).

During early Cambrian time great quantities of clastics and some carbonates were deposited offshore in what was to become the great Paleozoic geosynclines. As the geosynclines gradually sank and the land was lowered, mature drainage was established, and offshore deposits were more frequently dolomites and limestones, with the clastics being limited to that portion of the basins immediately offshore from major drainage lines. Thus, clastics were followed by carbonates (Tomstown dolomite) through Pennsylvania, New York, and much of Virginia. In southern Virginia, east Tennessee, and Alabama the late deposits of Lower Cambrian were Rome sands, silts, and shales -- tremendous accumulations of deltaic materials built out from the mouths of the main drainage systems. During all this time Kentucky, with the possible exception of the extreme southeastern portion, was land.

As the lowering of the land progressed the seas encroached still farther upon the surface. The incipient embayment began to form because of the position of the main drainage system and developed headward. It was now bordered on the south by the beginnings of the Ozark upland and its southeastern extension. A similar depression began extending toward the later Ouachita embayment and served as the southern boundary for the Ozark promontory, which formed thus as a drainage divide between two embayments. (See pl. 2B.) Again great quantities of clastics accumulated immediately offshore in the Kentucky embayment, forming perhaps another delta. Locally within that embayment, or more probably along shore, thick deposits of well washed, but poorly sorted, sands accumulated. This is the basal sand found in the Spears well in Lincoln County, Kentucky (No. 69). Immediately off the mouth of the stream, deltaic silts and shales with only occasional sand layers were formed. The James Hall well in Estill County (No. 743), only about 60 miles from the Spears (No. 69), had mainly shale in the position of the basal "Spears" sand. Fine clays in limestone were formed beyond the reach of the stream-carried sediments. Farther out were clean limestones and dolomites. Dolomites were formed in the shallow waters off the tip of the new Ozark promontory and near the northeast boundary of the Kentucky embayment. This is the Elbrook on the northeast boundary and Conasauga and equivalent formations on the south. Wells drilled in the upper part of the present Mississippi embayment in Arkansas and southeastern

1. Lexington dome and Jessamine dome have both been used as designations for that dome of the Cincinnati arch with its highest point just south of Lexington. Since Lexington has more general meaning as a geographic entity, it might serve the purpose better.





TRANSGRESSIVE AGE RELATIONSHIP OF BASAL CAMBRIAN SAND

FIGURE 3

LOCATION OF WELLS

1. ATLAS POWER COMPANY NO. 4 FEE, SECTION 36, T. 28 N., R. 32 W., JASPER COUNTY, MISSOURI.
2. CITY OF LEBANON NO. 66, SECTION 11, T. 34 N., R. 16 W., LACLEDE COUNTY, MISSOURI.
3. U. S. BUREAU OF MINES NO. 1 S. S. H., SECTION 3, T. 39 N., R. 3 W., CRAWFORD COUNTY, MISSOURI.
4. M. H. MARRETTAL NO. 1 C. BARNETT, SECTION 3, T. 25 N., R. 11 E., STODDARD COUNTY, MISSOURI.
5. STRAKE PETROLEUM COMPANY NO. 1 RUSSELL, SECTION 24, T. 19 N., R. 11 E., PEMISCOT COUNTY, MISSOURI.
6. THE CALIFORNIA COMPANY NO. 1 E. W. BEELER, SECTION 4, T. 5 S., R. 29 E., GILES COUNTY, TENNESSEE.
7. THE CALIFORNIA COMPANY NO. 1 A. R. SPEARS, NE SW NE SECTION 13-L-57, LINCOLN COUNTY, KENTUCKY.
8. OHIO OIL COMPANY NO. 1 JOHNS, (LOT 9930) LOGAN COUNTY, OHIO.

Missouri encountered a sandstone or quartzite under the greatly thickened Upper Cambrian limestone section. This may be a clue to a similar deltaic deposit in the incipient Ouachita embayment.

The land was low and weathering was mainly chemical, with sands moved only by major streams. The muds (hydrolyzates -- see Rankama and Sahama, 1950, p. 198) were carried off along with much material in solution. There was a general lag of quartz grains, however, and much of the surface was covered with the residates (Rankama and Sahama, 1950, p. 198) of such weathering, mainly in the form of quartz grains since most of the land was granitic rocks. The chemical action on the quartz resulted in some solution, and there must have been many wind-blown accumulations. While this surface was covered mainly with loose sand, streams carried a little of the fine clay materials and much soluble minerals. Considerable carbonate was formed at this time. By now the Kentucky embayment was filled, and the drainage shifted a little westward to the upper part of the present Mississippi embayment, crossing the southeastern extension of the Ozarks and joining the Ouachita embayment to form a part of the general Appalachian geosyncline. In the shallow water of central Kentucky where the old delta had been; there now was formed a great thickness of dolomite and, in the lower portion, a little oolitic limestone. Offshore to the east, where the water possibly was a little deeper, limestone and dolomite collected.

Growth of the Ouachita embayment headward resulted in the lag sands accumulating as basal sand followed by dolomite in the shallow edges; shallow-water algal and pellet limestone formed in the center. The sands were washed in and deposited rather quickly, because in spite of their good mineral sorting, the size sorting is poor. Near some of the old granite islands the basal sands are arkosic in many places. As the seas moved slowly onto the low-lying land, basal sands were formed followed by dolomite containing some sand blown into them from the remaining land. Thus, the entire Upper Cambrian throughout a great area (pl. 1 and 2C) is sandstone followed by sandy dolomite and, as a final deposit, some chert with the dolomite and sand. As the interior land mass was slowly cut down, the seas encroached over the platforms and progressed inland. The shoreward edges during late Cambrian were marked by basal sandstones and sandy, glauconitic dolomites which lapped onto the pre-Cambrian surface, cutting across time lines as deposition progressed inland. During the Cambrian there were many plants in the hydrosphere which took potassium from the sea water, and thereby

"... a corresponding amount of hydrochloric acid was released, and an equivalent amount of calcium carbonate was dissolved. Therefore, there occurred a progressive increase in the calcium and magnesium content of ocean water until the Cambrian, when the first calcareous shells appeared" (Rankama and Sahama, 1950, p. 405).

Over a great mass of land area (pl. 1) the entire Upper Cambrian (including Knox, Ellenburger, and Arbuckle) is represented by these basal sands and dolomites formed in shallow foreland seas. The dolomite is as nearly primary dolomite as it is chemically possible to have. Either it was deposited as such, or the replacement took place before lithification and burial on the sea floor.

While this deposition was taking place on foreland areas, dolomite with little sand and a little chert was deposited in areas that were under water before this final surge -- much of Kentucky, for instance. In the deeper part of the embayments and in the geosynclines pontic deposits formed. These deposits, which were composed of carbonates (mainly limestone) containing much dark organic clay, gave rise to the fine-grained, very dark brown to black limestones of southeastern Arkansas and western Tennessee. Deposits of this age in the eastern part of the Appalachian area should be of the same character, rocks which possibly have since been altered to form some of the metamorphics and granites -- if granitization is accepted -- in the Piedmont.

Thus, there is a picture of generally encroaching seas without a great time break until the close of the Cambrian (Knox). The early sediments of the Cambrian were limited in areal extent. A large land area provided quantities of sediments for quick accumulation immediately offshore. The cumulative load of these sediments, together with the general tendency for everything to sag toward the center of the earth, resulted in gradual sinking of the basin of accumulation -- the beginning of a geosyncline. Then, as the seas moved in because of lowering of the land and filling of the basin, sediments transgressed progressively higher on the land surface, the submergence culminating at the close of Knox time.

This is the time of great unconformity -- the time when the seas retreated (pl. 2D) because of isostatic adjustment at the edges of the basins of accumulation. Waters retreated only from the main portion of the land. The deeper embayments and geosynclines still remained under water and received sediments. The land and sea distribution was essentially the same as during the Middle Cambrian, with the exception of the Mississippi and Ouachita embayments, which had by now become permanent parts of the geosyncline.

Basal Sand

The stratigraphic sections (fig. 3) extend southeastward across the Ozarks into Tennessee, pivoting at the Beeler well (No. 174) and continuing northeastward essentially along the present crest of the Cincinnati arch. The top of the Elvins, as the most easily recognized unit within the section -- although it, too, may be time transgressive -- was chosen as a datum from which to draw all sections in order to show their basal relationships without regard to the effect of the post-Knox unconformity. The basal sand may be observed to rise in the section, crossing time boundaries as the waters encroached over the Ozarks. The greater thickness of sediments due to accumulations of dark argillaceous limestones in the embayment are clearly seen. The position in the old basin of the area tested by the Beeler well (No. 174) is shown by the occurrence of limestone with dolomite as being seaward from the central Kentucky platform during that part of late Cambrian. The deltaic deposits described in the Kentucky embayment can be clearly seen. The Hall well (No. 743) which was drilled only about 60 miles northeast of the Spears (No. 69) shows mainly shale and siltstone in the section occupied by sandstone and shale in the Spears well. Notice, too, the increase of sand content in the dolomite both toward

the Ozarks and to the north, in the direction of encroachment.

With this history in mind the difficulties of establishing horizon markers from one area to another in the Knox can be appreciated.

The basal sand is the Lamotte of Missouri, the Reagan of Oklahoma and Kansas, the Hickory of Texas, and the Mt. Simon-Dresbach of Wisconsin. Among the petroleum operators in Kentucky the basal sand there is called the "Spears" sand because of its having been found first in the well drilled by the California Company on the Spears farm. It is not the age equivalent to any of these others and not precisely the age equivalent to any sand named in the Appalachian area, although in general it is about Conasauga in age.

Bonneterre

In the Ozarks the Bonneterre overlies the Lamotte basal sand and in places rests directly on pre-Cambrian granites (fig. 2). It is dolomite, medium- to coarse-crystalline, white to pale-gray, and relatively free from shale excepting a few streaks of very fine, green clay. It is also relatively free from silt and sand, but does include quantities of glauconite in sand-sized nodules, in contrast to the silt-sized glauconite of the overlying Elvins.

Wells drilled on the southeast, in western Tennessee and Arkansas, show not only a change in facies basinward but also a thickening of the section due to the addition of older strata not deposited over the high. The position of the dolomite is occupied by dark, fine-grained, argillaceous limestone because of deeper waters in the embayment and greater distance from the source of clastics. The thickening below the top of the Bonneterre ranges from 260 feet in Hickory County and about 500 feet in Washington County, Missouri, to 2,400 feet without penetration of the granite in Pemiscot County in southeastern Missouri. This change in facies occurs in a relatively short distance, and similar changes should be expected to the south and southwest from the Nashville dome area into the geosyncline.

In Kentucky the Bonneterre is dolomite, essentially as uncontaminated by silt and shale as in the Ozarks, but glauconite is not found in such large quantities. Farther north and nearer shore, where this interval is occupied by the Franconia sandy dolomite, glauconite is common. Glauconite seems to be limited to the near-shore facies, whether because of shallow water and proximity to source of biotite, if the genesis as explained by Galliher (1935, pp. 1569-1601) is accepted, or to proximity to source of dissolved material brought into the sea water by streams from which minerals of this sort could be constructed.

Elvins

The Elvins group of the Ozarks contains some silts, shales, and sands locally associated with the dolomite but is characterized by the association of fine quartz silt with glauconite grains of approximately silt size. It is overlain by the Potosi cherty dolomite in the central part of Missouri, but the Elvins lithology displaces Potosi lithology toward the west, or toward the shoreline, as the sands move up in the

section. In places Elvins lithology extends as high as the Eminence, with Van Buren-Gasconade overlying the sandy and silty glauconitic dolomite. The Elvins is underlain by the nonsandy, glauconitic Bonnetterre. In all the wells drilled deep enough in Kentucky the sequence was similar, with a sandstone, the areal extent of which is not yet well defined, present in the Elvins of the Cincinnati arch (pl. 3). This sand is locally called the "Rose Run," because it was first noted in a well (No. 11) drilled on the Rose Run hematite properties in Bath County, Kentucky. Future drilling may prove it to be equivalent to the Gatesburg sandstone of Pennsylvania. As in the Bonnetterre, not as much glauconitic silt is present in the Elvins of Kentucky, but on the north the Trempealeau has the same sort of glauconite silt and even more sand than is found in the Ozarks. In the Ozarks, however, a good sandstone is locally developed in the Elvins; it is called the Davis member and is similar to the "Rose Run" of Kentucky.

Potosi

The Potosi of Missouri is a distinctive crystalline dolomite showing a tendency toward brown color and having characteristically drusy chert. The drusy chert of the Potosi (McQueen, 1931) seems to have been deposited, possibly from magmatic waters, during the time of mineralization of fractures. Some fracturing along with mineralization occurred on the Lexington dome, as shown by mineralized veins and by the development of the drusy chert. The Lexington dome, however, was a less positive feature than the Ozark dome and was not subjected equally to the strains that resulted in this fracturing, recrystallization, and mineralization. Thus, quantitatively, considerably less chert is found in the Kentucky wells. They do show in the proper sequence a series of brown crystalline dolomites with traces of drusy chert, overlying dolomite that is not cherty but which does have traces of quartz and glauconitic silt (Elvins), and underlying pale-gray, cleanly crystalline, and essentially noncherty dolomites of the Eminence type.

Eminence

The Potosi is followed throughout the Cincinnati arch by dolomite that is pale-gray, fine to coarse crystalline, with only traces of gray, quartzitic chert. It is much less siliceous than dolomite either above or below it, and there is a fairly definite color change at the Potosi contact. This lithologic character is typical of the Eminence formation of the Ozark region.

Van Buren-Gasconade

The Eminence, with its low silica content, is overlain by light-colored, medium-crystalline dolomite containing considerably more chert. The Van Buren-Gasconade chert is in general dense white to translucent, having some thick-walled dolomolds and irregularly shaped oolites. The upper contact is sharper than in the case of many Knox formations because of contact with the sandy Roubidoux.

Canadian

The basal Canadian, the Roubidoux formation, in the Ozarks contains much rounded and frosted sand, some of which is chert-cemented. Detailed descriptions of the various units of the Canadian are not given here. The descriptions of the Knox formations given here consist only of the characteristics which have been most helpful in establishing correlations from the Ozarks to the Cincinnati arch area. More detailed descriptions of these formations and their insoluble residues are given by McQueen (1931) and Cullison (1944). In general the dolomites are finer grained than the older formations of the Knox, more clastic in character, and include some fine silts, floating sand grains, and rare, fine, green shales. The cherts are more oolitic and dolomoldic than those below.

The Canadian has been subdivided into the Roubidoux, Jefferson City, Cotter, and Powell -- formations locally having lithologic characteristics by which they can be differentiated. In Kentucky a series of dolomites having the same characteristics as the Canadian in the Ozarks can be recognized. In many wells the characteristic insoluble residues of the Roubidoux, Jefferson City, and Cotter units of that series can be seen in proper sequence. In all wells drilled sufficiently far into the top of the Knox there is a unit about 150 feet thick characterized by very sandy chert similar to the Roubidoux. This overlies the heavily siliceous Gasconade.

Basinward in the Canadian there is more limestone interbedded with the dolomite. Thus, in the deep well in south-central Tennessee (No. 174) considerably more limestone is present in that part of the section than on the Lexington dome, and there was much limestone in the Jefferson City, which was encountered immediately beneath the Cretaceous, in a well drilled in Hardeman County, Tennessee (No. 1445). The Beekmantown in Virginia contains more limestone at the outcrop than is found in wells in Kentucky. The limestone is very fine grained, sublithographic, and pale-gray.

Close of Knox

The close of the Cambrian was marked by retreat of the waters into basins and embayments with erosion of the main land surface (pl. 2D). Plate 3 shows the thickness of post-Elvins Knox in Kentucky. The thinning indicated is by erosion of the upper formations, although a little may be due to nondeposition as the seas retreated. Central Kentucky, near the crest of the present Cincinnati arch, has as much as 1,700 feet of post-Elvins Knox as compared with less than 100 feet about 50 miles to the northeast. The map (pl. 3) indicates two isopachous highs suggestive of the trend of the Cincinnati arch. This alignment of thicker areas is probably a part of the series of irregularities, structural and isopachous, responsible for localization of the southern arch in the Silurian.

In Kentucky only about twelve wells have been drilled as much as 1,000 feet into the Knox. Most of the data used in preparation of this map were obtained from correlations of short sections. Future drilling with additional information may change this picture.

Relative uplift of the main mass of land to the north resulted in thinning of the section in that direction. There must be a reversal in the thinning, however, in that direction, as it is thinning too fast in northern Kentucky to account for the known thickness in Ohio. The distribution of the "St. Peter" sand in Kentucky suggests that it was deposited offshore, perhaps from a high from which Knox was being eroded, and the pattern suggests that the east-west trending structure which has been shown by isopaching the Silurian and Devonian (Freeman, 1951a, pp. 1-61; 1951b, figs. 3, 6, 8, 10) might have had its inception at that time. There is no information on the Cambrian west of the present arch in Kentucky, where it should be helpful in determining the existence of this structure as early as Ordovician or Cambrian. There is no evidence at present except the distribution of the St. Peter in eastern Kentucky and the fact that the Knox is thinning too fast to the north.

Uplift of the Ozarks as a part of the main land mass accounts for the thinning of the late Knox in that direction. The southern Blue Ridge uplift, which was due to very early folding in the southeast resulting in an offshore island arc, is responsible for slight thinning toward the southeast.

The hachuring on plate 3 indicates the known areal distribution of the "Rose Run" sand. Apparently it coincides with the axis of thinning of late Knox formations. Although there is some control on the south and ample control on the west, there is as yet none on the east and north. This sand is probably a southern extension of one of the Trempealeau or Franconia sands; thus, wells drilled to the north of the indicated area should encounter it.

ORDOVICIAN

Beginning of Chazy-Black River

By the end of Cambrian time much of the United States portion of the continental mass was under water. Renewed differential settling of the continental and oceanic segments (isostatic adjustment) resulted in a lag in settling of the continental masses and a partial draining of the waters, leaving only that in the geosynclines and deeper embayments. No break in deposition is present between Knox and Chazy in the deeper parts of the geosynclines and embayments, but a break of considerable magnitude is evident over most of the continent. The same land areas, in a large part, were exposed that were last to be submerged in late Cambrian time (pl. 4). As the seas slowly encroached again there resulted a sort of repetition of Cambrian history with this difference: the exposed land area was largely covered with fresh sediments to be eroded, rather than with igneous rocks and metamorphosed sediments as in pre-Cambrian. Thus the earliest Ordovician (Chazy) reflects the lithology of the nearest contributing areas. In the Arbuckle embayment and in the embayment southwest of the Llano uplift the Simpson sediments were derived from the western part of the Ozark upland and the Colorado-New Mexico upland, where the foreland deposits of Upper Cambrian were being eroded. These rocks were sandy, slightly cherty dolomites and sandstones, and resulted in accumulations offshore of sandstones, fine, waxy, green clays (commonly

the end product of solution of limestone and dolomite), and some limestone or dolomite. Farther east, the southern Ozark upland provided for erosion the basin-type Cambrian limestone -- dark argillaceous limestone -- and the Smithville and Black Rock formations of northern Arkansas resulted. During the general uplift which resulted in post-Cambrian draining of parts of the continent, the Ozark upland extended generally toward the present Nashville dome to form a structural noseing off the front of the Ozarks (pl. 5). Headward erosion of the Mississippi embayment during early Ordovician resulted in cutting through this extension. Whereas the other early Ordovician sediments were mainly the result of solution of the Upper Cambrian sediments (from low-lying land with poor drainage), this headward erosion was rapid enough that detritals derived from destruction of the Canadian-type dolomites on the northeastern part of the Ozark upland were deposited near the head of the embayment and spread out fanwise in front of the upland. This resulted in the early Ordovician Everton, St. Peter, and Joachim. The base of High Bridge series of central Kentucky, the Everton, St. Peter, Joachim, the Smithville-Black Rock, and the Simpson, thus, are roughly age equivalents, but each type of lithology reflects the position of that part of the basin with respect to (1) the shoreline and (2) the ancient drainage pattern. Central Kentucky was far enough from the source that only limestones accumulated during this period, with the exception of a local development of "St. Peter" sand.

The coincidence of patterns made by the thickness map on the St. Peter as shown in plate 6, the distribution of St. Peter in plate 7, the thinning of post-Elvins Knox in plate 3, and the distribution of, or at least the southern extent of, the "Rose Run" sand in plate 3, is significant. It suggests a definite east-west trend through eastern Kentucky. This was probably the hinge-line between the more stable basin of deposition of the Appalachians on the south and the unstable platform of deposition on the north. Thus, the sands of the Trempealeau were scattered generally over the unstable shelf and became thinner southward.

The relative uplift of the Laurentian area resulted in erosion of upper Knox formations. This uplift was hinged in the same general trend as the area through eastern Kentucky outlined by distribution of the St. Peter sandstone, an area which was closely related to the shoreline for a short period. The St. Peter sand, derived from erosion of the sandy Knox dolomite, was deposited offshore for only a short distance. Relief of the shoreline was not great; the shoreline itself shifted considerably; the supply of sand was small. The distribution of the sand as found today in Kentucky, as a result of these factors, is limited in areal extent to the region of abrupt thinning of the upper Knox. Offshore, on the south, the finer products of solution collected to form the fine, argillaceous, dolomitic limestone of the basal Chazy (Wells Creek -- Bentall and Collins, 1945). The Laurentian area was lower, which resulted in accumulation of the solution products of dolomite and limestone -- the fine-grained, green, argillaceous limestone of the Glenwood. Nearer shore (northward) green shales and sands of the Glenwood-St. Peter were deposited. Kentucky, located between the Laurentians and the Ozarks, has elements of both types of sedimentation. On the west the Buffalo River facies is paramount but decreases with distance from the Ozark high. Where Knox or older sand lenses were exposed, furnishing local sources, this sand was reworked and redeposited to form what has been called the St. Peter in Kentucky. Since less sand was available for

that purpose in the Upper Cambrian of Kentucky, it is spotty in occurrence, as compared with the blanket, but time-transgressing, sand (DuBois, 1945, and Grohskopf, 1948, pp. 351-365) of the type St. Peter, where the Cambrian section (foreland deposits) contains considerably more sand. The distribution of the St. Peter in Kentucky is indicated by hachuring in plate 7 and there is sufficient control to be fairly certain of accuracy.

The southern Blue Ridge area in east Tennessee, North Carolina, and Georgia was probably up at this time perhaps for the first time, and probably as an island arc off the edge of the continental mass. The sediments were stripped off and redeposited, and finally granite was exposed; these contributed to form the arkosic sandstones and shales of the Blount facies. The limestones in this facies are crystalline, highly fossiliferous, and indicate shallow water and possibly near-shore conditions. In other words, the facies of lower Ordovician (Chazy) in the southern Appalachians strongly suggest that the southern Blue Ridge became land about this time. A source for sediments of late Ordovician and early Silurian was required in that direction also. Because there was activity in the Ozarks at about that time, and because these differential settlements must have caused the prominent land areas to act in unison, it is a logical conclusion. All of this near-Blue Ridge facies distribution was formerly, of course, considerably east of its present location, to which it was moved by various crustal shortenings finally culminating in the main Appalachian orogeny.

As the seas gradually moved over the upland areas, progressively younger deposits formed basal Ordovician (post-Canadian), so that in northern Ohio and Indiana -- approaching the old Algonquin and Wisconsin lobes -- the Chazy-Black River section becomes very thin and dolomitic, and overlies Trempealeau. In places in west Texas and south-east New Mexico the Montoya (Cincinnatian) overlies Ellenburger, from upper Ellenburger down to the basal Bliss sandstone (Cloud and Barnes, 1946, p. 66). There is no evidence that the Ordovician seas ever covered the main part of the Ozark upland, unless the preservation of so much of the Cambrian section there is due to its having been buried under upper Ordovician, which was later entirely cut away.

The thickness map of the interval between the top of the Knox and the top of the Tyrone (pl. 7) shows thinning northward, and also with thickening southeastward into the deeper part of the Appalachian basin and southwestward toward the Ozark high. Thus, the period of uplift and erosion which resulted in irregularly thick areas of late Knox sediments also, because of direction of re-encroachment and proximity to source of materials, effected a constant thickness of Chazy over these zones. This is another step in the formation of the Cincinnati arch.

It was suggested some time ago that the picture thus presented by an isopachous map of this interval might also present a picture of Knox thinning, as it was known that thin Chazy rested on progressively older formations into Ohio. Careful sample studies have shown this to be essentially true. Local structures developed during the pre-Chazy interval are likely to be reflected in local thinning of the Chazy.

Small irregularities which are apparent where there is a great deal of control have been omitted from this map to avoid confusing the regional picture. Undoubtedly, if there were as many data for all of the state as there are for Estill, Powell, and Clinton Counties, many more such local variations would be indicated.

STRATIGRAPHIC SECTIONS OF ORDOVICIAN

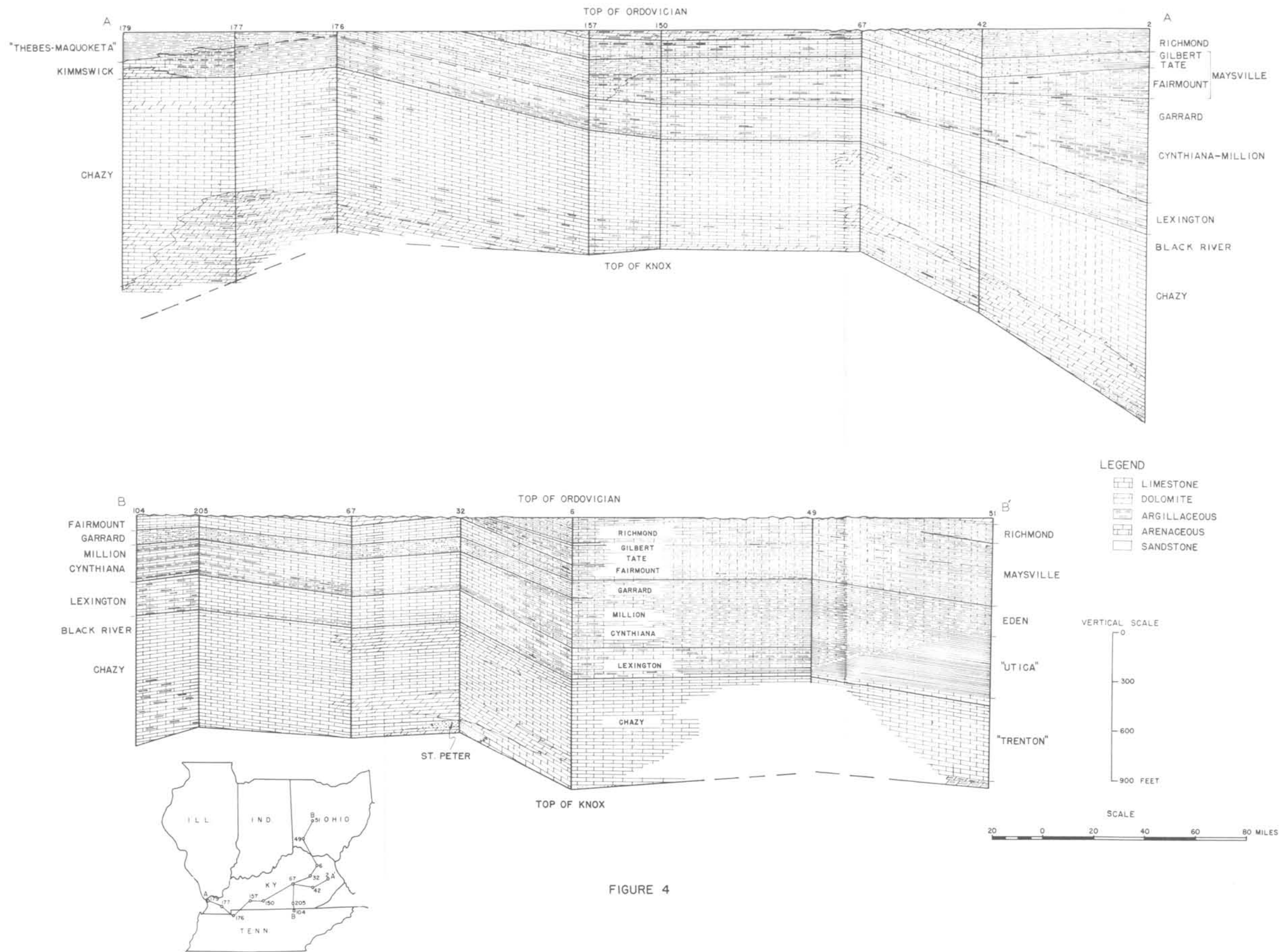
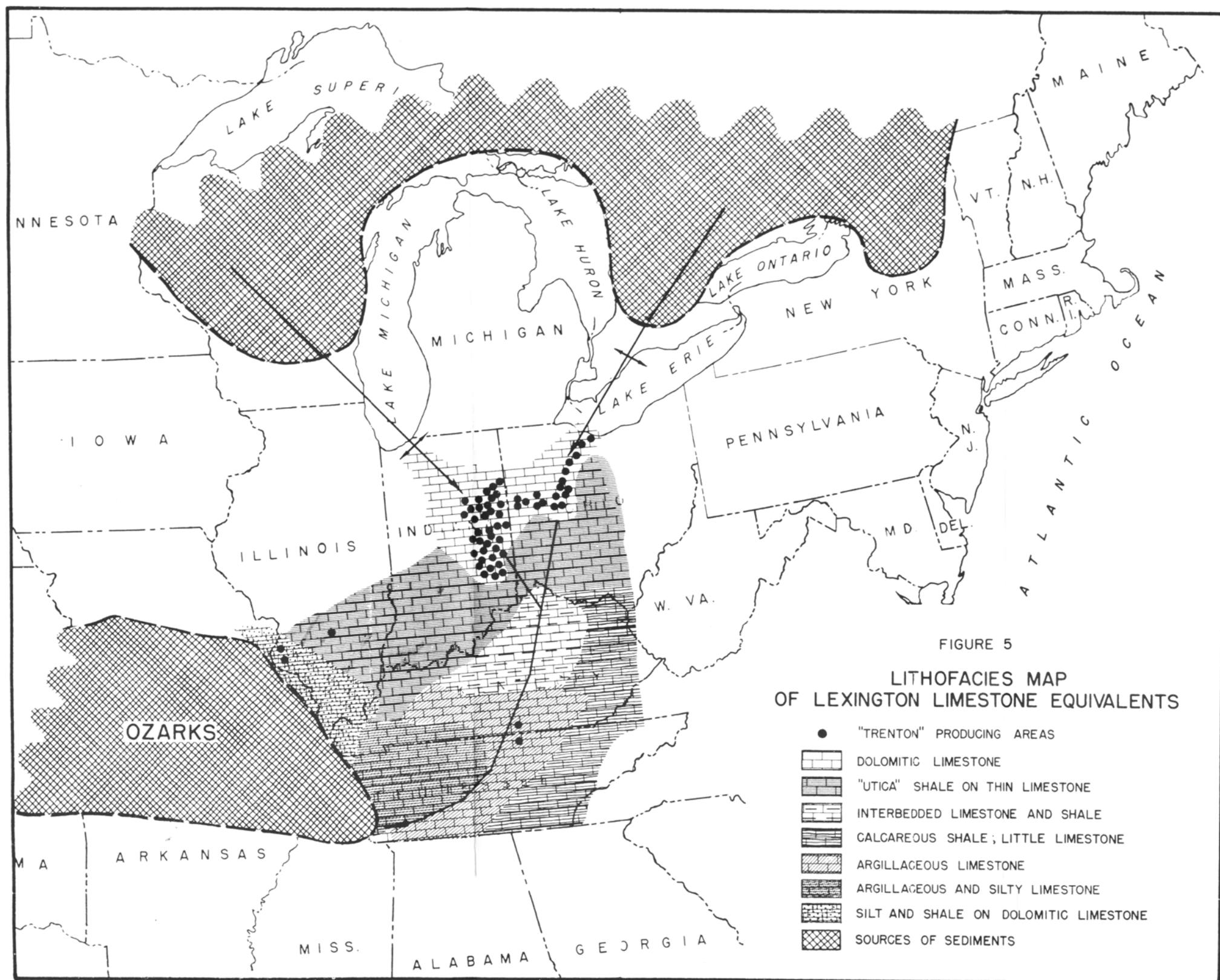


FIGURE 4



Detailed studies made with this possible interpretation might reveal that the Smithville-Black Rock of Arkansas, the Buffalo River of the Ozarks, and the Chazy of the Appalachian basin are essentially correlative and mark deposits following an orogeny. Some faunal differences should be expected due to the difference in environment of deposition.

The post-Wells Creek Chazy of Tennessee, around the Nashville dome, contains a little more shale than do the equivalent formations north into Kentucky. This is due to the proximity to the Ozark-extended high. The Murfreesboro and Pierce lose clay content on the northeast and can not be differentiated from the rest of the section in central Kentucky. Chert beds that can be used for correlation around the Nashville dome (Bentall and Collins, 1945) are lost on the northeast in Kentucky, where essentially the only chert in the Chazy or Black River is associated with bentonite.

In the Mississippi Valley the basal Plattin (Grohskopf, 1948) is marked by small structureless oolites -- calcareous clay pellets and intraformational conglomerates -- indicative of shallow-water conditions at that time. At nearly the same horizon similar oolitic zones are found in south-central Tennessee, that is, south of the Ozarks-extended, and in western Kentucky, north of that structure. These are limited to the region around the old high, however, and are not recognized basinward.

The section from basal Wells Creek to the top of the Carters in Tennessee, and the Camp Nelson-Oregon-Tyrone in Kentucky, is considered as a unit in subsurface work. There are no completely satisfactory units within this section which would add important details to the regional geologic picture. Bentall and Collins (1945) have broken this group into units which are a great convenience but only locally applicable. At the outcrop, over the Lexington dome, a three-fold division is possible only because of the presence of a dolomitic limestone which occurs about 90 feet below the top of the Tyrone. This dolomite is undoubtedly secondary and related to the doming with development of fractures. It can be recognized in the subsurface only high on the structure. No evidence can be seen, either on the surface or in the subsurface, of a break in sedimentation in this part of the section.

In Kentucky the Chazy-Black River interval thickens from little more than 400 feet at the Ohio River to more than 1,100 feet in southeastern Kentucky and more than 1,400 feet in southwestern Kentucky, where the clastic dolomites have been added to the base. The thinning can be explained almost entirely by nondeposition of the lower strata. It is a long sequence of vaughanitic to lithographic limestone with amazingly constant facies. Several thin metabentonites are known, the most persistent zone occurring within the top 20 feet of the Tyrone. Drillers call this zone the "Pencil Cave."

The changes of facies across Kentucky are indicated in the stratigraphic sections (fig. 4). At the west end of the state the lower Chazy is composed of clastic dolomite, silt, floating sand, and some thin shale partings. This facies is gradually lost eastward, and the lower part which becomes darker and slightly more argillaceous than the upper 300 feet correlates with the Murfreesboro of Tennessee. Thickening of the Chazy southeastward is by addition of older, greenish-gray, argillaceous limestones and a little dolomite. In the area indicated by hachuring in plate 7 on the east side of the present arch, the base is marked by

the sandstone which is called St. Peter. Farther north the fine lithographic limestones may rest directly on the Knox, or the basal limestone may be slightly argillaceous and green, a southward extension of the Glenwood. The dolomitic limestones in the upper 100 feet of the section are limited to the top of the present Cincinnati arch.

Trenton

The use of the term "Trenton" should be explained before that unit is described. According to common usage in Ohio and Indiana, the Trenton includes the limestone between the base of the Utica shale and the top of the Knox. As it was long assumed that the basal Eden in Kentucky was approximately Utica in age, the natural upper boundary for Trenton here was the base of the Eden or the top of the Cynthiana. The top of the Cynthiana is difficult to determine even in surface exposure in Kentucky, as no great faunal or lithologic break is present (McFarlan and Freeman, 1935, pp. 1975-2006). In the subsurface it is even more difficult, and that interval is usually referred to as Cynthiana-Million, the Million being the lower part of the Eden. The lower Cynthiana contact with the Lexington limestone below is sharp, however, and can be determined with ease in both surface and subsurface work. Subsurface studies indicate that the Utica shale facies is found progressively lower in the section toward the south and actually has been identified in the lower 40 feet of the rather persistent 200 feet of Lexington limestone. Thus, considerable confusion exists about the exact stratigraphic interval indicated by the term Trenton. This problem of correlation and lithologic relationships should be studied and an attempt made to understand the exact relations to the Trenton at the type locality.

Lexington

There was a sharp lithologic change at the close of the Tyrone, with local irregularities at the upper contact. A breccia including fragments of Tyrone limestone locally occurs in the basal Lexington. Although this change is sharp and prominent over most of that portion of the continent under discussion, there seems to have been no great time break and no interval of erosion except of the sort which would be accomplished by wave action with a shallowing of the waters. That there was considerable volcanic activity at about that time is attested by the layers of bentonite which distinguish the later part of the early Ordovician and, indeed, are locally present at the contact of the Tyrone and Lexington or within a few feet of the base of the Lexington. The Chazy-Black River section is composed almost entirely of a great area of sub-lithographic limestone, very fine and homogeneous, and is in sharp contrast to the Lexington or lower Trenton, which was apparently a time of great variation of sedimentation in a rapidly changing environment.

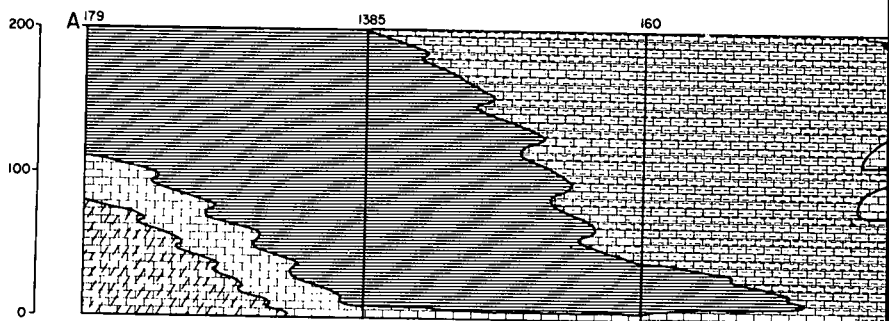
The Trenton in Kentucky is said to include the Lexington limestone group and the Cynthiana. During Lexington time in the Cincinnati arch area local facies changes were so many as to have caused great confusion among early workers and to have resulted in the use of a great many unnecessary names. This problem was explained by McFarlan and White (1948, pp. 1627-1647). In spite of the local facies the

Lexington limestone group has enough over-all similarity of lithologic character and interval to make a good mappable unit, either for surface or subsurface work. It can be identified throughout Kentucky and southward into the Hermitage-Cannon of eastern Tennessee, to the Hermitage of western Tennessee, and northward for a short distance into Ohio. In Ohio it soon loses character by becoming a part of the long sequence of shales known there as Cincinnati, the base of which is the Utica.

The Ozarks, or the land mass immediately adjacent, must not have been completely covered during the Chazy-Black River, because when the Ozarks and the southeastern extension became a contributing land area at the beginning of Lexington time, a considerable quantity of shale and some fine to coarse silt were available for immediate deposition. Thus, immediately to the southeast and east, calcareous shale and silts were deposited, relatively unsorted in western Tennessee. Off the northeast flank in western Kentucky and southern Illinois, apparently away from the mouth of the stream bringing in the silt and mud, very fossiliferous limestone (Kimmswick) formed in the clear, shallow waters. A little later, however, some of the muds and silts that were being carried into the sea to the south were sorted and transported northward and deposited as a coarse-grained siltstone and fine shale ("Thebes-Maquoketa"). This makes the so-called Thebes-Maquoketa of western Kentucky and adjacent Illinois and Missouri roughly equivalent to the upper part of the Lexington limestone.

At the same time the Ozarks began contributing muds and silts, the other land areas, which usually acted in unison, became effective (figs. 5 and 6). The Blue Ridge arc and the Adirondack lobe were also high enough to furnish clastics but again mainly of the fine shale and silt size. Deposits of this type of sediments began near the Adirondacks in early Trenton and continued through the Martinsburg. By this time there was another effective area. Because of the deposition of great quantities of sediments over the unstable platforms, part of the continent which was land during most of the Cambrian and hence did not receive the great quantities of early sediments or become a part of the geosyncline, was under water during late Cambrian (foreland areas) and during all but the earliest Ordovician. The accumulation of stresses due to these sediments loading against the late Cambrian land masses started a tendency for the stable areas, which lagged behind as the seas moved in, to drag with them the immediately adjoining areas. Thus the Wisconsin lobe, which did not receive sediments or was last to go under during late Cambrian, influenced the area immediately southeast of it and tended to form a structural nosing in that direction. In the same manner the Algonquin lobe extended southwest from Ontario, showing a tendency toward a structural nosing in front of it. By early Trenton time these two had coalesced, and when there was a little differential movement between the land and sea areas -- not enough to drain the stable platforms but only to drain the higher lands and leave the water more shallow over the rest of it -- this incipient north end of the Cincinnati arch stood as a topographic high on the sea floor.

Thus, while the Ozarks contributed clastics to form the Hermitage of western Tennessee, the Thebes-Maquoketa of west Kentucky and southern Illinois, and some silts and muds as far east as the present Cincinnati arch, the shallow waters over central Tennessee out of reach of these clastics were receiving principally limestone deposits and a little interbedded shale, some of it almost as fine-grained and dense as



—LEGEND—

	DOLOMITE OR DOLOMITIC LIMESTONE		ARGILLACEOUS FOSSILIFEROUS LIMESTONE
	LIMESTONE		SILTY ARGILLACEOUS LIMESTONE
	DARK ORGANIC SHALE		CALCAREOUS SHALE
VAUGHANITIC TO FINE-GRAINED ARGILLACEOUS LIMESTONE			

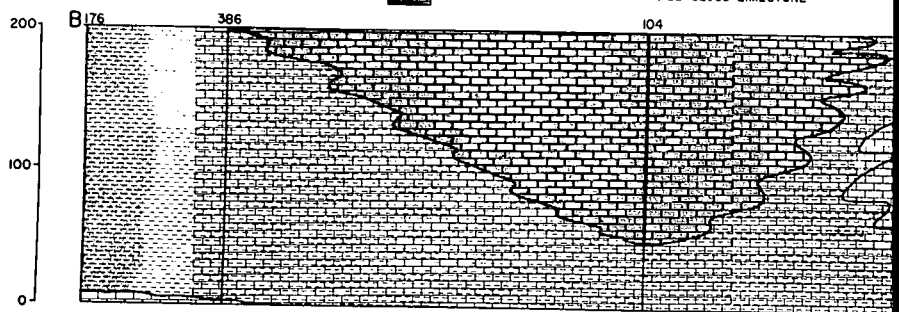
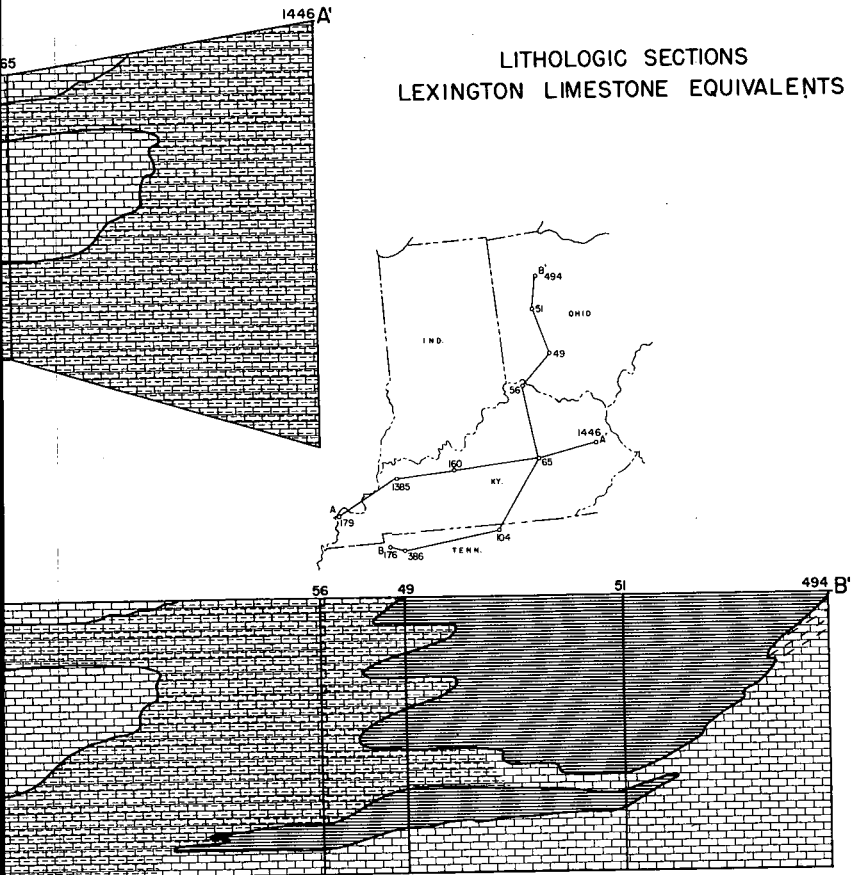


FIGURE 6

LITHOLOGIC SECTIONS
LEXINGTON LIMESTONE EQUIVALENTS



the underlying Chazy-Black River. This facies goes out northward toward the Lexington dome, and through the Cumberland saddle there is some interfingering of sublithographic limestone and crystalline, fossiliferous limestone containing some interbedded calcareous shale. Clastics from the northeast did not reach into Kentucky, except for a little black shale; this probably formed out beyond the reach of sediments from the shore, where the waters were too deep for complete destruction of the organic matter before burial. The region of the incipient Cincinnati arch in the north (Findlay-Kankakee) was one of shallow water -- a sort of banks -- generally too far from shoreline in all directions to receive any appreciable quantity of clastics. As a result there was a rich fauna and a very fossiliferous and dolomitic limestone formed. Probably much of the dolomite was of the sort that has been noted in the Funafuti Atoll in the Pacific forming today (Hatch, Rastall, and Black, 1938, pp. 195-197) as replacement of fossil material. Near shore to the northeast, east, and northwest during most of this interval very fine grained, richly organic clays were being deposited because of the greater depth of the water and quick burial of the organic material. Very little limestone was accumulated with the shale and organic matter except south of the Ohio River, where highly fossiliferous limestone with interbedded calcareous and less organic shales were deposited at this time. As the water deepened slightly over the newly formed arch the black shale deposits moved up, with limestone still accumulating in the shallower water, until finally all was covered. This meant that a highly fossiliferous and dolomitic limestone having much initial porosity was buried quickly under shales rich in compounds from which oil could be formed, and thus the unique conditions necessary for the great Trenton oil field of Ohio and Indiana were created.

The base of the Lexington is marked by a metabentonite, which in northern Tennessee and southern Kentucky is known as the "mud cave." In southern Kentucky the Lexington is mainly brownish-gray, fine-grained, argillaceous limestone lithologically similar to the Cannon of Tennessee but having few crystalline, fossiliferous limestone strata like those in central Kentucky. On the south flank of the Lexington dome the top of the Lexington is marked by the first occurrence of the fine-grained, brown limestone which makes up much of the section on the south and which caused considerable confusion to early stratigraphers -- the *Salvisa* facies.

Northward the limestone of the Lexington becomes increasingly shaly from the top down, with introduction of a shale of Utica lithology 25 to 30 feet above the base (figs. 4 and 6). In a well (No. 56) near Cincinnati this Utica-type shale is nearly 20 feet thick, and the overlying Lexington still has considerable limestone. In Warren County, southern Ohio, the Lexington is still recognizable (well No. 49) as a unit and contains about 30 feet of brown to black, carbonaceous Utica-type shale occupying a position 30 feet above the base of the Lexington. Farther north, in Logan County, Ohio, (well No. 51), 45 feet of Lexington-type limestone underlie the Utica, and the entire section above is slightly calcareous shale. This could not be differentiated from the Cincinnati. Thus, brown to black shales of the Utica facies apparently were being deposited as early as middle Lexington as far south as the Ohio River, and they may be time-transgressing, younger northeastward.

While shale was being deposited through Ohio and northward, limestone (some of it biohermal) interbedded with shale was being formed

in northern Kentucky. In southern Kentucky and northern Tennessee slightly argillaceous, fine-grained limestones formed. The transition from Lexington-type lithology to Cannon-type occurs in the Cumberland saddle between the Nashville and Lexington domes.

In the direction of the Ozark high the Lexington becomes more shaly and silty (fig. 4), the silt deposition starting practically at the beginning of Lexington in the Cincinnati arch area and increasing in importance southwestward until the equivalent Hermitage of western Tennessee is essentially shale and silt.

Almost everywhere in the subsurface of Kentucky, both east and west of the Cincinnati arch, the top of the Lexington is marked by fine, brown limestone containing some chert. The entire section is remarkably uniform in thickness, approximately 200 feet, and the contact with the overlying Cynthiana is fairly sharp.

The stratigraphic section (fig. 4) indicates the facies of the Ordovician across Kentucky. Near the Ozarks the Trenton consists of the Kimmswick biohermal limestone overlain by the sorted clastics described above as the Thebes-Maquoketa, which become less well sorted as the section, as drawn, gets closer to the Ozarks source. That part of the section is mainly calcareous shale across western Kentucky to mainly limestone with some interbedded shale in central Kentucky. The section B-B¹ shows that the Lexington is fine-grained, argillaceous limestone in northern Tennessee and through the Cumberland saddle; toward the north into central Kentucky the amount of vaughanitic limestones decreases, and the formation consists of interbedded fossiliferous limestones and some shale. Still farther north the amount of shale increases at the expense of the limestone and shale of the black organic "Utica" type and replaces the middle Lexington at about the latitude of the Ohio River. The "Utica" black shale increases in thickness to the northeast but rises higher in the section where it crosses the Findlay arch in north-central Ohio and adjacent Indiana.

Cynthiana

The lower Cynthiana has numerous facies as seen on the outcrop over the Cincinnati arch. These can be recognized in the subsurface. They include the phosphatic Woodburn limestone, the crystalline quarry rock known as the Nicholas with underlying shaly limestone facies, and the interbedded limestones and shales of the Bromley on the north. Later, in Cynthiana time, the sediments became more uniformly fossiliferous, gray, slightly phosphatic, crystalline limestone, interbedded with dark-gray, calcareous shales. This type of sedimentation continued into the Eden.

Eden

The Eden has been subdivided into Fulton, Million, and Garrard in central Kentucky, and Fulton, Economy, Southgate, and McMicken near Cincinnati. It is difficult at the outcrop to recognize the Fulton, thus establishing the contact between Cynthiana and Eden, and it is even

more difficult in the subsurface. For that reason the Cynthiana and Million are described together. At the outcrop the Million appears to have more shale than the underlying Cynthiana, but this characteristic is not discernible in well cuttings. The discrepancy is probably due to weathering phenomena, the shale of the Million being distinctly clayey and the limestone thin-bedded; the clay washes over the surface of the exposure and gives an erroneous impression of the amount of shale. In the cuttings much of the clay is washed out during drilling operations, and the excessively thin bedded character of the limestone can not be determined.

In a small area in Clinton County, Kentucky, there is within the Million a limestone, practically coquina, which possibly represents a biohermal accumulation. The trend of this exceptional limestone is slightly east of north, in general paralleling the present trend of the Cincinnati arch. This is a reservoir for petroleum and is locally known at the "Granville sand." The pattern made by this facies is perhaps 10 miles long and a little more than a mile wide. Wells drilled on either side show normal sections of gray, fossiliferous, phosphatic limestone interbedded with calcareous shale. The "Granville" is clean, cream to white, rarely dolomitic, and contains rare pink calcite. Beyond the northern end of the productive area, in Russell County, the limestone is still nonargillaceous but has much red calcite, lithologically similar to the Fernvale of later Ordovician age, which may have had a similar origin.

It has been pointed out (Diamond, 1943) that the "Granville" limestone seems to underlie the crest of the Illwill anticline. This suggests reeflike accumulation that may have influenced the location and orientation of the anticline. The original depositional dips over it created a zone of weakness where subsequent stresses were released.

The upper Eden in Kentucky is known as the Garrard siltstone. Maysville fossils have been found in the upper part of it in northern Kentucky. This is a sandy to silty and argillaceous, dark-gray limestone. In the Cincinnati arch area it was long assumed to be rather limited in extent. However, in subsurface studies it was found to be a good horizon marker, because it can be traced not only throughout Kentucky but also into Tennessee, where it becomes a part of the upper Hermitage of western Tennessee. It is a time-transgressing silt, starting in Lexington time north of the Ozark upland and extending into the basal Maysville at the Ohio River near Cincinnati. Where there is considerable subsurface control in the vicinity of the Cincinnati arch, it is extremely useful for correlation. Locally the amount and distribution of the silt within the formation varies considerably. In southern Kentucky it is in many places broken by coarsely crystalline limestone with yellow calcite crystals. This limestone may be found overlying the silt, within it, or may be split into two limestone breaks in the silt. This particular characteristic appears to be limited to the southern and southeastern flanks of the Lexington dome and seems to rise in the section northward. The "Granville" appears to be a similar deposit. A short distance north of the Granville area in Garrard County this zone is found in the Garrard itself, and in Estill County it is found just overlying the Garrard in the basal Fairmount member of the Maysville. The stratigraphic section (fig. 4) extending from Ballard County, Kentucky, in the Mississippi embayment, across the south flank of the

Lexington dome into eastern Kentucky, suggests that the black silt and shale, which are known as the Thebes-Maquoketa in the embayment and have been correlated with Richmond, are actually considerably older. Possibly the silt accumulation began there soon after deposition of Kimmswick thereby approaching time equivalency with the Lexington and lithologic equivalency with the Cynthiana-Eden in central Kentucky. The source of the Garrard silts, then, was the lowland area of the southeastern extension of the Ozark upland, and the distribution is due to offlap phenomena as the waters slowly retreated from around the upland. (Note plate 8 showing thinning of all post-Tyrone Ordovician toward the Ozarks.)

Maysville

The Fairmount, lower member of the Maysville, is a series of limestones, very fossiliferous and phosphatic, interbedded with calcareous shale, similar, excepting for faunal content, to the underlying Cynthiana-Million. In southern Kentucky it is an easily mappable unit about 120 feet thick, having sharp lithologic contact with the underlying Garrard silt and with the overlying Tate green dolomitic siltstone. The Garrard facies rises in the section northward at the expense of Fairmount. The Tate loses silt northward, becoming increasingly calcareous, argillaceous, and gray. Just as the Lexington limestone becomes increasingly shaly northward, so do the other members easily recognizable in Kentucky, until the entire section above the lower 20 to 30 feet of Lexington is occupied by undifferentiated Cincinnati calcareous shale in Ohio and Indiana. This is also true east of the Cincinnati arch in Kentucky, where these units are gradually lost in the Martinsburg shale.

A new source of clastics became available near the end of Maysville time, however. Silts from this new southeastern source, which was to affect the Richmond in the southern Appalachians, reached southern Kentucky and Tennessee during later Maysville time, producing the Tate formation. It may be that the lower part of the red Medina, or Queenston, is equivalent to the Tate of central Kentucky. Again the question arises as to where to draw the contact between the two groups, the Richmond and Maysville, when the new source suggests a major break at the base of the Tate, whereas on the north and east continuous deposition of marine-type gray limestones and shales characterizes these formations.

A limestone break, the Gilbert, makes it possible to determine the top of the Maysville in the subsurface in southern Kentucky. This is thin, heavy-bedded, almost black limestone, very fine grained and dense. In few places is it more than 8 to 10 feet thick. Since the entire Richmond northward becomes increasingly calcareous, argillaceous, and nonsilty, the Gilbert may be the first such limestone facies to appear. The Tate silt is so similar to the Richmond and is essentially so barren of fossils that it has been commonly mistaken for Richmond at the outcrop. For instance, the so-called Saluda of the outcrop area on the west side of the Cincinnati arch in Kentucky is commonly Tate, and what has been called Richmond in south-central Kentucky is almost everywhere Tate.

Richmond

The close subsurface control which is available shows that the Richmond thins westward (pl. 9) and is completely absent in many places before it crops out on the west flank of the Cincinnati arch. A thickness map of the Richmond indicates that the Ozarks-extended must have been high during this time, and Richmond was either not deposited or was later eroded. The distribution of the post-Kimmswick silts and shale of the Mississippi Valley, and the Richmond channel fills in southern Tennessee, described by Wilson (1948, pp. 733-766), tend to confirm this theory.

The isopachous map (pl. 9) of the Richmond indicates that it thins to extinction slightly west of, and without regard to, the present Cincinnati arch in Kentucky. The zero line can be drawn with fair accuracy. The dashed lines indicate the area where the Richmond is absent because of post-Silurian erosion over the arch. In that area the Maysville is overlain either by a remnant of Middle Devonian limestone or by the New Albany black shale. Throughout the rest of the area of known occurrence the Richmond is overlain by Brassfield, basal Silurian, in normal sequence.

One of the problems created by this study is: what part of the strata mapped as Thebes-Maquoketa in the Illinois Basin is actually equivalent to the Lexington in Kentucky, and what part is the southwestward extension of Richmond deposition toward the Ozarks? Richmond was not identified in wells in Perry or Sullivan Counties, Indiana.

Another problem is the Fernvale which occurs through a small area in northwestern Tennessee and adjoining Kentucky as a crystalline limestone with much pink calcite. It is only 20 to 30 feet thick and directly underlies the Brassfield and overlies the Hermitage. Shideler¹ (personal communication) said that in many respects the Fernvale of Tennessee is different from that in the western Ozarks. Perhaps re-examination might prove it slightly older. It is reported, however, to contain *Rhynchotrema capax*.

Near the southern part of the Lexington dome (pl. 9) the Richmond is mainly green, argillaceous, silty dolomite. Northeastward it becomes first more calcareous, then less green and silty, until just south of the Ohio River it is lithologically similar to the underlying Maysville, that is, fossiliferous gray limestone interbedded with calcareous shale, the shale increasing northward. In a small area west of the dome the Richmond is dolomitic, locally having clean, but thin, dolomites which have contained a little oil. On the southeast, the Richmond becomes increasingly silty, with the green color changing to red, first as red silty shales, then red silts, and finally the red sandstones of the Medina.

For a short period following deposition of the Richmond all land areas on the west were low. The waters were shallow and ideal for the formation of widespread but thin limestone -- the Brassfield. Clastic sedimentation continued in the Appalachian basin on the east, the red Medina clastics being followed by white sands, but from eastern Kentucky westward through all of the area affected by the Cincinnati arch and the Ozarks, there was a great lull. Following this, for

1. Shideler, W. H., Department of Geology, Miami University, Oxford, Ohio.

the first time, the Cincinnati arch had appreciable effect on sedimentation. At first it acted as a barrier to the clays being washed into the Silurian seas from the east, and later in the Silurian it was high enough to contribute sediments to early Devonian deposition.

OIL AND GAS POSSIBILITIES

Cambrian

Plate 1 is a generalized isopachous map of the Cambrian on which are indicated the oil fields producing from either Ellenburger or Arbuckle. It indicates markedly the relationship between oil production and the foreland deposits, most of the production being found within the 2,000-foot thickness line. This apparently is due to two factors: (1) The foreland deposits are dolomite and sandstone. The upper Ellenburger-Arbuckle is generally fine-grained, dense, and intricately fractured. The lower part of the section is more coarsely crystalline, with either initial porosity or secondary porosity developed because of its initially coarse-grained characteristics. (2) The position on the foreland areas means that during all subsequent orogenies these areas were most violently subjected to stresses which resulted in much faulting, fracturing, and sharp folding. For this reason, following such orogenic movements the younger strata were removed from over the structures. In many places much or all of the Ellenburger was removed, and in all cases the truncated edges were buried under later sediments.

Early in the Pennsylvanian there was considerable sharp folding in many places over the continent, although in some areas it started as early as Mississippian. There was much truncation of older formations over folds in western Texas and southeastern New Mexico, over the central Kansas uplift, near the Ozarks, and along the Nemaha granite ridge extending through Oklahoma and Kansas. The late Mississippian or early Pennsylvanian folding in the Appalachian geosyncline was in the area of thickest sediments and was concentrated in what is now the Piedmont area. It was accompanied by more severe crumpling than was obtained in the area of foreland Cambrian deposits because of its relation to the axis of the old geosyncline and thickness of sediments. This had the effect of temporarily moving the axis of the sedimentary basin westward until the folding which continued into late Permian involved these sediments also. If this is the case the Cambrian and Ordovician involved in the early Pennsylvanian folding was composed mainly of basin deposits, lithologically and genetically different from the foreland deposits in which the oil is found in the Texas-Oklahoma and Kansas areas. Most likely limestones and pontic shales make up the bulk of the Cambrian and Ordovician sediments in the early Pennsylvanian folding of the Appalachian geosyncline. This early folding would make it possible for the great thickness of Devonian clastics to have furnished sands necessary for early Pennsylvanian deposition to the west, in the present folded belt and westward. If there is any place in the eastern Appalachians where the folding was not too intense, where at least the Devonian and upper

Silurian were eroded, and where the overlap was by marine sediments rather than by early Pennsylvanian nonmarine deposits, it might be a good place to prospect for oil. If found it is likely that the porosity would be fracture porosity instead of interstitial because of the nature of the basin sediments. If there is any place in the western Appalachian area, toward the foreland deposits, where the same conditions existed, it would be a good place to prospect. The oil found in the fractured Ordovician under the thrust sheet in southwestern Virginia (Rose Hill) may be such an instance. Perhaps there are other similar possibilities in eastern Tennessee, under the edge of the thrust sheet.

To find structural conditions similar to those in Texas it would be necessary to find essentially open folds that had formed probably in early Pennsylvanian or late Mississippian, which had been eroded somewhat and then overlain by later marine sediments. The difficulties are (1) whether folds of that kind would have persisted in spite of renewed activity at the close of the Permian, and (2) the overlying Pennsylvanian is composed mainly of fresh-water or brackish-water deposits with the carbon locked up in the sediments as coal rather than as potential petroleum.

The Mid-Continent area and western Texas received early Pennsylvanian marine sediments. Deposition was rapid and organic material accumulating in the sediments was buried before it could be oxidized or entirely destroyed by scavengers. Rapid burial, or water too deep for the penetration of sunlight, would result in preservation of such organic material. Similar sedimentation continued throughout Pennsylvanian and Permian time with no major breaks in this area. Pennsylvanian and Permian sediments in this part of the continent were particularly rich in reef-building animals or animals whose hard parts could accumulate as reefs, indicating an abundance of organic material available for preservation.

The best production from the Ellenburger in western Texas comes from those fields where the Ellenburger is overlain by either Pennsylvanian or Permian. In some places thin Simpson either overlies the Ellenburger or is present on the downdip side of the field. Sometimes the production comes from the upper portion of the Ellenburger where the top section is fractured. Locally the upper part of the Ellenburger is missing, and the lower beds have some interstitial porosity combined with fracturing. The effective interstitial porosity is usually considerably less than one percent, and the saturation is only about 50 barrels per acre-foot, but since the oil column may be from 200 to 700 feet thick, it is still possible to produce a great deal of oil. Where limestone is present in the section production is lower, because apparently the fractures in limestone heal more rapidly than those in dolomite (Adams,¹ personal communication). McFarlan² (personal communication) has observed on the outcrop where there are interbedded limestones and dolomites, that frequently the dolomite is fractured much more intricately than the limestone.

1. John Emery Adams, The Standard Oil Company of Texas, Midland, Texas.

2. A. C. McFarlan, Chairman, Department of Geology, and Director, Kentucky Geological Survey, University of Kentucky, Lexington, Kentucky.

At present only one field (the Barnhard field) is known that is not located on a sharp fault structure, and there the dome is low and the production so low that there is some doubt of its paying out. In most cases, and in all of the best fields, the Ellenburger is overlain by Pennsylvanian or Permian, at least at the top of the structure. At the northwest end of the Central Basin platform, near and over the New Mexico line, a little production is obtained from the Ellenburger where every unit above is represented -- the Ordovician, Silurian, Devonian, and Mississippian. All these units are thin and fractured, and in most cases oil is found in the Silurian and Devonian as well as in the Ellenburger, indicating further that fracturing is the important factor. These fields are much less productive than the ones to the south where Ellenburger was exposed in early Pennsylvanian. One field is a buried hogback of Ellenburger overlain and surrounded by Permian (Ellison, 1948, pp. 399-418).

In north-central Texas there is a little spotty Ellenburger production which does not compare favorably with the western Texas production. In the porous area accumulation is in fractured Ellenburger overlain by Pennsylvanian. This occurs where the Bend arch (north-south trending) is crossed by the Red River uplift (east-west trending), resulting in sharp fracturing and some faulting.

In northeastern Oklahoma, at Tulsa and northeastward, the Arbuckle production has not been comparable in quantity to that of western Texas but has been profitable. Here again the Ellenburger is a foreland type of sediment. The section is irregular in thickness mainly because of the fact that the basal deposition was around eroded granite hills. Over many of these buried hills Roubidoux rests on granite, and in places the sediments overlying the hills are as young as Cotter. Again the accumulation is mainly in fractures, although there is some interstitial porosity where the uppermost formations of the Arbuckle were subjected to pre-Pennsylvanian erosion. Pennsylvanian marine sediments rest on Arbuckle. Wells occasionally have found production in the Arbuckle in adjoining Kansas where the New Albany black shale rests on eroded Arbuckle. In the central Kansas fields, over the central Kansas uplift, pre-Pennsylvanian erosion exposed Arbuckle strata, with pre-Arbuckle at the unconformity on top of the structure. Thus, here again the Arbuckle has been eroded over structure and subsequently buried under Pennsylvanian marine deposits.

Summarizing, it appears that these things are necessary for production of oil from the Ellenburger-Arbuckle-Knox: (1) Dolomite, principally because some interstitial porosity is generally found in the coarser dolomites, and because dolomite either fractures more easily than limestone or heals less readily. (2) Sharp folds (a) to initiate the necessary fracturing, (b) to facilitate more rapid erosion of overlying beds so that the older formations can be overlapped by younger organic strata, and (c) to cause the stresses necessary to distill this organic material into oil. Any organic material in the Ellenburger itself may be so distilled into petroleum and some of it preserved even during the period of exposure. Later stresses are likely to be relieved along the same lines of weakness exhibited earlier, and further distillation of organic matter from the younger strata results in oil and gas, which can migrate into the more porous Ellenburger.

Comparison of Knox in Kentucky to Conditions Elsewhere

The Knox in Kentucky is almost entirely dolomite, some formations of which have considerable interstitial and perhaps some fracture porosity, demonstrated by the fact that all wells drilled into this horizon have much salt water. The dolomite is considerably thicker than in the producing areas, which is a bad feature only because it indicates that deposition here was on a more stable platform area rather than on the unstable foreland where sharp structures developed.

The only indications of oil in Kentucky Knox have been found in areas of the sharpest known structures in the state. Wells drilled by the Pure Oil Company and the Stanolind Oil Company (wells No. 36 and 37) on the Rockcastle River uplift had a small amount of oil in fractured Knox and finished with less than commercial production. The gas found in the St. Peter (with a little in the Knox itself) in Estill County is related to a major fault system, the Irvine-Paint Creek, which had movement initiated during the Devonian. A well drilled farther east in this section where the unconformity at the top of the Knox was greatest (well No. 1446 in Johnson County) was dry in the Knox. A well (Webster County No. 168) drilled in the Rough Creek fault zone encountered much fracturing in the Knox but no oil. In this location most of the Canadian section was present, overlain by thick Chazy-Black River. The little sporadic production in Clinton County is in an area where younger formations produce from fractures also.

No structures are known in Kentucky that are comparable to those found in the producing area of west Texas and the Mid-Continent. That is not the whole story, however. There is no unconformity in the section that brings Knox into contact with younger formations which might have had initially high organic content from which oil could be distilled. The overlying Ordovician is fine-grained, dense, and brown, the color possibly due to organic stain. Except for the small areas mentioned above, there are no known structures which might account for stresses sufficient to convert the tiny amounts of preserved organic matter in the Ordovician into oil in sufficient quantities to be commercial.

In Kentucky deeper production of any importance is more likely to come from the lower sands, if they can be found in contact with a possible source of the oil. The sands were about 700 feet thick in the California well (No. 69) in Lincoln County, but in Estill County (No. 743) this same interval was occupied by shales, some of them black, and by three thin sandstones, tightly cemented, but all fluorescing under ultraviolet light. If these sands could be found where they were less quartzitic, where there were still shales associated, and where there was structure of sufficient magnitude to start the distilling process, some commercial oil might be found. Since the sands came from the north, a move in that direction is indicated. Perhaps the so-called crypto-volcanic structures might have locally produced sufficient stress at the time of their formation to provide the conditions necessary for accumulation of oil. The promising area for such testing from the information now available would be along the crest of the old structure outlined by the Silurian and Devonian isopachous maps (Freeman, 1951a, pp. 1-61; 1951b, figs. 1, 3, 6, 8, 10). See plate 10.

Ordovician

The St. Peter gas has been described under Cambrian, because in some wells part of the gas actually comes from the Knox, as well as from the sand above. The distribution of this gas is related to the Irvine-Paint Creek fault. A number of wells have been drilled, some of them having initial open flow of 18,000,000 cubic feet per day, but the analyses show it contains as much as 46 percent carbon dioxide, which must be removed before the gas can be marketed as fuel.

Production from the Ordovician has been found only in a limited area in southern Kentucky and adjacent northern Tennessee. It is the area in which the first production in Kentucky was found, the first wells having been drilled for salt water. Oil with considerable initial volume was found as early as 1819 in Wayne County and in 1829 in Cumberland County. The oil being produced in Clinton and Cumberland Counties from the Ordovician now comes from two types of reservoirs: (1) fractures in otherwise dense limestone, and (2) biohermal accumulations. Development of the Trenton field in Ohio and Indiana stimulated much interest in possible Trenton production elsewhere, and operators still hopefully talk of testing the "Trenton" in other areas. The analysis of Trenton stratigraphy given under the discussion of the Ordovician earlier in this paper precludes a repetition of similar conditions in many places. The nature of the problem is indicated in figures 5 and 6.

The reasons for Trenton accumulation in Ohio and Indiana may be summarized as follows: Recall the most effective promontories in the Cambrian and those last to be submerged in the Ordovician. They are a part of the main continental massif, and because of their position in the early Cambrian and during Ordovician, their effect was accentuated with time. The sediments deposited all around them, in embayments and in the open sea, are thicker than those deposited over them, which represent only the greatest extent of the seas. As these sediments became thicker the basins gradually shifted away from the promontories. A lag in front of the massif resulted in lag folding. The Wisconsin promontory, facing southeast, had an anticline gradually forming by lag southeastward. The Algonquin promontory, facing southwest, had an anticline forming to the southwest. The Ozark promontory, facing slightly south of east, had an anticline forming in that direction. The same was probably true of the Adirondack and Llano lobes.

The presence of bentonite is evidence of vulcanism on a considerable scale in late Chazy-Black River and early Lexington time. Thus, some slight renewal of the differential settling of continental and oceanic masses, with not enough differential to drain the continents, may be presumed. The usually unstable platform remained under water except near the lobes, and the isostatic adjustment was reflected in the land-sea relationships in their vicinity. Surface drainage of land areas most productive of detritals -- that is, promontories -- was renewed.

With the renewed topographic differences between land and sea areas at this time the anticlines forming in front of the Wisconsin and Algonquin lobes had coalesced to form a topographic high on the sea floor -- similar to the Bahama banks in the Atlantic today. In this shallow-water area great quantities of fossil debris collected, some of the aragonite and calcite being replaced by dolomite. It was swept

clean of silt and shale by wave action. Most of the organic matter not destroyed by scavengers or by oxidation was swept clear in the same manner and collected in deeper waters. On all sides where the water was deeper the sediments consisted principally of pontic deposits -- fine muds and wind-blown debris and great quantities of organic material preserved because of depth of water and lack of aeration. This area is a good example of the three environments of deposition described by Rich (1951, pp. 1-20) as undaform (the dolomitic limestone), clinoform (the slope shales), and fondoform (the black basin shales).

As the water deepened slowly the banks were submerged, and finally the black organic clays were deposited over the top of the biohermal deposits (undathem). If the information were available for isopaching the limestone and dolomite in the interval between the Utica black shales and the underlying fine-grained limestones of the Black River, it should show a great lenslike body, flat at the bottom and convex upward toward the center. This is the location of the Lima-Indiana Trenton production.

The very porous, partially dolomitized, biohermal limestone deposited in the shallow waters over an ancient bank formed a good reservoir rock. The high organic content, attested by the great thickness of black shales overlying and surrounding the limestone, could provide a source for the oil. The fact that it was a lenslike accumulation, sealed on all sides and on top by shale, furnished a stratigraphic trap with local concentrations caused by small structures.

The rest of the Cincinnati arch was not high at this time. The factors developed for the Trenton field in Ohio should be of use in locating other areas where a duplication of such conditions might be found. Since the various promontories of the main massif acted as a part of the massif, and thus in unison, if the Wisconsin and Algonquin lobes were high at that time, the Ozark lobe must have been high also. That it was high is indicated by the distribution of lithologies around it (fig. 5). In western Tennessee and adjoining Kentucky this part of the section is represented by silty and slightly calcareous shales. This poorly sorted sediment suggests that drainage off that upland entered the sea perhaps in west Tennessee. The muddy waters here would preclude formation of bioherms, but such great fossil accumulations should be anticipated on the flanks of the Ozarks away from the mouth of the main drainage channel. Sample studies do indicate a good limestone, very similar in lithology to that found in Ohio, on the north flank in southern Illinois and western Kentucky.

In contrast to the northern Cincinnati arch area, where the water was deepening during Lexington time, the Ozarks were rising, and the limestone deposits formed near the shore and rose with it. Thus, although the overlying shales on the flank of the Ozarks are dark-gray to black, they are not quite so richly organic as the Utica shales. As the water became shallower the mud brought in by the main stream was spread out laterally, and the longshore currents sorted the detritus into silt and clay in contrast to the unsorted material nearer the stream mouth. This means that the shales which covered the limestone were deposited in shallowing waters and might have lost much of their organic content through aeration of the water had they not been buried very quickly.

On the seaward side of this limestone accumulation, however, black shales of the Utica type were deposited, as should have been

expected where the water was deeper and farther from shore. In wells in southern Indiana and adjacent Kentucky the samples indicate 10 feet or less of Lexington-type limestone overlain by richly organic black shales of the Utica type. Here then are the requisites for a potential oil field on the north flank of the extended Ozarks; in the Jackson Purchase region of Kentucky. There has been some Trenton production at Dupo and Waterloo in Illinois and from a few wells in southern Illinois fields. Samples there indicate biohermal limestone (Kimmswick), about 50 feet thick, covered by black shales.

The presence here of possible reservoir rock and a possible source rock on the down dip side has been demonstrated. As to possible trapping conditions, growth of the southeast extension of the Ozarks and headward growth of the Mississippi embayment (pl. 5) brought Cretaceous gravels in contact with strata from Middle Cambrian to Lower Mississippian age in this part of Kentucky. In southern Fulton County the last remnants of Lexington limestone were found below Cretaceous. Thus, there might have been a pre-Cretaceous surface leak of hydrocarbons. It is necessary then to find a trap against the Ozark structure before the Lexington as a limestone was exposed through embayment erosion. This could have been accomplished in two ways. There might be permeability trapping due to facies change southward into the shales and argillaceous limestones, where the Lexington was still overlain by shales and perhaps some Silurian and Devonian. Or, a trap might be effected by folding or faulting. A rising structure adjacent to a basin settling under sediments should cause down-toward-the-basin normal faulting similar to that around the Gulf of Mexico, where it forms traps for Cretaceous and Tertiary oil. Much faulting occurred in the Jackson Purchase area, some of which might have taken place during the Devonian when the Rough Creek disturbance was initiated. This would form fault traps.

There may be other possibilities for repetition of Ohio "Trenton" conditions. Conditions similar to those found on the north flank of the Ozarks-extended might be present also for the south flank in Arkansas and Mississippi; south of the Adirondack lobe; and west of the Blue Ridge if the sediments have not been too much disturbed by Appalachian folding.

The Trenton on the Cincinnati arch in Kentucky was deposited some distance from shore but still had some interbedded shales, a rich fauna, and nothing to indicate rapid burial. In the Cumberland saddle, where the oil has been found in Trenton, it is fine-grained, more argillaceous, and much more dense than on top of the Lexington dome. The accumulation is of the fracture type with initial production as much as 2,500 barrels per day but very fast decline, many wells being abandoned within two or three months. In many cases drilling deeper into another fracture brings a repetition of the initial production. Fracture production of this type is found from the Maysville down to the Knox.

Conditions such as those responsible for the Lima-Indiana field, however, are not necessarily limited to the Lexington limestone. Great variations of facies continued into the Cynthiana and Eden following Lexington deposition. The "Granville" production in Clinton and Cumberland Counties, Kentucky, is apparently a biohermal accumulation. The overlying formations are not in this case oil-rich shales, however, and so the oil either was indigenous, which seems unlikely since the limestone must have accumulated in shallow water where organic

content would be lost, or it moved into this porous formation from a possible lower reservoir, along with the fracture accumulations in the same general area. To obtain such limestones it is necessary to have an environment of shallow water, where wave action can keep muds washed out, and can facilitate secondary replacement of calcite and aragonite by dolomite in order to preserve initial porosity. A topographic high on the sea floor may be surface irregularity if a new land area is being covered, or it may be due to structure. In the case of the Cumberland saddle this part of the basin was apparently not out of water after earliest Ordovician, so the reasons for "Granville" lithology must be structural. Small faults or minor folds as the accumulating basins sank and sediments compacted would provide enough local topographic relief to account for the bioherms. Knowledge of the existence of such biohermal deposits in an area could, on the other hand, indicate areas of structural weakness and lead to extension of such structures and the discovery of other good reservoirs.

Some oil has been found in the Upper Ordovician in Bath County. Several small fields produced oil for a little while. The wells were drilled many years ago and information is not available, even as to their total depth. A few tests drilled recently indicate that the oil must have come from the Richmond. The original wells were located by oil seepages at the springs (Oil Springs and Olympia Springs) in the neighborhood. Apparently this accumulation is related to faulting in the area, as most of it is concentrated near the faults on the upthrown side.

More oil of the same type may possibly be found in the Ordovician, but under the sedimentary conditions now apparent, accumulation comparable to that in the Lima-Indiana Trenton field should not be anticipated in Kentucky except, in smaller quantities perhaps, on the north flank of the Ozarks-extended in the Jackson Purchase (pl. 10).

DOLOMITE

Much has been written about the origin of dolomite, and there is still considerable feeling in the primary dolomite versus secondary dolomite controversy. It is not necessary in a paper of this kind to review all that has been said and done by other writers on the subject. Especially good and exhaustive studies and reviews are included in the list of selected references.

The problem of dolomite formation, like so many geological problems, is complicated by the altogether human desire to pigeonhole everything. It has assumed greater proportions because it has been approached with the idea that dolomite -- meaning all of it -- has to be either primary or secondary. As in so many other cases in geology the admission of many small complexities simplifies the final picture. The admission, for instance, that lithologic facies or faunal facies do exist -- in other words, an acceptance of what can be seen in the seas today as having a bearing on events of the past -- actually simplified the interpretation of geological history a great deal. It has eliminated numerous unconformities and made it unnecessary to account for numerous transgressions and regressions of the seas.

This is the case with dolomite. Acceptance of the possibility of

dolomite being formed either by chemical deposition or penecontemporaneously over wide areas, or as replacements of calcite or aragonite in shells soon after deposition, or as secondary dolomite being deposited either from meteoric waters or in some cases from magmatic waters after lithification, eliminates the controversy regarding dolomite formation. In other words the admission of each particular dolomite occurrence as a separate and distinct problem with no attempt to make it fit some preconceived idea of all of it having to be either primary or all of it secondary in origin will conserve a great deal of energy which can then be applied to getting a little further toward learning geologic history. There seem to have been many competent students on each side in this controversy. Why should not both be right?

In the early stages of geologic history great quantities of dolomite were formed, on such a regional scale that there is hardly a possibility of its having been formed by replacement after lithification -- it is too homogeneous in composition and texture. Why should not this have been primary? The land area exposed to weathering was mainly igneous or altered igneous and sedimentary rocks; weathering was mainly chemical, and much magnesium along with other salts went into solution; water was shallow over the epicontinental areas where most of the dolomite was formed and thus was probably subject to much agitation by waves; the temperature in general was higher. There has not been since that time on this continent a precise duplication of such conditions. On a smaller scale during the Silurian similar conditions existed, but they were short lived as the seas became restricted by barriers to free circulation of waters and the dolomites became evaporite types.

Without going into the chemistry of origin, which has been discussed so exhaustively by people better fitted for doing so than the writer, a number of dolomite types can be listed. These are types which can be recognized by examination under the binocular microscope and are what the geologist encounters in making subsurface studies by examination of well samples. Recognition of the type of dolomite in the formation may be used to supplement other data in reconstructing conditions at the time of deposition.

1. Regional dolomite
2. Laminated dolomite
 - (a) All dolomite
 - (b) Dolomite and limestone
3. Evaporite dolomite
4. Shallow-water dolomite
5. Replacement (after lithification) dolomite
 - (a) Replacement along fractures and in fucoidal markings
 - (b) Replacement and recrystallization by strata
6. Detrital dolomite (dolarenite)

1. Regional dolomite. In this category belongs such dolomite as that of the Cambrian (including Knox). It is dolomite or richly dolomitic limestone, and its areal extent can be measured in thousands of square miles. It is essentially homogeneous in chemical content and crystallinity. It is difficult to account for homogeneity over such tremendous areas by replacement after lithification. If the sediments were

not initially deposited as dolomite, replacement must have taken place before lithification on the sea floor -- a two-stage chemical reaction. The homogeneity applies not only to the relative proportions of magnesium carbonate to calcium carbonate but also to the crystal size within any one stratum. One of the characteristics of dolomite which makes it immediately recognizable under the binocular is the habit of crystallization, which results in uniform crystal size within any one layer. In other words, the crystals of any one fragment of dolomite from a single stratum will all be about the same size, which superficially and upon weathering gives it the appearance of a very well sorted sandstone. This type of dolomite is found on the unstable platforms of deposition, that is, in areas landward from geosynclines, where the water was shallow (epicontinental), and toward the source of dissolved salts. Dolomite of this type grades into limestone basinward, and the limestone associated with it is usually fine-grained, dense, and relatively clean of clay. The limestone of the Arbuckles, which is offshore facies of this type dolomite, must have been deposited in shallow waters also because of the quantities of pellet limestones, intraformational breccias, and algal masses found in it. This suggests that the depth of the water is not as essential as a source for large quantities of magnesium in the waters. Dolomite of precisely this nature is not common after the Cambrian, which further suggests that the source of salts was important.

Lithologically this dolomite can be recognized by grain-size uniformity, low initial porosity and permeability (few vugs), presence of syngenetic chert intimately intergrown with dolomite rhombs (dolomoldic), frequently enclosing isolated sand grains (probably wind-blown), and less frequently waxy, green bentonitic clays, probably also of wind-blown origin. When this dolomite is associated with limestone the latter is very fine grained, dense, and sublithographic. All proportions from limestones to dolomites may be found. Frequently separate dolomite rhombs are found scattered through the fine-grained limestone. An example is the Cambrian dolomites.

2. Laminated dolomite. Dolomite of this type is usually limited in areal extent to a particular basin or portion of the basin.

(a) Laminæ are usually thin enough that they can be recognized in well samples. When the particles are so finely broken that actual laminæ may not be seen, there still may be seen two kinds of dolomite of slightly different grain size with occasional fragments showing contact between the two. The laminæ are usually due to slight differences in crystal size and may occasionally have some slight color change. How this could be accomplished by replacement is difficult to see. The laminæ are similar to varves and apparently represent cyclical conditions of chemical deposition which affects grain size of crystallization, with these conditions being repeated at regular intervals, like the daily changes responsible for varves. An example of this kind of dolomite is found in the Jeffersonville (Devonian) of Indiana in a limited area near the Cincinnati arch. Exposures have been described by Dawson (1948), and it can be recognized for some distance down dip in well samples.

(b) Laminated dolomite with limestone is found in the Arbuckle of Oklahoma (Ham,¹ personal communication) on the outcrop. Here

1. W. E. Ham, Acting Director, Oklahoma Geological Survey.

again the laminae are very thin and represent in this case cyclical deposition of limestone alternating with dolomite. This, too, must have been of primary origin -- direct chemical precipitation of the dolomite. Replacement of this kind, with perfectly regular laminae of limestone against dolomite, would be extremely difficult or impossible. The dolomite is very finely crystalline, and the limestone is sublithographic. Such an accumulation could result as an intermediate area between the regional dolomite and an area of limestone deposition where magnesium concentration was insufficient for complete dolomite formation; or, it could be due to the cyclic concentration of the magnesium content dependent on respiratory necessities of the great numbers of algae living in the sea at that time, attested to by the abundance of algal masses in the Arbuckle limestones. Another possible explanation would be the loss of carbon dioxide by agitation of the water in daily tidal changes. If this takes place in a borderline area of limestone or dolomite deposition, interlaminated strata of both might result; if it takes place where magnesium concentration is sufficient to provide all dolomite, then size of crystals might be the only apparent effect, and such dolomite as the laminated Jeffersonville described above would result.

In places the Arbuckle limestone looks as though such laminated limestone and dolomite had been stirred while soft to form an intricate mix ("marble cake" appearance). Probably the initially laminated soft ooze was disturbed either by deeper wave action during storms or by burrowing animals.

3. **Evaporite dolomite.** The mechanics of getting dolomite to accumulate with salts and gypsum in an evaporating sea has not been too satisfactorily explained by using modern sea waters for experimental purposes. The great abundance of dolomite of this type is found in the Upper Silurian and Lower Devonian (Salina or Cayuga) and in the Permian. In the case of the Silurian in the Appalachian area, the water was rich in dissolved salts from the weathering of a land mass containing quantities of new flow rocks (Freeman, 1951a, pp. 1-61). Deposition of dolomite was begun following early clastic accumulation but at that time the seas were restricted by the gradual growth of the Cincinnati arch until there was no free circulation of waters between the Appalachian geosyncline and open sea to the southwest. The Cincinnati arch, in other words, formed a barrier over which water could flow occasionally, between the Appalachian geosyncline, which was rimmed on the east by the southward extension of the Adirondacks towards the Blue Ridge, and the Illinois Basin which was open to the south. This formed a great evaporating pan similar to the one described by Adams and Frenzel (1950, pp. 289-313) for the Permian in Texas and New Mexico.

Dolomite of this type is easily recognized under the microscope even when not directly associated with salt and gypsum. It is usually very finely crystalline, earthy in texture, and brown in color probably due to the enclosed organic material, since the conditions of deposition would preclude complete oxidation of the organic matter. Its peculiar texture is unmistakable. When associated with gypsum or anhydrite it is frequently intergrown, and when it has been exposed to weathering the gypsum or anhydrite is leached, leaving vugular openings with the dense dolomite intervening. The result is very low permeability in spite of the vugular character. Lithologically the Permian

dolomites formed under these conditions are very similar to those of the Silurian and, to a lesser extent, to the St. Louis of western Kentucky and southern Indiana. Here again is an example of primary deposition of dolomite, and here again are times when it was possible for the marine waters to have unusual quantities of dissolved salts, particularly magnesium. The vulcanism during late Ordovician accounts for magnesium of the Silurian, and there must have been much vulcanism accompanying the greater Pennsylvanian folding to provide magnesium for the Permian evaporating basins.

4. Shallow-water dolomite. The only dolomites forming today in any quantity are those of secondary origin (Hatch, Rastall, and Black, 1938, pp. 195-197) in the various coral islands of the Pacific and Indian Oceans. Here there seems to be dolomitization of the calcite and aragonite of the corals and associated fauna. All through geologic time there seems to be a definite relationship between dolomite -- whether primary or secondary -- and shallow water, in epicontinental foreland areas (undaform -- Rich, 1951, p. 3), evaporating basins, or over structures. Associated with the Cincinnati arch is considerable dolomite of this nature. The Trenton is very dolomitized high on the Findlay arch, the ancient beginning of the Cincinnati arch. The Trenton as a whole is extremely fossiliferous, and this is particularly true away from the old shorelines where the water was relatively clear. On the Findlay arch there was little shale deposition at this time, and the Trenton consists mainly of biohermal limestone much of which was replaced by dolomite. The dolomitization probably took place at the time of formation of the rock, similar to the replacement in the Pacific coral atolls, and this resulted in high initial porosity and permeability.

The Brassfield as a dolomite is also related to its position with respect to the Cincinnati arch. And there was a repetition of essentially Trenton conditions during the Niagaran over the northern end of the Cincinnati arch and high on the west flank of the southern part of the arch -- the Lexington dome -- which acted as a subsea barrier to clastics from the east at that time. The water was shallow all along the arch, but from the southeast much fine clay was being carried in, and therefore clear waters conducive to rich fauna and dolomite replacement were limited to the west flank of the dome. The Guelph (Niagaran of Indiana and Michigan) lithology, and to a lesser extent the Laurel of southwestern Kentucky and adjacent Tennessee, was a result of this sort of dolomitization and resulted in a vugular, initially highly porous and permeable formation.

Under the microscope this dolomite is generally almost white to very pale gray, coarsely crystalline, and has much apparent interstitial angular porosity. It is as clean and crystalline as much of the Knox but is more porous and has very little, if any, chert or sand.

5. Replacement (after lithification) dolomite.

(a) Secondary replacement along fractures and fucoidal markings. Frequently fine-grained limestones are seen having microveins of finely crystalline dolomite. A good example of this is the dolomite found in the Chazy-Black River brown vaughanitic limestones of central Kentucky. A single fragment under the microscope may be cross-bedded with tiny veins of finely crystalline brown dolomite, perhaps only one crystal in thickness. In some places the dolomitization has proceeded so far as to result in irregular patches of dolomite, giving the

limestone a mottled appearance on surface exposures. This is particularly true of the Oregon member of the Chazy-Black River. Because of its appearance when polished, it is known to the building trade as "Kentucky River Marble." Why that particular member of this fine-grained series should have lent itself more than any others to this process of replacement by dolomite is unknown, unless it is due to initial characteristics of bedding. The Camp Nelson below is rather thick-bedded and massive, and the Oregon may have been incipiently more thin-bedded, so that when the waters carrying the dolomite in solution moved along the fractures they could move with comparative ease along the bedding planes as well, gradually replacing and isolating blocks of the limestone.

It is a curious thing that this dolomitic character of the Oregon should be limited to the Lexington dome and may perhaps be explained by excessive fracturing because of its position on the dome. It is suggested in this case that the waters carrying dolomite in solution were probably magmatic in origin, as there are numerous mineralized fractures containing barite, fluorspar, calcite, galena, and sphalerite also associated with the dome.

Van Tuyl (1916, p. 270) has suggested that the fucoidal and otherwise organic-appearing markings on some limestones which now contain fine-grained dolomite, similar in lithology under the microscope to the fracture fillings just described, may be organic in origin and that the organic material was responsible for deposition of the dolomite.

(b) Replacement and recrystallization by strata. There is some evidence of replacement of limestone, or even of dolomite, by dolomite after lithification and burial of the rock. The Niagaran (Lockport) of eastern Kentucky is a good example of this. Under the microscope and superficially the rock looks like limestone, with crystals of irregular shape and size. Some of the irregularity of size is due to pseudomorphic replacement of the calcite or aragonite of fossils and of the limestone matrix. Sometimes the fossils have been leached and the openings partially filled by dolomite rhombs. The replacement is usually incomplete in these cases, because the water cannot circulate with perfect freedom, and a part of the initial porosity is destroyed by deposition of the dolomite, whereas perhaps more is created by the leaching of fossils. The Lockport dolomite, which characterizes this type of dolomitization, is very fossiliferous, but it is seldom that the replacement has taken place before burial, as in the case of the Guelph shallow-water dolomite. In one area in Kentucky, fairly high on the Cincinnati arch (Estill County), dolomite which might have been formed in the same manner as the Guelph accumulated, while fine sands accumulated immediately adjacent to it and finally overlapped it. This dolomite is usually gray, with perhaps a low percentage of shale or silt.

6. Detrital dolomite (dolarenite). Occasionally uplands of dolomite are cut down by mechanical erosion before all the dolomite can be carried away in solution. The detritus from such erosion is transported and deposited in much the same manner as quartz sand. After microscopic examination this dolarenite is not confused with dolomites formed by other means. Usually the dolomite grains are fairly well size-sorted, since the dolomite from which it was derived, following the nature of dolomite crystallization, would have been well size-sorted. The grains, however, usually show some signs of having been transported

-- corners knocked off and some slight rounding -- and may accumulate with grains of quartz or other minerals having about the same size range. The matrix is usually dolomite, since some solution of the dolomite grains themselves takes place during lithification. This results in a dolomite with two main size ranges in the crystals, usually medium to coarse grains in a fine-grained matrix. This is easily recognized in well samples and is particularly characteristic of the basal Chazy, the Buffalo River series, or Everton of the upper Mississippi embayment. Another example is a basal Devonian dolarenite found as an alongshore deposit through Warren, Logan, and Todd Counties, Kentucky, with the Laurel dolomite as the source of the dolomite grains.

PART II

SAMPLE DESCRIPTION LOGS

Part II consists of the descriptions of cuttings from 185 wells. The majority of these descriptions represent wells drilled in Kentucky. However, one or more logs from each of the neighboring states of Arkansas, Indiana, Missouri, Ohio, Tennessee, and West Virginia are included. The descriptive logs represent all of the samples available on any one well; in many cases the sets are incomplete.

The sample description logs are listed alphabetically by county. An index by location and an index based upon the author's numbering system follow the sample descriptions. Wells used in preparation of the illustrations and mentioned in the text carry the author's number.

KENTUCKY

Well No. 1 (155). Motley No. 1 Reed, 8630 NL - 6250 WL, 7-D-40, elevation 546 feet, Allen County.

DEVONIAN

Sellersburg

- 218 Little black shale; some brown, slightly argillaceous dolomite; some crystalline limestone.
- 218-23 Some brown, crystalline, coarse, dolomitic limestone, crinoidal, having rare fragments of deep brown chert with white spicules; some pale greenish-gray, finely crystalline dolomite.
- 223-28 Dolomite, dense to vugular, the vugs being lined with coarser crystals, light-cream; a few samples test for a show of oil; a few fragments contain large rounded and frosted sand grains.

SILURIAN

Brownsport

(Lobelville)

- 228-37 Dolomite, as above; still a few fragments of pale-green dolomite, probably from above; still few samples show oil.
- 237-50 Same, but even more worn and porous brown dolomite.
- 250-70 Dolomite, finely crystalline, brown to gray, and argillaceous.
- 270-75 Same, with some crinoid plates, little gypsum (white and soft).
- 275-80 Same, plus some dolomite that is crystalline and porous.
- 280-85 Same; this dolomite is distinctive in that on megascopic examination it looks like shaly limestone; very little argillaceous material apparent under the scope; but it is gray-brown, sucrose, with enclosed crinoid fragments of calcite of another color (more brown) which stand out conspicuously.

(Bob)

- 285-95 Dolomite, gray, a little more coarsely crystalline and less argillaceous; still gray-brown and crinoidal.

(Beech River-Dixon)

- 295-300 Dolomite, a little lighter gray and more finely crystalline than above; a little more argillaceous and pyritiferous material.
- 300-05 Dolomite, very fine, argillaceous, gray; one fragment of bright, light-green shale.
- 305-30 Dolomite, gray, shaly; large pieces which megascopically look just like gray shale, but dolomitic under scope.
- 330-40 Same, except that some of the argillaceous material is greenish.
- 340-45 Same, plus a few fragments of dark-gray clayey shale.
- 345-60 Dolomite, very finely crystalline, light-gray; some pyrite balls included.

Lego

- 360-65 Dolomite, some coarser but most of it finer grained; pale gray-green to white; less argillaceous; some porosity. Some soft white gypsum.
- 365-75 Same, clean dolomite, white to light-gray to cream, crystalline.
- 375-80 Dolomite, dense, crystalline, pale blue-gray; still some white gypsum. Some of the dolomite is much more coarsely crystalline.
- 380-410 Dolomite, dense to porous, bluish-white; coarsely crystalline; still some gypsum, selenitic at 390-95.

Waldron

- 410-15 Dolomite, as above, plus gray shale, some dolomitic, some thin, papery, and clayey.
- 415-20 Shale, dark-gray, dolomitic.

Laurel

- 420-25 Some shale, as above; some crystalline clean dolomite; a few fragments which suggest oolitic Laurel.

- 425-30 Dolomite, white to cream, crystalline; rare glauconite.
 430-60 Dolomite, white, crystalline; more porous than above.

Osgood

- 460-65 Plus a little gray, argillaceous dolomite.
 465-70 Dolomite, some dense, fine-grained, white to pale greenish, argillaceous, and some greenish dolomitic shale; good deal of pyrite.
 470-80 Gray argillaceous dolomite.

Brassfield

- 480-85 As above, plus a little coarsely crystalline white dolomite and chert that is translucent gray with occasional yellowish inclusions.
 485-90 Dolomite, gray-green, sucrose; grains all about same size.
 490-505 Dolomite, same plus some white; a little chert, gray with black inclusions; replaces and encloses fossils.

ORDOVICIAN

Garrard-Maysville

- 505-10 Dolomite, white, green and dark-gray, crystalline and granular.
 510-15 Dolomite, a little more coarsely crystalline and gray, with still some of the peculiar gray chert with black markings.
 515-20 Same, without so much chert.
 520-25 Same, but slightly argillaceous.
 525-40 Same, with some soft white gypsum at 540.
 540-65 Same kind of rather coarse, dark-gray dolomite with argillaceous streaks.
 565-70 Dolomite, more finely crystalline and argillaceous.
 570-90 As above, with a little blue-white, translucent, agatized chert closely set into the dolomite.
 590-610 Dolomite and chert as above; plus small black nodules of phosphate and rare *Cyclora minuta*.
 610-20 Some very dark gray, almost black, argillaceous dolomite, slightly crinoidal; introduction of gray, coarsely crystalline, fossiliferous limestone.
 620-25 Limestone, very argillaceous, almost black; looks like argillaceous dolomite, but is calcareous; very fossiliferous, brachiopods and crinoids mainly; some phosphate nodules. This seems to be interbedded with more coarsely crystalline gray lime.
 625-730 Same, with many bryozoans, brachiopods, and phosphate nodules; sometimes *Cyclora minuta*.
 730-35 More shale than limestone, some of it very dark gray and fairly fine grained and clayey.
 735-60 Very calcareous shale, not fossiliferous as above; dark-gray.

Cynthiana-Million

- 760-800 Same, plus a few streaks of fossiliferous and phosphatic limestone -- brachiopods and bryozoans.
 800-10 Limestone, gray, crystalline, fossiliferous and phosphatic; some calcareous shale as above.
 810-35 Limestone, very coarsely crystalline, white to light-gray; many brachiopods and phosphate nodules.
 835-50 Same, with streaks of calcareous, dark-gray shale.
 850-55 Shale, dark-gray, calcareous, few fossils.
 855-60 Limestone mainly, brownish-gray, fine crystalline to dense (different from that above).
 860-70 Shale, calcareous; many brachiopod fragments; few fragments of smooth ostracods; *Cyclora* and *Zygospira*; some lime streaks.
 870-75 Limestone, white, coarsely crystalline and brownish, dense, fossiliferous and phosphatic. (Ostracods)
 875-910 Limestone, white, coarse as above; much phosphate and many *Cyclora*.
 910-15 Almost more phosphate than lime. fossilifer-

Lexington

- 915-25 Limestone, more brown and dense; rare purple fluorite.
 925-30 Introduction of some very dense, fine-grained, brown limestone.

- 935-40 Limestone, white, very coarse to fine; a little dense and brown.
 940-45 Limestone, white, coarsely crystalline; rare dark-gray to black chert.
 945-50 More of the gray chert; many ostracods.
 950-55 Limestone, some almost black, argillaceous; some more dark-gray chert.
 955-75 Limestone, some dense, brown, ostracodal; some white and red phosphatic; fossiliferous.
 975-80 Limestone, tan, finely crystalline to white "bird's-eye."
 980-85 Limestone, fine-grained, brown, ostracodal.
 985-90 Same, plus some black, calcareous shale.
 990-1000 More like Tyrone, but still has streaks of crystalline, phosphatic limestone.
 1005-25 Same with very large *Leperditia*.
 1025-30 Shale, calcareous with some brachiopods.
 1030-35 Same, plus some gray, crystalline limestone.
 1035-50 Limestone, argillaceous, very dark gray to black, some lighter and finer but with dark specks; very brachiopodal.
 1050-65 Same, plus some coarsely crystalline, phosphatic and fossiliferous, gray limestone.
 1065-70 Much darker and more argillaceous; almost black.
 1070-75 Shale, calcareous, almost black; few brachiopods.
 1075-80 Shale, very dark gray, calcareous.
 1080-90 Same, with occasional streaks of crystalline limestone.

Chazy-Black River (Tyrone at top)

- 1090-95 Lithographic limestone.
 1095-1100 Same as above, with some bentonite.
 1100-35 Good "bird's-eye" limestone and green bentonite with large flakes of biotite.
 1135-45 Occasional streaks dolomite and darkly argillaceous.
 1145-1200 Same, plus occasional fragments of smooth, grayish-tan chert.
 1200-05 Some fragments show small, rounded inclusions like incipient oolites.
 1205-10 Rare brown chert in brown lithographic limestone.
 1210-55 More chert than above; occasional streaks of darker argillaceous limestone.
 1255-1300 Tan lithographic limestone and finely crystalline brown dolomite; less argillaceous limestone than above.
 1300-1455 Less dolomitic. (Some fragments of brachiopods)
 1455-65 Introduction of white lithographic limestone.
 1465-1575 Brown lithographic limestone, occasional dolomite streak or streak of dark-gray, argillaceous limestone.
 1575-1655 Brown lithographic limestone with little or no dolomite, and more of the lime is dark-gray, argillaceous.
 1655-65 More dolomitic, being very finely crystalline like the lithographic limestone.
 1665-1775 Less dolomitic and more argillaceous; some fragments almost black.
 1775-1800 Much more dolomitic, finely crystalline, light-tan.

(Wells Creek)

- 1800-05 Introduction of very light colored, fine-grained lithographic limestone.
 1805-30 Finely crystalline, cream-colored dolomite and fine lithographic limestone.
 1830-45 Cream dolomite, more coarsely crystalline than above; no limestone.
 1845-55 Same, plus a little green shale.

CAMBRIAN

Knox

- 1855-75 Cream, medium-crystalline dolomite with introduction of chert, some dolomoidic.
 1875-95 Dolomite, tan, medium crystals with a little less chert.
 1895-1905 Dolomite, white, coarsely crystalline.
 1905-12 Almost all bentonite -- must have caved.

Well No. 2 (116). Stoll Oil Refining Company No. 1 Ben Bond, at Lawrenceburg, section 17-S-56, Anderson County.

ORDOVICIAN

Lexington

- 80-115 Limestone, crystalline, light-gray, fossiliferous and slightly phosphatic; trace of dolomite.
 115-35 Limestone, very coarsely crystalline, fossiliferous and phosphatic.
 135-80 Limestone, more fine grained than above, very slightly argillaceous, fossiliferous.
 180-200 Limestone, more argillaceous. dark-gray, fossiliferous.
 200-20 Limestone, very coarsely crystalline, fossiliferous and phosphatic, with little interbedded shale and some gray chert.

Chazy-Black River

- 220-40 Limestone, very clean, lithographic, light-brown; trace of bentonite.
 240-85 Limestone, very slightly dolomitic, fine-grained, brown.
 285-308 Limestone, cream, lithographic.
 308-25 Dolomite, very finely crystalline, brown (Oregon).
 325-50 Limestone, very slightly argillaceous and dolomitic, brown.
 350-80 Limestone and some finely crystalline dolomite, brown; rare ostracods.
 380-400 Limestone, very fine grained, slightly argillaceous, brown.
 400-710 Limestone, fine-grained to lithographic; rare crystals of brown dolomite.
 710-30 Limestone, very finely dolomitic, brownish-gray.
 730-40 Limestone, less dolomitic than above; some slightly argillaceous, leaving finely banded residue.
 740-55 Limestone, very fine grained, dark gray-brown, slightly argillaceous.

(Wells Creek)

- 755-75 Limestone, dark grayish-brown, slightly argillaceous, very dolomitic, slightly silty.
 775-95 Dolomite, pale-gray, fine-grained, slightly argillaceous with green shale and fine silt.
 795-800 Dolomite as above; 30% sand in clusters, fine to medium, rounded and frosted.
 800-25 Dolomite, cream, finely crystalline, almost lithographic with some green shale and rare sand.

CAMBRIAN

Jefferson City-Cotter

- 825-37 Dolomite, cream to chalky-white, very finely crystalline; trace of chert, dense to finely dolomoldic.
 837-90 Dolomite, finely porous to crystalline, dense; trace of chert, dense to dolomoldic to sandy.
 890-905 Dolomite, very finely crystalline; trace of green shale.
 905-15 Dolomite, finely crystalline; trace of dolomoldic chert and fine sand in clusters.
 915-74 Dolomite, white, medium to very coarsely crystalline; rare sand; trace of chert, dense to dolomoldic; green shale.
 974-90 Dolomite, tan, medium-crystalline; chert with thin-walled dolomolds and some druse.
 990-1025 Dolomite, coarsely crystalline, pale-gray; rare large rounded and frosted sand grains.
 1025-55 Dolomite, cream, coarsely crystalline; rare oolitic chert.
 1055-1100 Dolomite, light-tan, medium-crystalline; chert, 5%, chalky-white with small oolites; rare druse.
 1100-15 Dolomite, densely crystalline, fine-grained; rare chert and sand.
 1115-30 Dolomite, as above; chert 30%, translucent white.
 1130-1230 Dolomite, densely crystalline; rare chert, translucent to quartzose, with some banded druse.

Roubidoux

- 1230-35 Mainly chert, white to pale gray-white, translucent to quartzose to chalky.
 1235-45 Sandstone, white, fine- to medium-grained, with much secondary crystal growth in the quartz.

- 1245-50 Dolomite, with trace of sand and chert.
 1250-55 Dolomite, with 10% sand, rounded and frosted.
 1255-75 Mainly chert, white, translucent, with some crystalline quartz.
 1275-80 Dolomite, cream, crystalline; rare chert.
 1280-85 Mainly chert, quartzose to oolitic; rare sand enclosed.
 1285-92 Dolomite, with trace of chert and sand as above.
 1292-1320 Mainly chert, very oolitic and sandy, white and dense.
 1320-46 Dolomite, very coarsely crystalline, pale-gray; trace of chert, smooth, white to chalky; rare brown oolites.
 1346-62 Dolomite, pale-gray, medium-crystalline; rare chert with thin-walled dolomolds.
 1362-68 Sandstone, slightly dolomitic, medium-grained, with much secondary quartz growth.

Van Buren-Gasconade

- 1368-98 Dolomite, coarsely crystalline, pale-gray; trace of chalky-white dolomoldic chert; pyrite.
 1398-1415 Dolomite, medium-crystalline, cream; trace of rounded sand.
 1415-60 Dolomite, fine-grained; chert, translucent, white, with thin-walled dolomolds and occasional oolites.
 1460-70 Dolomite, as above with no chert; rare sand.
 1470-80 As above, with sand and trace of chert.
 1480-1542 Dolomite, finely crystalline; trace of chert, dense to quartzose, with rare obscure oolites.
 1542-45 Mainly chert, white, translucent, with enclosed pyrite; some thin-walled dolomolds.
 1545-60 Dolomite, coarsely crystalline; much chert, white to translucent.
 1560-1810 Sample gap.
 1810-17 Dolomite, coarsely crystalline, white; trace of fine sand and green shale.
 1817-75 Dolomite, as above; little chert, cream to tan, quartzose, slightly oolitic.
 1875-90 Mainly chert, translucent, white, quartzose and slightly oolitic.
 1890-1920 Dolomite, cream, crystalline; little chert, translucent to dense, white.
 1920-35 Mainly chert, quartzose to obscurely oolitic, some chalky-white.
 1935-45 Dolomite, pale-gray, coarsely crystalline; trace of chert.
 1945-60 Dolomite, cream to tan, fine-grained; little oolitic chert; occasional rounded and frosted sand grains.
 1960-85 Dolomite, pale-gray, coarsely crystalline; little quartzose oolitic chert.
 1985-95 Dolomite, brown, fine-crystalline, slightly argillaceous.

Eminence

- 1995-2035 Dolomite, gray, crystalline; little pale-gray chert.
 2035-45 Dolomite, as above; 60% chert, cream, smooth.
 2045-55 Dolomite, brown, finely crystalline; little smooth gray chert.
 2055-95 Dolomite, pale-gray, finely crystalline; rare sand grains.
 2095-2110 Dolomite, as above, with trace of pale-gray quartzose chert.
 2110-25 Dolomite, pale-gray, finely crystalline; trace of very fine sand.
 2125-40 Dolomite, as above; little quartzose gray chert; rare oolites.
 2140-55 Dolomite, as above; chert, smooth to quartzose, light-gray, occasional indistinct oolites.
 2155-95 Dolomite, tan to gray, medium-crystalline; little oolitic chert.

Potosi

- 2195-2200 Mainly chert, cream to white to pale-gray, dense to quartzose.
 2200-20 Dolomite, medium-grained, brown; rare chert, brown quartzose.
 2220-30 Mainly chert, gray and tan, occasional small oolites.
 2230-2315 Dolomite, brown, medium-crystalline; 5% chert, brown, granular to pseudo-oolitic.
 2315-25 Dolomite, lighter than above; no chert; rare sand.
 2325-2400 Dolomite, cream to tan, crystalline; rare chert, tan, quartzose to granular.
 2400-42 Dolomite, as above; chert (less than 5%) is cream, smooth to slightly drusy.

Elvins

- 2442-44 Mainly chert, quartzose, tan to gray, very oolitic.
 2444-2500 Dolomite, dark-brown, crystalline, with trace of granular silica.

2500-70	Dolomite, coarsely crystalline, white, with rare chert.
2570-75	Dolomite, brown, crystalline, medium-grained; 20% chert, tan, rough.
2575-2600	Dolomite, medium-crystalline, brown to tan; rare chert, quartzose and granular.
2600-65	Dolomite, white, coarsely crystalline; rare pyrite and green shale.
2665-70	Dolomite, as above; trace of white silt and glauconite.
2670-2838	Dolomite, brown, coarsely crystalline; rare silt and very rare chert.

Well No. 3 (149). Gardner Oil Company No. 2 John Bunch, CN $\frac{1}{2}$ SW SW SE, section 16-G-45, elevation 825 feet, Barren County.
Gas at 459; 100,000 cubic feet of gas at 632-38; slight show of oil at 462, 1927-35; salt water at 2021-27. (Incomplete set of samples)

New Albany 418-58

SILURIAN

Laurel

492-98 Dolomite, medium-grained, sucrose, pale-gray.

Osgood

498-503 Dolomite; gray, crystalline limestone, some of which is shaly.
503-08 Limestone, gray, dolomitic, some shaly.
508-15 Same, with some pale-green dolomite.
515-20 Dolomite, light- to dark-gray, crystalline, sucrose; trace of shaly dolomite.
520-30 Dolomite, pale-gray to green, medium-crystalline; trace of dark-brown to gray shale.
530-35 Same, plus much dark gray-green shale, much of which is dolomitic.

Brassfield

535-40 Dolomite, tan, glassy, crystalline, with little cream, microspecked chert.
540-52 Dolomite, white to pale yellowish-green; much chert white to light-gray.

ORDOVICIAN

Maysville

(Tate)

552-60 Dolomite, white, crystalline, with much interstitial pyrite; dark-gray, greasy shale.
560-90 Shale, dark gray-green, greasy-looking, some slightly dolomitic.
590-605 Same, plus dolomite, white to light-gray, coarsely crystalline and porous.
605-15 Dolomite, tight, gray, more finely crystalline and slightly argillaceous.
615-25 Dolomite, more green.
625-30 Dolomite, shaly and gray.

(Fairmount)

630-40 Limestone, white to light-gray, coarsely crystalline, porous, phosphatic.
640-50 Limestone, darker gray, more fine grained, some shaly.
650-55 Same, plus some green dolomitic shale.
655-60 Limestone and dolomite, white, green, dark-gray; shale, gray, calcareous
660-65 Limestone, darker, finer, some argillaceous; occasional fragments of vugular white limestone.
665-70 Limestone, gray, dense to crystalline; trace of calcareous shale.
670-740 Limestone, very fossiliferous with many brachiopods; streaks of calcareous shale.
740-852 Same, with Cyclora minuta.

Cynthiana-Million

852-60 Same, plus some limestone, more argillaceous and phosphatic, with large fossil fragments.
860-950 Same, with some slightly silty.

Lexington

950-1000 Limestone, more dense than above; very fossiliferous.
1000-45 Limestone, coarsely crystalline; very fossiliferous.
1045-50 Limestone, as above, with some fine lithographic limestone.

- 1050-55 Limestone, brown, crystalline, fossiliferous.
- 1060-65 Same, plus some dark and argillaceous.
- 1065-70 Limestone, coarsely crystalline and very phosphatic.
- 1070-80 Limestone, crystalline, with some lithographic limestone.
- 1080-1115 Limestone, brown, crystalline.
- 1115-38 Limestone, brown and some gray-green, with trace of chert at 1125.
- 1138-83 Limestone, dense, gray, crystalline; trace of brown color; some argillaceous.
- 1183-1215 Limestone, very dark gray, with calcareous, fossiliferous shale.
- 1215-20 Limestone, light, crystalline, fossiliferous.

Chazy-Black River (Tyrone at top)

- 1220-25 Same, with some lithographic lime.
- 1225-60 Lithographic limestone, with much bentonite in upper portion.
- 1260-65 Same, with trace of chert.
- 1265-1370 Lithographic brown limestone.
- 1370-75 Slightly dolomitic, with trace of cream chert.
- 1375-1430 Limestone, more gray, fine, smooth lithographic limestone.
- 1430-40 Same, with some bentonite.
- 1440-60 Lithographic limestone.
- 1460-70 Limestone, darker brown; some dark-brown chert.
- 1471-1570 Limestone, very smooth, lithographic.
- 1570-75 Limestone, as above, with some dark greenish-gray shaly limestone.
- 1575-1614 Lithographic brown limestone.
- 1614-35 Limestone, lithographic, almost white.
- 1635-90 Brown lithographic limestone.
- 1690-1740 Very dark, slightly argillaceous, fine-grained limestone.
- 1740-70 Limestone, deep brown, smooth.
- 1770-1830 Very finely dolomitic.
- 1830-71 Limestone, lithographic, brown, with streaks of slightly argillaceous limestone.

Joachim

- 1871-80 Limestone, slightly lighter in color and finely dolomitic.
- 1880-90 Dolomite, light-gray, finely crystalline, slightly calcareous, with trace of smooth gray limestone.
- 1890-99 Limestone, lithographic, and fine dolomite; light-gray with trace of green.
- 1899-1907 Dolomite and limestone, very fine grained, white.
- 1907-17 Dolomite and limestone, interbedded.
- 1917-27 Slightly darker gray, faint trace of green.

(Position of St. Peter)

- 1927-35 Dolomite, slightly more coarsely crystalline, fine to medium; less limestone.
- 1935-40 Dolomite, with sand, almost quartzitic, medium-grained, and dark-green bentonitic shale.
- 1940-45 Dolomite, dark-green and shaly, with occasional large rounded and frosted grains.

CAMBRIAN

Knox

- 1945-58 Dolomite, finely crystalline, white; trace of white to cream translucent chert.
- 1958-65 Dolomite, cream, finely crystalline; more translucent chert.
- 1965-73 Dolomite, cream, medium-crystalline; some dull white chert, finely dolomitic.
- 1973-81 Dolomite, cream, coarse-crystalline; more translucent white chert.
- 1981-90 Dolomite, cream, finely crystalline, looks weathered; less chert.
- 1990-98 Dolomite, glassily crystalline, cream; little chert, almost transparent.
- 1998-2004 Dolomite, very finely crystalline, tan.
- 2004-12 Same, plus translucent chert.
- 2012-21 Dolomite, cream, very fine grained, looks like lithographic limestone; white chert.
- 2021-27 Dolomite, finely broken, with much drusy quartz. Water?

Well No. 4 (150). W. T. Rich, Jr., et al No. 1 Houchens, 4 miles southwest of Glasgow, 14-F-43, elevation 760 feet, Barren County.

MISSISSIPPIAN

Fort Payne

- 20-25 Limestone, very coarsely crystalline, light-gray and mottled, fossiliferous.
- 25-50 Siltstone, dolomitic, argillaceous, gray, with some geode quartz.
- 50-55 Limestone, coarsely crystalline, light-gray, fossiliferous; interbedded with greenish-gray siltstone as above; translucent chert.
- 55-76 Limestone, finely dolomitic, pale-gray, with translucent gray chert.
- 76-95 Dolomite, calcareous, pale greenish-gray, with little chert, as above.
- 95-119 Limestone, dolomitic, very siliceous, with some chert very finely disseminated throughout the limestone.
- 119-55 Limestone, very coarsely crystalline, crinoidal, with some of the matrix slightly greenish and argillaceous.
- 155-64 As above, but some is dolomitic; more free chert.
- 164-78 Shale, green, slightly calcareous, with crinoidal inclusions.
- 178-98 Shale, green, slightly calcareous, with occasional crinoid plates enclosed.

New Albany

- 198-219 Shale, black, coarse-grained, carbonaceous, with some pyrite.
- 219-48 Shale, as above, including occasional fragments of very argillaceous, weathered-looking dolomite.
- 248-49 Dolomite, very weathered; some argillaceous with black clay included; some phosphatic, and with rare fragments of coarse sand.

DEVONIAN

Beechwood

- 249-55 Contact of Duffin above with limestone, light-gray, crystalline, fossiliferous.

SILURIAN

Brownsport

- 255-64 Dolomite, silty and slightly argillaceous, gray; occasional crinoidal fragments.
- 264-72 Dolomite, finely silty and slightly argillaceous, gray and pyritic.
- 272-85 Dolomite, as above, but less silty, with occasional streaks of phosphatic limestone (fragmental remains of phosphatic fossils). Occasional limestone fragments showing oily stain.
- 285-94 Dolomite, slightly silty and argillaceous, gray, as above; many phosphatic fossil remains.
- 294-300 Dolomite, very slightly argillaceous, dense, brownish-gray.
- 300-17 Dolomite, brown, fine-medium crystalline, very dense; some chert, gray translucent.
- 317-22 Dolomite, brown, as above, dense; occasional fragments of limestone with phosphatic fossils.

Louisville

(Lego)

- 333-43 Dolomite, pale-gray, densely crystalline, medium-grained to very vugular, with light oil stain; rare selenite and pyrite.
- 343-53 Dolomite, as above, some very slightly argillaceous.
- 353-60 Dolomite, gray, medium-coarse crystalline, dense, with occasional fragments argillaceous.

Waldron

- 360-68 Dolomite, as above; shale, slightly dolomitic, gray, pyritic.

Laurel

- 368-73 Dolomite, tan-gray, medium-crystalline, dense to vugular; trace of dolomite oolites.
- 373-84 Dolomite, fine-crystalline, creamy-gray, dense, with some glauconite.
- 384-92 Dolomite, gray, dense, fine, as above, with some darker gray, very slightly argillaceous.

- 392-98 Dolomite, some cream, vugular, lightly stained; some dark-gray, dense, and mottled.
 398-400 Dolomite, very porous and finely broken, pale-gray; some gypsum.
 400-06 Dolomite, gray, finely crystalline, dense, with some slightly argillaceous and mottled, as above.
 406-12 Dolomite, fine and argillaceous, gray.

Osgood

- 412-30 Shale, slightly dolomitic, greenish-gray, argillaceous.
 430-40 Shale, as above, with trace of dolomite.

Brassfield

- 440-50 Dolomite, medium-coarse crystalline, cream to gray, vugular; some denser, brown, glauconitic.

ORDOVICIAN

Maysville

(Tate)

- 450-58 Dolomite, argillaceous, green, medium-crystalline, with some darker, more argillaceous, and slightly silty.
 458-72 Dolomite, argillaceous, silty, more gray than green.
 472-82 Dolomite, fine-medium crystalline, argillaceous, silty, gray-green.
 482-86 Dolomite, fine-medium crystalline, argillaceous, gray-green, silty.
 486-98 Dolomite, as above; some clean, crystalline, dolomitic limestone, white to pale-green, vugular.
 498-503 Dolomite, greenish, vugular, as above, with some dark mottled chert and limestone, very argillaceous, gray. Top of Fairmount.
 503-20 Shale, dark-gray, dolomitic and calcareous; some chert, as above, with dark mottling.
 520-27 Shale, calcareous, very slightly dolomitic, dark-gray; trace of phosphatic limestone.
 527-48 More phosphatic limestone, as above; trace of fossiliferous chert.
 548-56 Some shale, as above; limestone, dense, fossiliferous, phosphatic.
 556-88 Shale, as above, interbedded with more fine grained, fossiliferous limestone.
 588-95 Limestone, fossiliferous, dense, slightly phosphatic; interbedded with dark, calcareous shale; trace of chert.
 595-600 Limestone, very dark gray-brown, fine-grained, argillaceous.
 600-06 Limestone, dark gray-brown, argillaceous, fossiliferous, very slightly phosphatic.
 606-12 Limestone, more fossiliferous, interbedded with brown-gray "mud rock."
 612-18 As above, with limestone more brown.
 618-43 Limestone, fine, some phosphatic and gray, interbedded with calcareous shale.

Garrard

- 643-77 Limestone, fine-grained, some phosphatic, as above, interbedded with fine, silty and shaly limestone.
 677-94 Siltstone, argillaceous, calcareous; interbedded with calcareous, fossiliferous and phosphatic limestone.
 694-725 Siltstone, argillaceous, very slightly calcareous.

Cynthiana-Million

- 725-45 Limestone, fossiliferous, brown-gray; interbedded with calcareous, fossiliferous and phosphatic limestone.
 745-67 Shale, very finely silty, calcareous; interbedded with some gray, fossiliferous and phosphatic limestone.
 767-801 Limestone, brownish-gray, medium-crystalline, some fossiliferous, with much shale, as above.
 801-08 Limestone, brownish-gray, fine, slightly fossiliferous, some argillaceous; shale, slightly silty and calcareous.
 808-25 Limestone, more phosphatic; shale becomes finer with depth.
 825-35 Limestone, brown to gray, densely crystalline to fossiliferous, phosphatic; interbedded with calcareous shale.
 835-50 Limestone, more densely crystalline, brown, fossiliferous.

850-60 Limestone, very fossiliferous, crystalline, light-tan, interbedded with shale.

Lexington

860-70 Limestone, crystalline, as above, slightly dolomitic; trace of chert and gypsum.
870-72 Limestone, fossiliferous, phosphatic, light-tan, with much interbedded gray, silty, argillaceous limestone.
872-80 Limestone, more tan than above, crystalline, trace vugular; silt and shale, as above.
880-87 Limestone, brown, crystalline, very phosphatic, fossiliferous; interbedded with silt and shale, phosphatic.
887-93 Limestone, as above, with some light tan-gray, sublithographic.
893-900 Limestone, brown-gray, fine-grained, some slightly argillaceous; trace of chert, same color.
900-13 Limestone, brown, fine-crystalline, very fossiliferous; much brown chert, mottled with black.
913-17 Limestone, brown, fine, slightly argillaceous, slightly phosphatic, fossiliferous; trace of chert, as above, and fine silt in residue.
917-30 Limestone, very dark brown, fine, argillaceous, many ostracods.
930-72 Limestone, dense, brown, ostracodal, slightly argillaceous; occasional trace of greenish-gray limestone.
972-90 Limestone, very fine, dense, pale-gray, finely phosphatic; trace of fine silt in residue.
990-1012 Shale, very dark gray-brown, calcareous, with occasional streaks of limestone.
1012-25 Shale, as above; interbedded with limestone, fossiliferous and finely phosphatic; silt, as above.
1025-47 Shale, calcareous and silty, dark-gray.
1047-52 Shale, as above, with some limestone, light-tan, crystalline, enclosing silt to fine sand.
1052-59 Contact with limestone, fine, brown, and bentonite, green to brown, with biotite.

Chazy-Black River (top at 1055)

1059-64 Limestone, very fine, tan to gray-tan, sublithographic, with some bentonite.
1064-70 Limestone, as above, with some more gray and very finely argillaceous.
1070-80 (S. L. M.)
1080-88 Limestone, bentonitic, gray, fine-grained.
1088-1100 Limestone, some brown, lithographic, some slightly fossiliferous.
1100-10 Limestone, very fine, light-brown, lithographic.
1110-40 Limestone, cream to light-tan, lithographic, some finely dolomitic; trace of dense, cream chert.
1140-50 Limestone, brown, fine to finely crystalline, "bird's-eye."
1150-80 Limestone, as above, with trace of chert, same color and texture.
1180-1209 Limestone, very fine grained, gray-brown, slightly fossiliferous.
1209-19 Limestone, very fine, brown, some gray, very slightly argillaceous; trace of dense, gray-brown chert.
1219-40 Limestone, very fine, gray-brown, slightly dolomitic and argillaceous.
1240-1305 Limestone, fine, brown, fossiliferous, interbedded with some more gray and slightly argillaceous.
1305-25 Limestone, fine, brown, lithographic to fossiliferous, with very dense, brown, microspecked chert.
1325-62 Limestone, tan, very fine to subcrystalline.
1362-1429 Limestone, very fine, smooth, brown, interbedded with some slightly argillaceous.
1429-70 Limestone, cream to tan, very fine, lithographic.
1470-90 Limestone, brown, very fine, with trace finely dolomitic.
1490-1502 Limestone, very fine grained, brown.
1502-19 Limestone, very fine, light, as above, with some darker and more argillaceous.
1519-87 Limestone, very dark brown, smooth, lithographic, interbedded with some almost black, argillaceous limestone; very slightly dolomitic from 1528-40.

- 1587-1602 Limestone, more argillaceous than above, almost black.
 1602-61 Limestone, slightly argillaceous and very slightly dolomitic, fine-grained, almost black.
 1661-1700 Limestone, very smooth, dark-brown, lithographic, interbedded with darker gray-brown, argillaceous.

(Wells Creek) Contact at 1721.

- 1720-34 Contact of dark limestone, as above, with limestone, light gray-brown and dolomite; light gray-brown, finely crystalline.
 1734-45 More dolomitic; trace of shale, pyrite, and very fine silt.
 1745-56 Dolomite, slightly calcareous, light-gray, fine, some clastic; trace of very fine silt and translucent chert.

CAMBRIAN

Jefferson City

- 1756-66 Dolomite, cream, medium-crystalline, dense; some with much crystalline calcite; some skeletal quartz in residue.
 1766-70 Dolomite, light-tan, medium-crystalline to fine and dense; rare fragments coarser and very vugular; chert translucent, but some is finely dolomoldic and some very finely banded and drusy.
 1770-75 Dolomite, light-tan, medium-crystalline to fine and dense; occasional fragments coarser and vugular; chert translucent to dolomoldic, with occasional banded druse.
 1775-81 Dolomite, brown, very fine, dense; chert, quartzose to dull; trace of selenite and green shale.
 1781-85 Dolomite, as above, some recrystallized.
 1785-1808 Dolomite, very dense, finely crystalline; chert, translucent, white to drusy and mottled.
 1808-14 Dolomite, very fine crystalline, dense, brown; chert, quartzose to translucent, occasional fragments very drusy.
 1814-20 Dolomite, slightly calcareous, very fine grained, light-tan; trace of white translucent chert.
 1820-28 Dolomite, very finely crystalline, tan, dense; some chert, dense, white, some gray-tan; trace of dolomolds in chert.
 1830-41 Dolomite, medium-crystalline, cream, sucrose, some finer and greenish; much dark-green shale; some chert, slightly dolomoldic.
 1841-51 Dolomite, finer textured than above, tan, some very finely sucrose; occasional fragments calcareous; trace of silt.
 1851-58 Dolomite, very fine grained, brown, dense (almost as fine as lithographic limestones).
 1858-66 Dolomite, very fine, dense, as above; 10% chert, chalky to translucent to quartzose; occasionally drusy or mottled with rare dolomolds.
 1866-80 Dolomite, very fine, dense; chert, translucent or chalky, dolomoldic; little green shale.
 1880-95 Dolomite, some very slightly calcareous, very fine grained, brown; trace of translucent chert.
 1895-1907 Dolomite, as above; more chert (40%), chalky clastic to drusy with occasional dolomolds.
 1907-11 As above, with less chert.
 1911-27 Dolomite, very dense, crystalline, brown; some chert, as above, 5%.
 1927-37 Dolomite, cream, medium-crystalline; chert, 5%, translucent to chalky, dolomoldic.
 1937-41 Dolomite, as above, with some fine, dense, and brown; trace of translucent chert, and pyrite.
 1941-47 Dolomite, very fine, brown, slightly calcareous; chert translucent.
 1947-62 Dolomite, very fine, crystalline, creamy-gray.
 1962-72 Dolomite, as above; occasional fragments of chalky chert enclosing large dolomite rhombs.
 1972-80 Dolomite, very fine, crystalline, creamy-gray; chert, 20%, translucent to quartzose.
 1980-87 Dolomite, very fine, dense to medium, sucrose, light-tan; chert, translucent, tan, trace chalky, finely dolomoldic.
 1987-2005 Dolomite, fine-crystalline, dense, brown; chert, 50%, translucent to chalky-white; occasional large dolomolds; some chert almost crystalline.
 2005-15 Dolomite, fine, densely crystalline, vitreous; chert, translucent, 5%.
 2015-22 Dolomite, slightly more gray-tan, finely crystalline, dense; chert, gray-tan, 5%, translucent to dense; trace of pale-green shale.

- 2022-28 Dolomite, tan, very finely crystalline, dense, and some coarsely crystalline; chert, 10%, chalky-white, with large dolomolds, translucent, tan, and obscurely oolitic, dolomolds in pale-green shale.
- 2028-35 Dolomite, very finely crystalline, tan to gray, occasional coarser fragments; chert, 5%, chalky-white, with large dolomolds; rare sand grains.
- 2035-45 Dolomite, very finely crystalline, brown, medium-crystalline; rare coarse fragments; green shale, pyritic; chert, 5%, translucent to chalky.
- 2045-55 Dolomite, densely crystalline, brown, fine; chert, some fragments with irregular oolites, some chalky and finely pyritic, some slightly dolomoldic; trace of green shale.
- 2055-64 Dolomite, as above, densely crystalline, brown, fine.
- 2064-2117 Dolomite, very finely crystalline, gray-brown, dense; occasional fragments coarse, light-gray, vugular; chert, 1%.
- 2117-25 Dolomite, as above; occasional fragments very coarsely crystalline, with interstitial green shale; much very chalky white chert, 35%, some very coarsely dolomitic.
- 2125-31 Dolomite, coarser, light-tan, crystalline; some irregular fragments cemented with chalky-white chert; trace of white translucent chert.
- 2131-40 Dolomite, very finely crystalline, tan and irregularly coarse, as above; more chert, 20%, translucent.
- 2140-50 Dolomite, very finely crystalline, dense, brown to finely sucrose, with white, interstitial chert, 25%; some chert, quartzose with brown oolites, some brown with white oolites.
- 2150-66 Dolomite, very fine, dense, gray-brown; chert, 5%, dolomoldic and oolitic, as above.
- 2166-76 Dolomite, as above, some very fine, more fine-medium, brown; some oolitic chert, as above; some very finely disseminated pyrite.

Roubidoux

- 2176-2206 Dolomite, more gray to greenish-gray, finely crystalline, studded with poorly sorted sand; slight trace chalky, interstitial chert.
- 2206-26 Dolomite, as above, few fragments very coarsely crystalline, brown or gray, forming dolomolds in white, chalky chert; most chert (20%) gray and translucent.
- 2226-32 Dolomite, as above; chert, gray or tan, dense to translucent; trace of chalky, dolomoldic chert.
- 2232-49 Dolomite, pale-gray, fine- to medium-crystalline, occasional fragments coarse, tan, with interstitial white chert; finely pyritic and silty.
- 2249-65 Dolomite, as above, with little silt and sand; rare chert, microspecked; some green shale.
- 2265-93 Dolomite, tan, medium-crystalline, dense to slightly sucrose, with interstitial chalky chert; some chert dense, gray, with irregular oolites.
- 2293-2302 Dolomite, light-tan, densely crystalline, fine, some slightly coarser; chert, white to gray, dense, to very oolitic with unusually well developed radial oolites; pyrite and rare sand grains.
- 2302-12 Dolomite, tan-gray, very finely crystalline, dense, slightly silty; rare fragments medium, sucrose, brown, with interstitial chalky chert; some greenish and argillaceous dolomite.
- 2312-21 Dolomite, tan, fine-crystalline to gray, medium pyritic; chert, chalky, dense to drusy, irregularly fragmental.
- 2321-33 Dolomite, very hard, dense, crystalline, gray-tan; chert, fragmental, chalky to dense, pyritic.
- 2333-45 Dolomite, cream to brown, fine-crystalline; chert, translucent, dense to pseudo-oolitic; rare silt and sand.
- 2345-58 Dolomite, fine, tan, very sandy to medium-crystalline; chert, fragmental to dolomoldic; (corrected depth to 2364).

Van Buren-Gasconade

- 2358-64 Dolomite, fine-grained, light gray-tan; trace of silt and medium-fine sand, rounded and frosted; much fragmental chert from above.
- 2364-74 Dolomite, fine-crystalline, tan, some white and coarser; trace of silt to sand, as above.
- 2374-80 Dolomite, fine-medium crystalline, cream; trace of silt to sand enclosed in dolomite; trace of dense white chert.
- 2380-92 Dolomite, medium-crystalline, light-gray; occasional sand grains enclosed; trace of dense white chert.

- 2392-2400 Dolomite, medium-crystalline, tan; trace of silt; trace of chert, translucent to chalky, and very slightly dolomoldic.
- 2400-10 Dolomite, as above; chert, definitely clastic, with irregular fragments recemented; dolomite irregular in size in chalky matrix; irregular sand grains and chert fragments in chert matrix.
- 2410-18 Dolomite, very fine crystalline and dense; chert, dense, white, with occasional brown inclusions.
- 2418-26 Dolomite, medium-crystalline, brown; 10% chert, white with irregular pseudo-oolites and trace of silt clusters in residue.
- 2426-42 Dolomite, fine-medium crystalline, brown, with rare silt to sand enclosed; trace of chert with irregularly sized and shaped oolites.
- 2442-48 Dolomite, tan, as above, with some pale-gray, fine-crystalline, still enclosing silt and sand; trace of chert, as above.
- 2448-57 Dolomite, creamy-gray, fine-crystalline, dense, with more sand enclosed and some finely disseminated pyrite.
- 2457-67 Dolomite, very fine, tan to gray, fine-crystalline; trace of tan chert.
- 2467-77 Dolomite, as above; chert, cream, milky texture.
- 2477-87 Dolomite, fine-crystalline, light gray-tan; 20% chert, texture of lithographic limestone, some milky to chalky-white with rare dolomolds, some banded druse.
- 2487-2503 Dolomite, fine-crystalline, gray-tan; chert 5%, some milky, as above, some gray-brown, finely mottled.
- 2503-13 Dolomite, brown, coarsely crystalline; chert, some limestone-textured, as above, some very drusy, mottled, and banded.
- 2513-23 As above, with some dolomite, light gray-tan, fine-crystalline, enclosing very fine quartz silt.
- 2523-32 Dolomite, brown, densely crystalline, medium; trace of silt, as above; chert 5%, brown and tan, dense.
- 2532-43 Dolomite, cream, fine to dense-crystalline, brown; chert, as above.
- 2543-50 Dolomite, tan to brown, medium-crystalline; chert, as above, and some quartz druse.
- 2550-60 Dolomite, brown, medium-crystalline; occasional fragments of white dolomite; chert, dense, brown, translucent (less than 5%).
- 2560-66 Dolomite, as above; chert, dense, cream and brown, occasional quartz druse.
- 2566-82 Dolomite, dense, brown, finely crystalline; trace of fine silt; 10% chert, cream to tan, translucent, occasional fragments pinkish, dense, and weathered; some vugular.
- 2582-90 Dolomite, pale creamy-gray, fine-crystalline, dense; less chert, dense, gray, some finely pyritic.
- 2590-2600 Dolomite, gray-tan, very fine; chert, white, translucent, some finely pyritic.
- 2600-07 As above; trace of silt, with rare rounded and frosted sand grains; chert, dense to translucent, white.
- 2607-15 Dolomite, very fine, gray-tan, dense; less chert, dense, trace of druse; silt and sand rare.
- 2615-21 Dolomite, light-tan, fine-medium crystalline, dense to slightly vugular; chert, white to dense, tan; silt and sand, as above.
- 2621-30 Dolomite, slightly coarser than above, cream, medium-crystalline; occasional light selenite crystals.
- 2630-38 Dolomite, tan, fine-crystalline to coarse, dense.
- 2638-53 Slightly coarser dolomite, some porous; more sand; trace of dolomoldic chert.
- 2653-63 Dolomite, light-tan, medium dense to slightly coarser crystalline, vugular; trace of chert.
- 2663-75 Dolomite, light-tan, medium-crystalline, dense; trace of silt and dense chert; shale, gray, finely pyritic.
- 2675-85 Dolomite, gray to tan, some very coarsely crystalline; chert (less than 5%) dense, gray-brown; shale, as above, some interstitial, brown.
- 2685-95 Dolomite, dense, gray, fine to coarse, some conglomeratic, with clay pellets and sand in dolomite matrix.
- 2695-2702 As above, with little very finely disseminated silt and pyrite.
- 2702-15 Dolomite, brown-gray, very densely crystalline to slightly vugular; chert, lighter gray-brown.
- 2715-26 Dolomite, very coarsely crystalline; chert, 10%, dark-gray, very dense; trace of shale, pyrite.

- 2726-32 Dolomite, light-tan, very coarsely crystalline; chert, dense, blue-gray, some cream; trace of finely argillaceous, tan dolomite; rare selenite.
- 2732-46 Dolomite, cream, very coarsely crystalline; chert, 10%, pale-gray to tan, some drusy.
- 2746-55 Dolomite, as above; much chert (35%), gray, with small irregular oolites, structureless; occasional small geodelike structures with chalky coating.
- 2765-92 Dolomite, coarsely crystalline, as above; chert, 50%, cream to gray, dense, some micromottled.
- 2792-2814 Dolomite, coarsely crystalline, cream; chert, 20%, cream to gray, dense; trace chalky, cream, very slightly dolomoldic.
- 2814-30 Dolomite, cream, coarsely crystalline; chert, 30%, gray-blue, dense to microspecked; trace of drusy chert; occasional large sand grains enclosed in dolomite.
- 2830-40 Dolomite, cream, medium-crystalline, occasional very large crystals; chert, brown, oolitic (15%), with very good concentric structure; some dense, as above.
- 2840-50 Dolomite, as above; some chert brecciated.
- 2850-59 Dolomite, pale-gray, very finely crystalline, with some finely disseminated silt and pyrite; chert, as above.

Well No. 5 (151). Stoll Oil Refining Company No. 1 C. E. Glass, section ?-F-45, elevation 717 feet, Barren County.

New Albany to 160 feet

DEVONIAN
Sellersburg
160-65

Contact of black shale with rounded and frosted pyritic sand, with limestone, dolomitic, light gray-tan, medium-crystalline.

SILURIAN
Osgood
165-82

Shale, dolomitic, to fissile, gray, some slightly silty.

Brassfield
182-85
185-205

Dolomite, medium-crystalline, dense to slightly vugular, light-gray. Dolomite, cream to pale gray-green, medium-crystalline, vugular; trace of dense gray chert.

ORDOVICIAN
Richmond
205-20
220-35

Dolomite, slightly argillaceous and silty, pale greenish-gray. Dolomite, pale greenish-gray, medium-crystalline.

Maysville
(Gilbert)
235-50

Dolomite, dark gray-tan, medium-crystalline, looks argillaceous.

(Tate)

250-75
275-305

Dolomite, lighter than above, more silty. Shale, fissile to slightly dolomitic, with much dolomite, darker gray, argillaceous, much gray-green.

(Fairmount)
305-25

Limestone, very argillaceous, dark gray-brown, some phosphatic and fossiliferous; trace of silty dolomite.

325-90

Limestone, argillaceous, gray-brown, phosphatic and fossiliferous, with interbedded calcareous shales; trace of replacement silica.

390-425

Limestone, argillaceous, fine to medium, gray, fossiliferous, slightly phosphatic.

Garrard
425-55

Limestone, fossiliferous, gray, interbedded with calcareous and argillaceous siltstone.

455-545 Siltstone, argillaceous, interbedded with fossiliferous limestone.

Cynthiana-Million

545-70 Limestone, gray, fossiliferous and phosphatic, interbedded with dark calcareous shale.
570-625 Limestone, more gray-brown, fossiliferous, slightly less argillaceous.
625-70 Limestone, brown, fine-crystalline, fossiliferous, slightly argillaceous, with little more shale near the base.

Lexington

670-700 Limestone, fine-grained, brown, argillaceous; trace of brown chert.
700-10 Limestone, very fine, brown, ostracodal.
710-85 Limestone, fine-crystalline, gray to brown, fossiliferous; trace of chert and very little interbedded shale.
785-865 Limestone, fine, gray-brown, argillaceous, increasingly argillaceous with depth. Thin, very crystalline, fossiliferous limestone in base.

Chazy-Black River (Tyrone at top)

865-72 Limestone, tan, lithographic; much bentonite.
872-990 Limestone, lithographic, slightly dolomitic; rare chert same color, with more dark-brown chert in lower 20 feet. (Carters and Upper Lebanon of Tennessee)
990-1060 Limestone, brown, fine-grained, very slightly dolomitic and argillaceous. (Lower Lebanon of Tennessee)
1060-1100 Limestone, very fine grained, dense to subcrystalline, brown, ostracodal. (Ridley of Tennessee)
1100-50 Limestone, light-brown, dense to subcrystalline, trace argillaceous; little dark, mottled chert. (Pierce of Tennessee)
1150-1315 Limestone, very fine, lithographic, brown; rare fragments of dolomite. (Upper Murfreesboro of Tennessee)
1315-1535 Limestone, dark, slightly argillaceous, very fine grained.

(Wells Creek)

1535-50 Dolomite, gray-brown, slightly argillaceous.
1550-85 Dolomite, slightly calcareous, light creamy-gray, very finely silty.
1585-1605 Dolomite, tan-gray, fine-medium crystalline; much pyritic green shale.

CAMBRIAN

Knox

1605-15 Dolomite, light-tan, fine-crystalline; trace of translucent chert.
1615-20 Dolomite, coarsely crystalline; much chert, chalky-white to dull tan, with dolomolds.
1620-55 Dolomite, very fine crystalline, brown, some chalky-white; occasional dolomolds in white chert.
1680-1700 Dolomite, very fine crystalline, cream; trace of dolomoldic chert.
1700-05 Dolomite, finely sucrose, white; chert white, dense, oolitic.
1705-50 Dolomite, very fine grained, cream; trace of chert and green shale.
1750-1800 Dolomite, light-tan, medium-crystalline; chert, fresh, translucent and chalky, dolomoldic.
1800-20 Dolomite, medium-coarse crystalline, creamy-gray; trace of chert.
1820-25 Dolomite, cream, fine-crystalline; chert, translucent, oolitic, 30%.
1825-50 Dolomite, fine-crystalline, tan; trace of chert, as above.
1880-1904 Dolomite, cream, fine-crystalline, pyritic; slightly sandy, with residues showing clusters of fine quartz silt.
1910-38 Dolomite, coarse-crystalline, light-tan; trace of dolomoldic chert.
1990-2012 Dolomite, fine-crystalline, brown, slightly sucrose.
2012-16 As above, with much chert, cream, translucent.
2016-50 Dolomite, fine-medium sucrose, tan; translucent to dense chert, and rare sand grains.
2050-58 Dolomite, cream, medium-crystalline; trace of sandy chert.
2058-2320 Dolomite, fine- to medium-crystalline, tan to slightly gray; rare chert, dense to chalky.

Well No. 6 (11). Judy and Young No. 1 Rose Run, section 20-U-70, Bath County.

SILURIAN

Brassfield

0-30 Dolomite, coarsely crystalline, some crinoidal; trace of white chert and glauconite.

ORDOVICIAN

Richmond

30-100 Dolomite, finer grained than above, green, argillaceous, interbedded with occasional, more coarsely crystalline, glauconitic strata.
100-10 Dolomite, as above, with some fossiliferous gray limestone.
110-70 Limestone, gray, very fossiliferous, some slightly argillaceous.
170-200 Limestone, darker gray-brown, finer grained, argillaceous; many ostracods.

Maysville

200-75 Limestone, more gray and fossiliferous, phosphatic, some argillaceous, all relatively fine grained, with argillaceous material finely disseminated rather than interbedded.
275-95 Dolomite, calcareous, very argillaceous and green; few fossils.
295-305 Limestone, fine-grained and gray, with few fossils.
305-21 Limestone, gray, more fossiliferous than above.
321-89 Limestone, crystalline, phosphatic, and very fossiliferous, with thin calcareous and silty shale breaks, increasing in quantity with depth.
389-447 Limestone, silty or finely sandy, interbedded with crystalline fossiliferous limestone.

Garrard

447-97 Limestone, more silty than above, with some very argillaceous limestone.

Cynthiana-Million

497-508 Limestone, crystalline and phosphatic, fossiliferous.
508-20 Limestone, slightly dolomitic, crystalline, fossiliferous and phosphatic; occasional fragments stained with oil.
520-65 Limestone, as above, with no oil stain; little argillaceous limestone.
565-611 Limestone, finer grained than above, argillaceous to fossiliferous.
611-775 Limestone, more coarsely crystalline, phosphatic and fossiliferous.

Lexington

775-800 Limestone, crystalline, some fine-grained, more brown than gray; less phosphatic than above, occasional phosphatic *Ceratopsis*.
800-74 Limestone, very fine grained, brown, slightly fossiliferous; ostracods.
874-925 Limestone, more crystalline and fossiliferous; little argillaceous material.
925-41 Limestone, light-tan to gray, crystalline and fossiliferous; little calcareous shale; trace of replacement chert and gray translucent chert.
941-60 Limestone, crystalline, fossiliferous, cream; some chert partially replacing fossils, with trace of translucent gray chert; little calcareous shale interbedded.

Chazy-Black River

960-68 Limestone, very fine, lithographic, light-tan; trace of calcareous bentonite.
968-78 Limestone, as above, very faintly bentonitic, giving dull, gray-tan appearance.
978 "Pencil Cave" (bentonite).
978-87 Limestone, fine, lithographic, much bentonite, pale-green with some brown chert.
987-1007 Limestone, as above, with much bentonite (caving).
1007-25 Limestone, some lithographic, some finely argillaceous, greenish-tan.
1025-40 Limestone, very slightly dolomitic, light-tan.
1040-48 Limestone, with considerable bentonite; trace of very light cream, lithographic limestone.

- 1048-65 Limestone, very light cream, lithographic; still some caving bentonite.
 1065-76 Limestone, cream, lithographic, and some very dolomitic, almost white.
 1076-85 Limestone, very dolomitic, with separate rhombs enclosed in limestone matrix, cream.
 1085-1100 Limestone, cream, lithographic, little of it dolomitic as above.
 1100-16 Limestone, light-tan, fine-grained, lithographic, with a little dolomite.
 1116-24 Limestone, cream, lithographic; little slightly argillaceous.
 1124-1209 Limestone, light-tan, lithographic; trace of dolomitic limestone; trace of tan chert at 1193-99.
 1209-18 Limestone, some of it almost white, lithographic.
 1218-35 Limestone, tan, fine-grained to slightly granular; trace of dolomite.
 1235-46 Limestone, tan, and some almost white, lithographic.
 1246-60 Limestone, light-tan, lithographic to dolomitic; trace of greenish, argillaceous limestone.
 1260-68 Limestone, brown, lithographic.
 1268-86 Limestone, as above, with occasional very dolomitic streaks.
 1286-96 Little limestone; mainly dolomite, some of it sucrose.
 1296-1307 Limestone, lithographic, tan; trace of dolomite.
 1307-15 Limestone, lithographic, tan; some dolomitic limestone, faintly bentonitic.
 1315-53 Limestone, lithographic, tan, little slightly bentonitic.
 1353-65 Limestone, lithographic, brown; trace of dolomite.
 1365-1400 Limestone, as above, but much more dolomite, medium-crystalline, light-tan.
 1400-32 Limestone, dense, sublithographic, light-tan, with streaks of sucrose brown dolomite.
 1432-80 Limestone, brownish-gray, darker than above; less dolomite; trace of argillaceous limestone, greenish-gray, in streaks.
 1480-93 Limestone, very finely dolomitic, light-tan; trace of white silica.
 1493-1541 Limestone, tan, lithographic; little of it finely dolomitic, as above; trace of very slightly argillaceous limestone, greenish-brown. (Trace of white silica at 1505-17, with "blue lick" water logged at 1509.)

(Wells Creek-St. Peter)

- 1541-50 Dolomite, almost white, very finely crystalline, enclosing occasional medium crystals; little greenish-gray shale.
 1550-58 As above, with some finely silty dolomite.
 1558-71 Some dolomite, as above; some limestone, tan, lithographic; some greenish shale.
 1571-79 Dolomitic sandstone, fine to medium grains of sand, dolomite-cemented.
 1579-87 Dolomite, cemented and enclosing larger rounded and frosted sand grains; trace of bentonite.

CAMBRIAN

Potosi

- 1587-95 Dolomite, pale creamy-gray, densely crystalline to coarse, with rare large rounded and frosted sand grains; trace of bright-green bentonitic shale.
 1595-1608 Dolomite, as above, coarsely crystalline, but with more porosity.
 1608-17 Dolomite, coarsely crystalline and porous, as above; much bentonite, which probably came from above, with 1500 feet of water in the hole.
 1617-36 Dolomite, coarsely crystalline, white; rare large grains of rounded and frosted quartz.
 1636-47 Dolomite, as above; trace of chert, translucent; some dolomite is very pale green.
 1647-55 Dolomite, some as above, some very fine grained, pinkish-tan; much pyrite.
 1655-70 Dolomite, very finely crystalline, white.
 1670-82 Dolomite, coarser than above; 40% chalky-white chert, some of which is dolomoldic; few sand grains.
 1682-92 Dolomite, very fine grained, light-tan; 60% white, very finely dolomoldic chert.
 1692-1702 Dolomite, as above, but less chert.
 1702-15 Dolomite, cream to tan, medium-crystalline; little finely dolomoldic chert.
 1715-28 Dolomite, cream, medium to coarsely crystalline; little chert, as above.

- 1728-36 Dolomite, cream, very densely crystalline.
 1736-48 Dolomite, as above; 25% chert residue, some finely dolomoldic, some white oolitic chert.
 1748-60 Dolomite, white, medium to finely sucrose, enclosing rare sand grains.
- Elvins
 1760-1800 Dolomite, cream, finely crystalline; trace of fine silt.
 1800-05 Dolomite, white to cream, finely crystalline, with some white chert oolites.
 1805-20 Dolomite, white, finely sucrose and porous.
 1820-32 Dolomite, light-tan, medium-crystalline; trace of white chert.
 1832-54 As above, with some pyrite.
 1854-69 Dolomite, white, finely crystalline, with very finely dolomoldic chert.
 1869-1905 Dolomite, cream, fine- to medium-crystalline; trace of dull-white chert. Some porosity about 1891 feet.
 1905-17 Dolomite, light-tan, coarser than above; rare chert and enclosed quartz grains.
- "Rose Run"
 1917-26 Siltstone, very fine grained, dolomitic, white.
 1926-55 Sandstone, medium- to coarse-grained, rounded and frosted, porous.
 1955-62 Sandstone, very poorly sorted, fine- to coarse-grained, rounded and frosted, white, porous; little of it calcite-cemented; considerable bentonite; caving (water).
 1962-86 Sandstone, very poorly sorted, but little better than above; medium grains angular, large grains rounded and frosted; all friable.
 1986-94 Sandstone, as above, with some cream, crystalline dolomite and chalky-white chert.
 1994-2001 Dolomite, cream, medium-crystalline; little translucent to chalky-white chert.

Well No. 7 (1437). Knutson No. 1 John Meadows, SW NW NW section 17-T-71, Bath County.

SILURIAN

Clinton

(Oldham-Plum Creek)

- 35-40 Dolomite, cream to yellow, medium-crystalline to fossiliferous; trace of glauconite nodules and oolitic hematite.
 40-50 (Logged "mud").
 50-55 Dolomite, gray, medium-crystalline, fossiliferous, pyritic; some vugular and oil-stained.
 55-60 Dolomite, as above, with some showing much more green glauconite and yellow stain.
 60-65 Dolomite, gray, fossiliferous, medium-crystalline; some fragmental, with interstitial glauconite.
 65-75 Some dolomite, as above; some medium-grained, silty, slightly argillaceous, gray-green.

Brassfield

- 75-85 Dolomite, cream, medium-crystalline, some yellow and red inclusions; pyritic and slightly vugular.
 85-95 Dolomite, as above, with some gray, mottled, and fossiliferous.
 95-105 Dolomite, gray, with much glauconite, medium-crystalline; trace of fossiliferous gray chert.

ORDOVICIAN

Richmond

(Liberty)

- 105-20 Shale, calcareous, very finely silty, slightly greenish-gray.
 120-30 Shale, as above, with traces of medium-crystalline, gray, mottled dolomite.
 130-65 Mainly dolomite, mottled gray, as above; trace of shale.
 165-75 Shale, calcareous and very finely silty, gray-green; trace of mottled dolomite.

- 175-80 Dolomite, pale-gray, fossiliferous, densely crystalline, with limestone texture.
 180-87 Limestone, dolomitic, white, crystalline, very clean, with some porosity.

(Waynesville)

- 187-95 Shale, calcareous and dolomitic, very granular, gray.
 195-200 Limestone, gray, fossiliferous, interbedded with some gray calcareous shale.
 200-15 Limestone, very dark gray-brown, finely argillaceous, dense, slightly fossiliferous.
 215-30 Limestone, very fossiliferous (many bryozoan fragments), gray, mottled; some interbedded with very finely silty shale.

(Arnheim)

- 230-55 Limestone, slightly brownish-gray, fossiliferous; some interbedded with dark calcareous shale.
 255-60 Limestone, brownish-gray, with gray fossil fragments, very slightly argillaceous, very fine grained.
 260-70 Limestone, as above, with trace of very fine silt in residue.

Maysville

(Mt. Auburn-Tate)

- 270-90 Limestone, fine-grained, some subliothographic, gray-brown, very finely phosphatic, slightly fossiliferous.
 290-305 Limestone, argillaceous, gray, fine-grained, slightly fossiliferous.
 305-15 Limestone, more fossiliferous than above; many bryozoan fragments.
 315-40 Limestone, argillaceous, fine-grained, gray, slightly fossiliferous, finely phosphatic.
 350-55 Limestone, more gray-green than above, argillaceous, with some glauconite; trace of fine silt enclosed.
 355-65 Limestone, very fine grained, slightly argillaceous and silty; trace red color; a little glauconite.
 365-70 Limestone, as above, gray-green.

(Fairmount)

- 370-75 Limestone, gray, very fossiliferous, fine-grained, slightly argillaceous; trace of fine silt.
 375-80 Limestone, more green and silty than above.
 380-85 Limestone, more dense, brownish-gray, with ostracods.
 385-95 Limestone, gray-brown, fossiliferous, slightly phosphatic; many bryozoans; trace of fine silt in residue.
 395-400 Limestone, as above, with some interbedded green-gray silty and argillaceous limestone.
 400-05 Limestone, very fossiliferous, gray, phosphatic, clean; occasional coarse silt grains enclosed.
 405-55 Limestone, as above, with some interbedded calcareous and slightly argillaceous, coarse-grained siltstone.
 455-80 Little limestone, very fossiliferous, as above; mainly siltstone, slightly calcareous, coarse-grained.
 480-90 Limestone, phosphatic and fossiliferous, darker gray-brown; little interbedded siltstone, as above; some shale, slightly calcareous, fissile, in residue.
 490-500 Limestone, gray-brown, fossiliferous, slightly phosphatic; much calcareous and slightly argillaceous, coarse-grained siltstone.

Garrard

- 500-20 Limestone, very fossiliferous and phosphatic, with much interbedded siltstone and silty shale, slightly finer grained than above.
 520-40 Siltstone, medium-grained, very argillaceous, slightly calcareous, dark-gray; little interbedded limestone.
 540-60 Limestone, fossiliferous and phosphatic, with much interbedded coarse-grained siltstone and shale; some of the siltstone is reddish-brown. Reported gas blowing over the mast at 559 feet.

Million

560-65

Limestone, finely phosphatic, fossiliferous, light-gray; little interbedded shale and siltstone, as above.

565-72

Limestone, fossiliferous and phosphatic, with some interbedded calcareous shale and siltstone.

572-75

Limestone, more fossiliferous than above; less silt and shale.

Well No. 8 (1439). Knutson No. 1 Earl T. Richardson, NW SE SW section 24-T-71, Bath County.

SILURIAN

Clinton

0-25

Soil, yellow mud.

25-30

Clay, red and gray-green, fissile.

30-55

Clay, green, slightly fissile.

55-62

Dolomite, cream, densely crystalline, slightly pyritic.

62-72

Some dolomite, green and dense; mainly green and red shales.

72-85

Dolomite, green, densely crystalline, slightly argillaceous, with green shale interbedded.

85-90

Shale, green, fine-grained.

90-100

Shale, green and dolomitic, argillaceous, with much oolitic hematite.

Brassfield

100-15

Dolomite, yellow, crystalline, fossiliferous; some hematite; much pyrite.

115-20

Dolomite, gray, mottled, crystalline, fossiliferous, pyritic.

120-30

Dolomite, very densely crystalline, fossiliferous, gray; much glauconite and some mottled, fossiliferous gray chert.

ORDOVICIAN

Richmond

(Liberty)

130-45

Dolomite, argillaceous, greenish-gray.

145-65

Dolomite, argillaceous, greenish-gray, with some very fine silica enclosed.

165-85

Dolomite, gray, mottled, fossiliferous, streaked with finely silty, green, dolomitic shale; trace of oil stain.

195-200

Dolomite, gray, medium-crystalline, dense, fossiliferous, phosphatic; little green shale, as above.

200-10

Dolomite, very clean, crystalline, white to pale-green, some porosity; occasional fragments of very coarsely crystalline dolomite, as from large vugs.

(Waynesville)

210-15

Dolomite, calcareous, gray, phosphatic, slightly argillaceous.

215-20

Shale, calcareous, and limestone, very argillaceous, slightly fossiliferous, gray.

220-25

Limestone, argillaceous, fine-grained, slightly fossiliferous; interbedded with some slightly silty calcareous shale.

225-35

Limestone, very argillaceous, dense, ostracodal; residue black clay.

235-50

Limestone, gray, fossiliferous, slightly dolomitic, argillaceous; some very slightly silty.

(Arnheim)

250-60

Limestone, slightly argillaceous, brown, dense, earthy, with some ostracods.

260-70

Limestone, more argillaceous than above.

270-90

Limestone, brown, densely fossiliferous; some calcareous shale.

Maysville

(Mt. Auburn-Tate)

290-95

Limestone, fine-grained, brown, dense, argillaceous.

295-305

Limestone, as above, but very finely phosphatic.

305-15

Limestone, more dense than above, fine-grained, argillaceous, with occasional ostracods.

315-20

Limestone, dense, earthy, gray-tan, and slightly argillaceous.

- 320-25 Limestone, fine-grained, slightly fossiliferous and phosphatic; some interbedded gray shale.
 325-35 Limestone, fine-grained, fossiliferous and phosphatic, with some interbedded gray shale.
 335-55 Limestone, slightly argillaceous and silty, brownish-gray; few fossils.
 355-70 Limestone, slightly argillaceous and silty, cleaner than above, slightly grayish-green.
 370-75 Limestone, very finely silty, tan to greenish-gray and red.
 375-85 Limestone, fine-grained, slightly argillaceous and silty, grayish-green.
 385-90 Limestone, slightly argillaceous, grayish-brown, finely silty.

(Fairmount)

- 390-410 Limestone, very fossiliferous, grayish-brown; trace of very fine silt.
 410-15 As above, but with less argillaceous content.
 415-35 Limestone, very fossiliferous, phosphatic, light grayish-tan; some interbedded argillaceous and calcareous siltstone.
 435-45 Limestone, very fossiliferous, as above, with more of the interbedded siltstone.
 445-50 Limestone, very fossiliferous and phosphatic, gray; little interbedded silty shale.
 450-60 Limestone, darker and more argillaceous than above; much siltstone.
 460-75 Limestone, gray, very fossiliferous and phosphatic, with some interbedded gray calcareous siltstone.
 475-85 Siltstone, argillaceous and calcareous, gray; some interbedded fossiliferous limestone.
 485-500 Limestone, very fossiliferous and phosphatic; little siltstone, as above.
 500-10 Limestone, argillaceous, finer grained than above; little silt.

Garrard

- 510-25 Limestone, fine-grained, argillaceous, slightly fossiliferous; much silt, finer grained than above.
 525-40 Limestone, silty, as above; some very fossiliferous and phosphatic.
 540-60 Siltstone, very fine grained, slightly calcareous and argillaceous.
 560-75 Limestone, gray, argillaceous, with some interbedded very finely silty and calcareous shale.

Cynthiana-Million

- 575-85 Limestone, fossiliferous, light-gray, phosphatic, with much interbedded silty shale.
 585-90 Limestone, as above; much very fine silty shale, slightly calcareous.
 590-600 Limestone, gray, densely fossiliferous and slightly phosphatic; little interbedded silty shale.

Well No. 9 (57). No. 1 John Grimes, section 9-CC-59, Boone County.

ORDOVICIAN

Chazy-Black River (estimated top at 730 feet)

- 938-57 Limestone, light-tan, "bird's-eye," occasional streaks of very fine brown dolomite; rare ostracods.
 957-71 Limestone, light-tan, dense to slightly dolomitic, some streaks of medium-crystalline dolomite.
 971-95 Limestone, tan, dense to slightly crystalline, very fine grained.
 995-1014 Limestone, as above, some almost white, lithographic.
 1014-75 Limestone, very fine grained, lithographic, with occasional Leperditia-type ostracods.
 1075-1134 Limestone, fine-grained, brown, interbedded with tan, medium-crystalline dolomite.
 1145-82 Limestone, fine, lithographic, tan, with some greenish, slightly calcareous shale.

(Glenwood-St. Peter)

- 1182-94 Dolomite, very slightly argillaceous, fine-grained, greenish-gray.
 1194-1223 Dolomite, as above, with more green shale.
 1223-51 Dolomite, fine-grained, some finely silty, enclosing occasional large rounded and frosted sand grains; some fine-grained green shale.

- 1251-56 Sandstone, slightly dolomitic, very poorly sorted, medium to very coarse grains, rounded and frosted; much pyrite and bentonitic shale (biotite).
 1256-68 Sandstone, slightly dolomitic; some dolomite, coarsely crystalline and dense.

CAMBRIAN

- 1268-83 Dolomite, coarsely crystalline, slightly sandy; much bentonitic shale (caving?).

Well No. 10 (45). City of North Middletown No. 1 Richard Boardman, section 10-T-65, Bourbon County. (Well drilled for water.)

ORDOVICIAN

Lexington

- 200-65 Limestone, gray, crystalline, fossiliferous, interbedded with dark calcareous shale.
 265-68 Limestone, as above; much brown bentonite.
 268-85 Limestone, very fossiliferous, crystalline, finely phosphatic, light-gray.
 285-300 Limestone, as above, with much gray-white translucent chert.

Chazy-Black River

- 300-15 Limestone, fine-grained, dense, brown, with bentonite.
 315-25 Limestone, lithographic to slightly dolomitic; some bentonite.
 325-35 Limestone, cream, lithographic.
 335-54 Limestone, argillaceous, greenish-gray, very slightly dolomitic.
 354-70 Limestone, very slightly dolomitic, very fine to subcrystalline.
 370-75 Limestone, very dolomitic, sucrose, tan.
 375-90 Limestone, very light cream to gray, lithographic.
 390-405 Limestone, very dolomitic, almost white, sucrose; trace of dark-green shale.
 405-09 Limestone, tan-gray, very slightly dolomitic, earthy.
 409-31 Dolomite, slightly calcareous and argillaceous, much darker, gray-brown.
 431-40 Limestone, less dolomitic than above.
 440-53 Limestone, very light gray-tan, lithographic.
 453-583 Limestone, slightly dolomitic, brown to light-tan, fine-grained.
 583-95 Dolomite, slightly calcareous, very fine grained, dense, brown.
 595-610 Limestone, very slightly dolomitic, fine-grained, gray-brown.
 610-71 Limestone, very smooth, brown, lithographic.
 671-750 Limestone, dolomitic, sucrose, interbedded with very fine brown limestone.
 750-830 Limestone, very fine, lithographic, brown; traces of finely argillaceous gray-brown limestone.
 830-45 Limestone, very finely dolomitic, brown.
 845-55 Limestone, fine-grained, interbedded with finely dolomitic limestone.

(Wells Creek)

- 855-75 Dolomite, fine-grained, enclosing slightly larger grains (detrital), with trace of argillaceous dolomite.

CAMBRIAN

Jefferson City

- 875-900 Dolomite, densely crystalline, light-tan; rare rounded and frosted sand grains and chert, fine, white, translucent.
 900-04 Dolomite, as above, with more chert, translucent, white.
 904-14 Dolomite, cream, medium-coarse crystalline; trace of sand and green shale.
 914-20 Dolomite, as above, with more chert, translucent, white to chalky, interstitial.
 920-35 Dolomite, cream, finely crystalline; trace of rounded and frosted sand.
 935-45 Dolomite, cream, medium-crystalline; much translucent white chert with rare oolites.
 945-60 Dolomite, white, coarsely crystalline; trace of chert with obscure oolites.

Well No. 11 (138). Stoll Oil Refining Company No. 1 George Armstrong, section 10-R-46, Bullitt County. (Incomplete set of samples)

ORDOVICIAN

Chazy-Black River

925-30	Contact of Lexington phosphatic, fossiliferous limestone with very fine lithographic limestone; bentonite.
930-50	Limestone, very fine grained, tan; trace of bentonite.
950-55	Limestone, dense, tan to cream; trace of chert.
955-1115	Limestone, very fine, lithographic, interbedded with finely crystalline brown dolomite; rare fragments argillaceous.
1115-1290	Limestone, dense to subcrystalline, brown; rare fragments argillaceous.
1290-1360	Limestone, very dolomitic, brown, fine-grained to finely crystalline.
1360-1420	Limestone, grayish-brown, very slightly argillaceous, fine-grained.
1420-40	Dolomite, calcareous, very fine grained and earthy, brown.
1440-45	Limestone, dark-brown, lithographic.
1445-65	Dolomite, slightly calcareous and very slightly argillaceous, brown.
1465-80	Limestone, fine, lithographic, interbedded with some dolomitic limestone.

(Wells Creek)

1480-1500	Dolomite, lighter gray, with some shale streaks.
1500-10	Dolomite, finely crystalline, with rare sand grains and green shale.
1510-20	Dolomite, brown, medium-crystalline, some vugular; some interbedded sand and green shale.
1530-60	Dolomite, very fine to sublithographic, light-tan to gray; no chert.

CAMBRIAN

Knox

1560-75	Dolomite, tan, finely crystalline; rare sand grains in chert, and some large chert oolites.
1575-80	Dolomite, medium-crystalline, cream, with much poorly sorted sand, showing secondary crystal growth.
1580-95	Sandstone, dolomitic, angular, fine-grained.
1595-1635	Dolomite, very fine grained to medium-crystalline; trace of chert, oolitic and sandy.
1635-45	Marl.
1645-55	Dolomite, cream, densely crystalline, with much pyrite.
1655-70	Dolomite, fine- to medium-crystalline; rare sand and chert.
1670-80	Dolomite, very finely crystalline, dense. (Sample contains fragments of Osgood - Silurian.)
1680-85	Dolomite, very finely crystalline; 50% poorly sorted sand; trace of cherty sandstone and marl.
1685-1700	Dolomite, as above; much caving from Osgood.
1700-10	Marl.
1710-30	Dolomite, very fine grained, white; rare chert.
1730-35	Dolomite, as above; some sandstone, poorly sorted and dolomite-cemented.
1735-55	Dolomite, very finely crystalline, dense, with little white chert; some dolomitic shale.
1755-65	Dolomite, very finely crystalline, gray; no chert. (Some caving, red shale)
1765-1810	Dolomite, finely crystalline, gray, with dense to translucent chert.

Note: The driller reported crooked hole. That, with considerable caving and the marl noted at 1635-45 and 1700-10, suggests faulting.

Well No. 12 (777). Stoll Oil Refining Company No. 1 Senninger, section 3-S-46, Bullitt County. (Composite samples)

ORDOVICIAN

Lexington

745-50	Shale, calcareous, dark-gray, coarse-grained; little crystalline limestone.
750-820	Limestone, crystalline, fossiliferous, phosphatic, brownish-gray; some shale, as above.
820-85	Limestone, crystalline, fossiliferous, interbedded with dark calcareous shale.
885-915	Shale, calcareous, coarse-grained, very dark gray.

Chazy-Black River

915-23	Limestone, lithographic, tan.
923-26	Bentonite.
926-90	Limestone, very fine, light-tan; some dolomite.
990-1005	Limestone, slightly dolomitic and argillaceous.
1005-1115	Limestone, very slightly dolomitic, fine-grained, brown.
1115-80	Limestone, lithographic, dark-brown; trace of brown translucent chert.
1180-1255	Limestone, slightly argillaceous, very dark brown.
1255-1360	Limestone, dolomitic, fine-grained, brown.
1360-1410	Limestone, slightly argillaceous, dark-brown, fine-grained.
1410-40	Limestone, very finely dolomitic, light- and dark-gray.

(Wells Creek)

1440-80	Limestone, fine, argillaceous; mainly dolomite, fine-grained, gray.
1480-85	Dolomite, fine-grained, gray; rare sand grains.

CAMBRIAN

Jefferson City

1485-1500	Dolomite, fine-grained, brown, vugular; occasional sand clusters.
1500-10	Dolomite, tan, medium-crystalline; trace of rounded sand with secondary quartz growth.
1510-15	Dolomite, gray, medium- to coarse-crystalline, porous, sucrose.
1515-30	Dolomite, fine- to medium-grained, some coarse and vugular; rare sand.
1530-40	Dolomite, very fine crystalline, hard.
1540-55	Dolomite, very finely crystalline, brown; rare sand.
1555-60	Dolomite, very fine grained, cream; chert, 10%, dense, white to translucent.
1560-90	Dolomite, as above; occasional large sand grains.
1590-1625	Dolomite, fine-grained, cream; trace of chert and green shale.
1625-30	Dolomite, fine- to medium-crystalline, cream.

Roubidoux

1630-35	Dolomite, medium-crystalline, cream, enclosing poorly sorted sand grains.
1635-65	Dolomite, fine-grained, earthy; 10% chert, dense, white, quartzose.

Well No. 13 (337). South Central Petroleum Company No. 1 Virgil Ramey, Section 25-X-78, Carter County.

PENNSYLVANIAN

0-10	Siltstone, argillaceous, coarse-grained, micaceous, black.
10-38	Siltstone, argillaceous, gray, very sideritic.
38-44	Siltstone, pale-gray, coarse-grained; trace of coal.
44-66	Siltstone, finer grained than above, slightly argillaceous, gray; some gray shale.
66-88	Shale, silty, coarse-grained, dark-gray.
88-101	Sandstone, fine-grained, well sorted, well cemented.
101-05	Sandstone, as above, with some streaks of gray shale.
105-26	Shale, silty, gray, coarse-grained.
126-31	Sandstone, poorly sorted to medium-grained; some siderite.
131-45	Shale, coarse-grained, black to gray, fissile.
145-66	Shale, as above, with some light gray-tan clay.
166-68	Sandstone, sideritic, poorly sorted, in contact with soft green shale.

MISSISSIPPIAN

Greenbrier

168-71	Shale, soft, green, fissile.
171-76	Limestone, very fine grained, pale-green and yellow.

Lower Mississippian

176-83	Siltstone, green and dark-red, slightly argillaceous.
183-95	Siltstone, green, very glauconitic.
195-208	Shale, silty, coarse-grained, brick red.
208-20	Siltstone, well sorted, coarse-grained, pale-green, with much glauconite.
220-90	Siltstone, as above, but without glauconite; trace of siderite.

- 290-327 Siltstone, as above, but slightly more gray and argillaceous.
 327-45 Siltstone, slightly argillaceous, well sorted, coarse-grained, pale-gray.
 345-58 Shale, slightly silty, dark-gray, coarse-grained.
 358-71 Siltstone, slightly argillaceous, coarse-grained, well sorted, pale-gray.
 371-500 Siltstone, as above, finer with depth; tiny organic inclusions. More argillaceous below 450.
 500-622 Siltstone, gradually increasing in shale content with depth to silty shale, dark-gray.
 622-765 Siltstone, as above, interbedded with more argillaceous siltstone, dark-gray.
 765-72 Siltstone, medium-grained, very slightly argillaceous, pale-gray.
 772-76 Shale, slightly silty, darker gray.
 776-88 Siltstone, medium-grained, pale-gray.
 788-94 More argillaceous than above, some slightly reddish-gray.
 794-811 Shale, slightly silty, dark-gray, coarse-grained.

New Albany

(Sunbury)

- 811-28 Shale, black, coarse-grained, petroliferous; trace of pyritic sandstone in base.

(Berea)

- 828-36 Sandstone, very fine grained (.10 mm.), white, some porosity, well sorted.
 836-64 Sandstone, very fine grained, tightly cemented, with finely crystalline pyrite enclosed, very slightly micaceous.

(Bedford)

- 864-68 Sandstone, as above, with some gray silty shale.
 868-914 Siltstone, coarse-grained, well cemented; some shale, as above, with sandstone, very fine grained.
 914-44 Sandstone, very fine grained, well sorted as to size, poorly sorted as to minerals; occasional shale breaks.
 944-52 Sandstone, very fine grained, with some porosity.
 952-68 Siltstone, coarse-grained, tightly cemented, with much gray shale.

(Ohio)

- 968-1029 Shale, black, coarse-grained, some spores; pyrite and rare fragments of linguloid brachiopods.
 1029-92 Shale, black, as above, with much interbedded shale, gray, greenish-gray, to slightly red-gray, rusty-colored.
 1092-1239 Shale, very dark gray-brown, very coarse grained; occasional spores 1150-60, 1190-1205.
 1239-68 Shale, slightly finer grained than above, black, petroliferous; large spores and some pyrite.
 1268-80 Shale, gray-green, fine-grained, some black.
 1280-1317 Shale, black, coarse-grained, some spores.
 1317-62 Shale, greenish-gray, fine-grained, interbedded with black, as above.
 1362-92 Shale, gray-green, coarse-grained.

SILURIAN

Salina

- 1392-95 Contact of shale, as above, with dolomite, finely crystalline, bright-brown; marked with trace of pyritic sandstone.
 1395-1420 Dolomite, bright-tan, very finely crystalline, evaporite type, with rounded vugs partly refilled with crystalline dolomite.
 1420-31 Dolomite, as above, with rare fragments of fine-medium crystalline brown dolomite with a trace of interstitial porosity.
 1431-43 Dolomite, very fine grained, bright-tan, with trace of translucent chert the same color.
 1443-58 Dolomite, bright-tan to slightly gray-tan, very fine grained; trace of very fine quartz silt.
 1458-71 Dolomite, bright-brown, fine-medium crystalline, dense.
 1471-1504 Dolomite, very fine grained, tan to light-gray, with finely disseminated greenish-gray clay and some very fine quartz silt.
 1504-14 Dolomite, very fine grained, greenish-gray, argillaceous.

Lockport

- 1514-25 Dolomite, bright-brown and gray, mottled; trace of vugular porosity (solution).
1525-37 Dolomite, bright-brown, very finely crystalline to very fine grained, gray, very slightly silty.
1537-53 Dolomite, brown and gray, fine-medium crystalline, enclosing a little fine-grained sand, slightly rounded; some rounded solution vugs.
1553-71 Dolomite, brown, fine-crystalline, dense; some slightly gray-brown, fine-crystalline dolomite.
1571-81 Dolomite, gray, finely mottled, enclosing some fine-grained sand in quantity enough to exist as clusters in the insoluble residue.
1581-97 Dolomite, as above, with some cream, cleanly crystalline, dense dolomite; parts of fossils.
1597-1602 Dolomite, brown to gray-brown, looks argillaceous, actually no clay in residue.
1602-15 Dolomite, gray-brown, fine-medium crystalline, enclosing much fine rounded sand and crystalline pyrite.
1615-40 Sandstone, slightly dolomitic, well sorted for size, poor mineral sorting.
1640-57 Sandstone, slightly dolomitic and slightly argillaceous, finer grained than above, more gray.

Clinton

- 1657-63 Shale, gray, fissile.
1663-1787 Shale, dark-red, dense to fissile.
1787-93 Shale, dark-red, as above, and some green fissile shale.
1793-1813 Shale, green fissile to dense.
1813-41 Shale, dark-red, coarse-grained.
1841-50 Shale, green, fissile.
1850-52 Dolomite, fossiliferous, cream; trace of fossiliferous chert.
1852-65 Shale, dark-red, with much oolitic hematite.
1865-82 Shale, green, dense to fissile.
1882-1915 Shale, gray, fissile, with oolitic hematite in base.

Brassfield

- 1915-45 Dolomite, fossiliferous, gray, dense, with much glauconite.

ORDOVICIAN

Richmond

- 1945-58 Shale, green and some red, fissile.
1958-76 Shale, dark-red, fissile.
1976-96 Shale, green, fissile, with some coarse-grained, red.
1996-2049 Shale, some dolomitic, very fossiliferous and phosphatic, gray-green.
2049-61 Shale and limestone, very fossiliferous, phosphatic; some shale is gray, some gray-green.
2061-68 As above, with more limestone; many bryozoans and brachiopods.
2068-2107 Shale, fine-grained, green to gray, fissile, interbedded with fossiliferous and phosphatic limestone.
2107-22 Shale, gray-green, slightly calcareous, leaving flaky shale residue; trace of fossiliferous limestone.
2122-39 Limestone, fossiliferous, phosphatic, with some silty gray-green shale.
2139-53 Limestone, argillaceous, fossiliferous, dense, slightly phosphatic; change in insoluble residue to finely porous gray shale. (Oregonia member of Arnheim)
2153-76 Limestone, argillaceous, very fossiliferous to dense and earthy; trace of silt in residue.

Maysville

- 2176-2211 Limestone, fossiliferous and phosphatic, interbedded with gray-green calcareous shale, very slightly silty.
2211-21 Shale, calcareous, fine-grained, some fossiliferous, gray.
2221-47 Limestone, dense, gray-brown, fine-grained, argillaceous, some shale.
2247-71 Limestone, fossiliferous, gray, phosphatic, with interbedded silty shale and greenish-gray shale.
2271-76 Siltstone, calcareous and argillaceous, gray, some interbedded fossiliferous limestone.

- 2276-2304 Limestone, silty and argillaceous, interbedded with fossiliferous limestone, some phosphatic.
- 2304-11 Shale, silty and calcareous, gray-green, interbedded with fossiliferous phosphatic limestone.
- 2311-30 Siltstone, argillaceous, slightly calcareous, gray; some very fine grained sandstone.
- 2330-66 Siltstone to very fine grained sandstone, calcareous, interbedded with calcareous shale and fossiliferous limestone.

Garrard

- 2366-2407 As above, with less silt and more greenish-gray shale.
- 2407-42 Siltstone, calcareous, and shale, finely silty and slightly calcareous; trace of fossiliferous limestone.

Cynthiana-Million

- 2442-80 Limestone, gray-brown, very fossiliferous, with interbedded silty shale.
- 2480-92 As above, with some silt and very fine grained sandstone.
- 2492-97 Limestone, slightly brownish-gray, fossiliferous, dense; very small residue of silt and shale.
- 2497-2529 Limestone, fossiliferous, interbedded with argillaceous and calcareous siltstone.
- 2529-54 Limestone, densely fossiliferous, slightly phosphatic, with interbedded dark, finely silty shale.
- 2554-64 Limestone, slightly gray-brown, dense, finely crystalline, fossiliferous; some interbedded dark, finely silty shale.
- 2564-2612 Shale, calcareous, very finely silty, dark-gray to slightly greenish-gray.
- 2612-30 Shale, as above, with a little densely fossiliferous limestone.
- 2630-62 Limestone, tan-gray, fine-grained, fossiliferous and argillaceous, with interbedded silty shale.
- 2662-80 Shale, calcareous, dark-gray, very coarse grained.
- 2680-98 As above, with some limestone, brown, dense, fossiliferous.
- 2698-2715 Limestone, as above, interbedded with very finely silty and slightly calcareous, dark-gray shale.
- 2715-39 Limestone, more fossiliferous, gray-brown, with some silty shale.
- 2739-58 Limestone, gray-brown, very fossiliferous, slightly phosphatic, with interbedded coarse-grained calcareous shale.

Lexington

- 2758-88 Limestone, very dense, brown, fossiliferous, with little interbedded shale.
- 2788-94 Limestone, very dense, bright-brown, slightly fossiliferous, with some interbedded coarse calcareous shale.
- 2794-2852 Limestone, tan to medium-brown, sublithographic, slightly fossiliferous; some slightly argillaceous, leaving porous brown shale residue.
- 2852-84 Limestone, more brown and clean fossiliferous in sublithographic matrix; some interbedded brown calcareous shale.
- 2884-2913 Limestone, as above, but more argillaceous.
- 2913-31 Limestone, very fossiliferous, some phosphatic, tan, and some pale-gray.
- 2931-62 Limestone, very fossiliferous, phosphatic; some interbedded shale; trace of gray mottled chert.

Chazy-Black River

- 2962-68 Limestone, brown, lithographic, and some light-tan, crystalline, fossiliferous.
- 2968-80 Limestone, brown, lithographic, and some light-tan, crystalline; trace of gray-tan translucent chert.
- 2980-90 Limestone, brown, mottled, lithographic, with some slightly argillaceous, gray-brown; trace of chert, as above.
- 2990-95 Limestone, very light tan, lithographic, with pale-green bentonite.
- 2995-3016 Limestone, very clean, brown, lithographic; caving bentonite.
- 3016-58 Limestone, as above, some bentonitic and gray.
- 3058-3111 Limestone, lithographic, light-tan, very smooth and clean.
- 3111-49 Limestone, as above, some of it very finely dolomitic, tan; some bentonite.
- 3149-85 Limestone, gray-brown, very slightly argillaceous.
- 3185-3266 Limestone, fine, lithographic, brown, with some finely dolomitic limestone.

- 3266-89 Limestone, brown and gray mottled, slightly fossiliferous.
 3289-3321 Limestone, very slightly dolomitic, brown.
 3321-27 Limestone, tan to gray, lithographic; some gray bentonite with biotite.
 3327-38 Limestone, as above.
 3338-50 Limestone, less lithographic, fine-grained, gray-brown.
 3350-71 Limestone, cream, lithographic.
 3371-83 Limestone, medium-brown, lithographic.
 3383-3401 Limestone, light gray-tan, lithographic.
 3401-81 Limestone, brown, fine-grained to finely dolomitic.
 3481-3544 Limestone, brown, lithographic, with traces of dark, slightly argillaceous gray limestone.
 3544-70 Limestone, lithographic, interbedded with some finely dolomitic, very finely silty and slightly argillaceous, pale greenish-gray.
 3570-90 Limestone, lithographic, interbedded with some very faintly dolomitic; trace of green-gray shale.

(St. Peter)

3590-3600 Sandstone, dolomite-cemented, very poorly sorted to medium-grained, rounded and frosted.

3600-06 Sandstone, friable, very poorly sorted. Logged show of oil.

CAMBRIAN

Knox

- 3606-10 Dolomite, pale yellow-gray, medium-crystalline, sucrose; some very fine, interstitial white chert; some chert with micropellets.
 3610-15 Dolomite, very dense, finely crystalline, with finely disseminated chert, pale-gray.
 3615-20 Dolomite, fine-crystalline, gray, and coarsely crystalline, cream; some fine, chalky interstitial chert and glauconite; trace of pink crystalline dolomite.
 3620-25 Dolomite, fine-medium crystalline, light-tan, very dense.
 3625-30 Dolomite, cream, fine-crystalline, dense, with trace of very finely disseminated silica.
 3630-40 Dolomite, cream, finely crystalline; much interstitial chert, leaving very fine, thin-walled dolomolds in residue; some oolites completely replaced with chalky chert.
 3640-45 Dolomite, as above; occasional vugs filled with quartz crystals.
 3645-51 Dolomite, medium-coarse crystalline, tan; some interstitial glauconite.
 3651-58 Dolomite, medium-coarse crystalline, tan to pale-gray; trace of medium rounded and frosted sand enclosed.
 3658-65 Dolomite, more finely crystalline than above, pale-gray; trace of interstitial chert and dolomitic chert.
 3665-70 Dolomite, pale-gray, finely crystalline, as above; much very finely disseminated silica, leaving very fine grained chert silt in residue.
 3670-75 As above, with some very fine glauconite silt.
 3675-3706 Dolomite, fine to fine-medium crystalline, light-tan; residue is finely disseminated chert, very fine quartz silt, and silt-size glauconite.
 3706-19 Dolomite, fine-medium crystalline, light-tan; trace of interstitial chert and fine quartz silt; trace of finely crystalline pyrite.
 3719-23 Dolomite, as above, with some chalky-white chert in large fragments.
 3723-28 Dolomite, as above, with trace of interstitial chert, very fine quartz, and glauconite silt.
 3728-40 Dolomite, very pale gray, fine-crystalline; much interstitial silica, finely porous in residue, white to pale-green.
 3740-52 Dolomite, light-tan, medium-crystalline; trace of dense white chert, interstitial chert, and glauconite silt.
 3752-64 Dolomite, as above, with more interstitial chert; some large fragments of chalky-white chert enclosing large tan rhombs of dolomite.
 3764-73 More of the coarsely intergrown, dense white chert and light-brown dolomite rhombs; trace of quartz druse.
 3773-85 Dolomite, medium-crystalline, light-tan, dense to sucrose; trace of interstitial white chert.
 3785-97 Dolomite, medium-crystalline, light-tan, dense to sucrose; trace of crystalline pyrite; trace of dark argillaceous dolomite in thin layers.
 3797-3807 Dolomite, as above; trace of dense white chert and rare rounded and frosted sand grains enclosed.

3807-17 Dolomite, medium-coarse crystalline, light-tan; some dense chert with large rounded pellets enclosed; occasional rounded and frosted sand grains; trace of soft green shale.

"Rose Run"

3817-26 Dolomite, medium-coarse crystalline, light-tan, enclosing poorly sorted sand grains; some interstitial glauconite.

3826-32 Dolomite, as above, some very fine crystalline, all enclosing rounded and frosted sand grains; trace of green shale. (Much admixture of samples from above, but water not reported until 3836.)

3832-36 Dolomite, as above, enclosing some sand; sandstone, poorly sorted, but much of it completely quartz-cemented.

3836-40 Sandstone, well-sorted mineralogically, but poorly size-sorted, medium rounded and frosted, much of it showing secondary crystal growth and some quartz-cemented.

Well No. 14 (108). Bootman, et al No. 1 Pitman, section 21-I-54, Casey County.

ORDOVICIAN

Richmond

0-20 Dolomite, argillaceous, gray-green, streaked with dense glauconitic limestone.

Maysville

(Gilbert)

20-40 Limestone, very fine grained, dense, tannish-gray, slightly argillaceous.

(Tate)

40-75 Dolomite, calcareous, silty and argillaceous, green.

(Fairmount)

75-105 Limestone, argillaceous, gray, fine-grained, fossiliferous and phosphatic.

105-20 Limestone, as above, more fossiliferous, with trace of gray chert.

120-50 Limestone, gray, fossiliferous, some phosphatic, interbedded with gray calcareous shale.

150-65 Limestone, gray-brown, finely phosphatic.

165-80 As above, with some replacement chert.

180-95 Limestone, very fossiliferous, phosphatic, light-gray.

Garrard

195-200 Limestone, buff, crystalline.

200-10 Limestone, very silty, argillaceous, gray.

210-20 Siltstone, slightly calcareous, gray.

220-70 Siltstone, more argillaceous, occasional streaks of fossiliferous limestone.

270-85 Limestone, more shaly than above, little very fine silt.

Cynthiana-Million

285-330 Limestone, argillaceous, very finely silty, fossiliferous, slightly phosphatic.

330-70 Limestone, very phosphatic and fossiliferous, argillaceous.

370-425 Limestone, dense, brownish-gray, fossiliferous, very slightly phosphatic and argillaceous.

425-35 Limestone, more argillaceous than above.

435-90 Limestone, more fine-grained, argillaceous, brownish-gray, fossiliferous.

Lexington

490-505 Limestone, silty, lighter gray.

505-35 Limestone, brown, finely crystalline, fossiliferous; trace of brown translucent chert.

535-95 Limestone, finely crystalline, bright-brown, fossiliferous.

595-650 Limestone, very fossiliferous and argillaceous, fine-grained, brownish-gray; many brachiopods.

650-60 Limestone, very finely phosphatic, with some mottled chert.

Chazy-Black River

- 660-65 Limestone, very fine grained, tan, with bentonite.
665-70 Limestone, very fine, tan.
670-80 Limestone, brown to greenish, bentonitic.
680-705 Limestone, very fine, brown; trace of tan chert.
705-10 Limestone, very fine to subcrystalline; trace of dolomite, with caving bentonite ("Pencil Cave").
710-15 Dolomite, calcareous, brown, fine.
715-20 Limestone, very slightly dolomitic, brown; trace of chert.
720-25 Limestone, as above; no chert.
725-35 Limestone, very fine, tan, with occasional dolomite crystals, very slightly argillaceous; trace of tan chert.
735-55 Limestone, darker than above, with argillaceous streaks.
755-70 Limestone, brown to tan, very light "bird's-eye."
770-90 Limestone, brown, very fine, with trace argillaceous.
790-95 Limestone, very finely dolomitic, tan.
795-825 Limestone, bright-brown, very fine grained, interbedded with some slightly argillaceous limestone.
825-30 Limestone, very fine, lithographic, "bird's-eye."
830-50 Limestone, streaked with brown crystalline dolomite.
850-900 Limestone, very fine grained, tan; rare streaks of dolomite and slightly argillaceous limestone.
900-05 Limestone, very fine grained to slightly crystalline.
905-35 Limestone, very fine, as above, with rare chert and occasional streaks of crystalline dolomite.
935-1010 Limestone, dense, very fine grained, with traces of slightly argillaceous limestone; occasional fragments of brachiopods and ostracods.
1010-20 Limestone, very smooth, brown to light-cream.
1020-35 Limestone, light-tan, "bird's-eye."
1035-90 Limestone, very fine, brown, lithographic, with occasional fragments slightly argillaceous.
1090-1115 Limestone, very fine grained, brown to light-cream.
1115-40 Limestone, very light tan, with streaks of tan, crystalline dolomite.
1140-1200 Limestone, light-tan to cream, with some very slightly argillaceous, greenish-brown.
1200-25 Limestone, very fine, tan, with rare streaks of dark shale.
1225-45 Limestone, very dolomitic, very finely crystalline.
1245-55 Limestone, very fine, lithographic, brown.
1255-60 Limestone, as above, with some dolomite.
1260-1335 Limestone, very fine, brown, with streaks of darker argillaceous limestone, some of which is very finely banded.
1335-45 Limestone, fine, tan, slightly dolomitic; some argillaceous, gray-green.
1345-55 Limestone, as above, with some green shale.
1355-60 Limestone, tan, some almost white; trace of green shale.
1360-70 Limestone, pale tannish-gray, some dolomitic; trace of green shale and fine silt.

(Wells Creek)

- 1370-85 Dolomite, very fine, pale-gray, with very finely silty fragments and some green shale.
1385-90 Dolomite, very finely crystalline, sucrose, light-gray, enclosing poorly sorted fine to medium-fine sand.

CAMBRIAN

Knox

- 1390-95 As above, with trace of white dense chert.
1395-1400 Dolomite, very finely crystalline, cream to tan, some green; trace of very fine sand.
1400-05 Dolomite, very fine and chalky; trace of dead oil stain; some dense white chert.
1405-10 Dolomite, very fine to fine-medium crystalline, some porosity; chert, dense white, translucent to mottled tan.
1410-15 As above, with more chert; some green shale.
1415-35 Dolomite, very finely crystalline, tan to green and cream, slightly argillaceous

- 1435-40 Dolomite, very finely crystalline; trace of tan quartzose chert and very fine sand.
- 1440-55 Dolomite, fine, cream to tan; trace of very fine silt; much dark-green shale, some banded with pyrite.
- 1455-65 Dolomite, cream, very finely crystalline, chalky; chert, gray, light, translucent, enclosing pyrite.
- 1465-70 Dolomite, light-tan, finely and densely crystalline.
- 1470-75 Dolomite, light-tan, very fine; much dense to translucent gray chert with pyrite.
- 1475-80 Dolomite, as above, some finely sucrose, brown (oil stain?); chert, dense, white, gray, translucent to tan, quartzose.
- 1480-90 Dolomite, brown, fine-medium crystalline, dense; chert, chalky-white to translucent.
- 1490-1500 Steel line measurement.
- 1500-05 Dolomite, very finely crystalline, brown; pyrite; much green shale.
- 1505-10 Dolomite, as above, with some more coarsely crystalline, pale-gray, pyritic; trace of interstitial green clay.
- 1510-15 Dolomite, brown, medium-crystalline, dense; chert, translucent, white; some very sandy; occasional sand in fine dolomite.
- 1515-20 Dolomite, brown, fine; chert, chalky to dull, with some green shale.
- 1520-30 Dolomite, brown, medium-crystalline, dense to slightly sucrose; chert, white, sandy.
- 1530-35 Dolomite, cream to light-tan, finely sucrose, with some pale-green pyritic shale.
- 1535-45 Dolomite, as above; trace of translucent chert and green shale.
- 1545-50 Dolomite, pale grayish-tan, very fine grained; trace of green shale and interstitial pyrite.
- 1550-60 Dolomite, brown, fine-grained, crystalline, dense; trace of dense white chert with rare enclosed sand.
- 1560-70 Dolomite, creamy-tan, chalky, fine-grained, enclosing some very fine quartz silt.
- 1570-85 Dolomite, creamy-tan, chalky, fine-grained, enclosing very fine silt with rare sand grains.
- 1585-95 Dolomite, very pale gray, finely sucrose; trace of fine silt with rare sand grains and green shale.
- 1595-1600 Sample missing.
- 1600-05 Dolomite, very finely broken, fine dolomite and fine silt. (Drilled in water, and fragments too small to determine nature of crystallinity.)

Well No. 15 (109). Hillsdale Oil Company No. 1 Oscar Rader, section 15-I-57, Casey County. (Incomplete set of samples)

ORDOVICIAN

Chazy-Black River

- 762-64 Bentonite; little dense brown limestone, and a trace of translucent chert.
- 764-90 Limestone, dense, brown, very fine, bentonitic.
- 790-95 Limestone, dense to crystalline, brown; much bentonite; 20% chert, brown to white, microspecked.
- 795-800 Limestone, as above, with less chert.
- 800-08 Limestone, slightly dolomitic, tan, very fine grained.
- 808-10 Limestone, as above, with a little argillaceous and slightly silty limestone.
- 810-30 Limestone, very fine grained, brown, some slightly argillaceous, with a little dark chert.
- 830-905 Limestone, very dark brown, fine-grained, slightly argillaceous.
- 905-90 Limestone, very slightly dolomitic and argillaceous, dark-brown, fine-grained.
- 990-1140 Limestone, slightly grayish-brown, slightly argillaceous, fine-grained.
- 1140-1218 Limestone, very slightly dolomitic and argillaceous, fine-grained, brown.
- 1218-1310 Limestone, grayish-brown, fine-grained, some slightly argillaceous.
- 1310-25 Limestone, very dolomitic, fine-grained, brown.
- 1325-1430 Limestone, very slightly argillaceous, dark-brown, very fine grained.
- 1430-45 Limestone, very fine grained, some slightly dolomitic.

(Wells Creek)

- 1445-65 Dolomite, very finely crystalline, light-gray, slightly silty.

- 1465-70 Limestone, argillaceous, dark grayish-brown, leaves finely banded shale residue.
 1470-1500 Dolomite, white, finely crystalline, enclosing some very fine sand and rare rounded and frosted grains, slightly argillaceous.

CAMBRIAN

Jefferson City

- 1500-05 Dolomite, medium-crystalline, light-gray, pyritic.
 1505-15 Dolomite, very dense and finely crystalline, white, finely porous; trace of sand enclosed.
 1515-30 Dolomite, very finely crystalline, white; trace of silt; rare imperfect chert oolites.
 1530-35 Dolomite, cream, very densely crystalline; some finely silty and with rare rounded and frosted quartz grains.
 1535-50 Dolomite, coarsely crystalline, cream; rare sand grains and trace of dense white chert.
 1550-55 Dolomite, fine to coarsely crystalline; chert, 10%, white, translucent; some sandy.
 1555-78 Dolomite, finely crystalline; trace of green shale and chert.
 1578-83 Dolomite, with very finely disseminated white chert.
 1583-1620 Dolomite, brown, sucrose, with vugs of coarsely crystalline dolomite; rare chert and green shale; rare rounded and frosted quartz grains.
 1620-40 Dolomite, brown, fine- to medium-crystalline; rare sand; trace of chert, slightly dolomoldic; trace of green shale.
 1640-50 Dolomite, white, finely crystalline to coarse; 50% sand with occasional secondary overgrowths.
 1650-93 Dolomite, very fine grained, gray, some very coarsely crystalline; rare sand, silt, and trace of dolomoldic chert.
 1693-1718 Dolomite, very fine to very coarse, light-gray; trace of translucent white chert with obscure oolites and rare dolomolds.
 1718-20 Dolomite, as above, with some enclosed sand grains.
 1720-35 Dolomite, brown, finely sucrose; trace of dolomoldic chert.

Roubidoux

- 1735-40 Dolomite, cream, fine- to coarse-crystalline; 30% sand, and dense to chalky-white chert.
 1740-65 Dolomite, coarsely crystalline, grayish-tan; chert, dense and pyritic.
 1765-70 Dolomite, as above, with some green shale.
 1770-75 Dolomite, as above, with trace of sandy chert.
 1775-85 Dolomite, cream, very coarsely crystalline; chert, 30%, white to pale-gray, with some druse and dolomolds.
 1785-1820 Dolomite, finely crystalline, cream, with very finely granular quartzose chert.
 1820-30 Dolomite, very finely crystalline; chert, very sandy, translucent and some interstitial.
 1830-50 Dolomite, cream, medium-crystalline; trace of pyrite and selenite.
 1850-65 Dolomite, cream, dense to sucrose; trace of chert with irregularly shaped oolites and some sandy chert.
 1865-83 Dolomite, brown, sucrose to vugular; rare granular silica and selenite.

Well No. 16 (780). Kim Development Company No. 1 Hudson, section 22-I-54, Casey County.

ORDOVICIAN

Richmond

- 4-20 Sandstone, dolomitic, very fine grained, brown; much mottled, tan to gray chert.
 20-25 Sandstone, as above, but more green; trace of glauconite.
 25-30 Sandstone, very finely dolomitic, and argillaceous.
 30-35 Same as above; some limestone, argillaceous, dark-gray.
 35-40 Siltstone, green, argillaceous; some limestone, argillaceous, dark-gray; mottled chert.
 40-45 Limestone, very dark gray, argillaceous.

Maysville

(Gilbert)

- 45-50 Limestone and siltstone, green, argillaceous; mottled chert.
50-55 Siltstone and some limestone, as above.
55-65 Limestone, slightly argillaceous, very fine grained, grayish-brown.

(Tate)

- 65-110 Siltstone, very fine grained, argillaceous, dolomitic, green.

(Fairmount)

- 110-35 Limestone, very argillaceous, some very fossiliferous and phosphatic; fossiliferous gray chert at 115-130 feet.
135-60 Limestone, gray, phosphatic and fossiliferous, interbedded with dark-gray calcareous shale; trace of very fine silt and rare fragments of fossiliferous chert.
160-65 Limestone, more fossiliferous and phosphatic than above; trace of very fine silt.
165-80 Limestone, argillaceous, more brown than that above, some still fossiliferous and phosphatic; trace of very fine silt.
180-200 Limestone, dense, brown, fossiliferous, and some finely phosphatic, less argillaceous than that above.
200-10 Limestone, gray, phosphatic and fossiliferous, interbedded with dark-gray calcareous shale.
210-30 Limestone, fine and argillaceous, very fossiliferous; more fine argillaceous silt than above.

Garrard

- 230-35 Limestone, crystalline, fossiliferous, grayish-white to yellow, interbedded with calcareous siltstone.
235-50 Siltstone, calcareous, gray, some argillaceous; occasional streaks of fossiliferous limestone.
250-60 Siltstone, argillaceous and calcareous, gray.
260-75 Siltstone, as above, with rare fragments of red limestone.
275-80 Limestone, argillaceous, gray, very finely silty (finer than above).
280-300 Limestone, very fossiliferous, interbedded with very fine silty and argillaceous limestone.

Cynthiana-Million

- 300-05 Shale, calcareous, gray, some very finely silty, with interbedded crystalline, phosphatic limestone.
305-10 Limestone, very fossiliferous, very finely phosphatic, interbedded with calcareous shale; trace of very fine silt.
310-35 Limestone, argillaceous, gray, very finely phosphatic, interbedded with calcareous shale.
335-50 Limestone, phosphatic and fossiliferous, with interbedded calcareous shale.
350-60 Limestone, gray, very fossiliferous, some phosphatic, interbedded with some argillaceous limestone; unusually fossiliferous.
360-80 Limestone, as above, with more shale.
380-90 As above, with trace of very fine silt, and fossiliferous chert.
390-400 Limestone, very argillaceous, with trace of very fine silt.
400-10 Shale, calcareous, fossiliferous and phosphatic; insoluble residue of porous, flaky shale.
410-35 As above, interbedded with some very fossiliferous limestone.
435-40 Shale, calcareous, fossiliferous.
440-50 Limestone, very fossiliferous, some phosphatic; little fossiliferous shale.
450-70 Limestone, very fossiliferous, fine-grained, some phosphatic, with shale, as above.
470-515 Limestone, coarsely crystalline, fossiliferous, much phosphate (more than usual).

Lexington

- 515-30 Limestone, brown, very fine grained; some crystalline and dense, some very finely phosphatic.
530-35 Limestone, very fine grained, brown, with some chert the same color.

Well No. 17 (110). Olds Oil Company No. 1 Elkins, at Kidd's Store, section 22-L-56, elevation 875 feet, Casey County.

ORDOVICIAN

Maysville

(Fairmount)

- 60-80 Limestone, slightly argillaceous and silty, very fossiliferous and phosphatic.
80-110 Limestone, fossiliferous, some slightly silty and argillaceous, gray.

Garrard

- 110-45 Siltstone, argillaceous and slightly calcareous, dark-gray.
145-65 Siltstone, as above, with some more argillaceous.
175-85 Limestone, gray, densely crystalline, very fossiliferous, with some calcareous and argillaceous siltstone.

Cynthiana-Million

- 185-200 Limestone, gray, fossiliferous, with interbedded calcareous shale.
215-25 Limestone, gray, crystalline, fossiliferous and phosphatic; trace of fine silty shale.
225-50 Limestone, same as above; mainly very argillaceous gray limestone.
270-305 Limestone, argillaceous, very fossiliferous, gray.
305-25 Shale, calcareous, dark-gray, coarse-grained, slightly fossiliferous.
325-45 Limestone, fossiliferous, brownish-gray, crystalline.
345-50 Limestone, brown, fossiliferous; much calcareous shale.
350-55 Limestone, coarsely crystalline, very fossiliferous; some pyrite.
355-75 Shale, very calcareous, dark-gray to brownish-gray.

Lexington

- 375-95 Limestone, densely crystalline, brown, with trace of silicified fossils.
395-400 Limestone, very fine grained, argillaceous, brownish-gray.
400-10 Limestone, fine-grained, brown, with a little slightly argillaceous; chert, mottled gray and tan.
410-80 Limestone, brown, very fine grained to subcrystalline; trace of shale.
480-95 Limestone, some crystalline and porous, white.
495-520 Limestone, finer than above, more brown, with some interbedded crystalline limestone.
520-55 Limestone, argillaceous, with what looks like altered bentonitic clays; occasional crystalline and fossiliferous layers.
555-70 Limestone, crystalline, some porosity; some phosphatic and fossiliferous.

Chazy-Black River

- 570-75 Limestone, fine-grained, lithographic, brown, with much bentonite; trace of translucent chert.
575-625 Limestone, very fine grained, brown, little of it with included bentonite.
625-65 Limestone, very fine grained, brown; occasional streaks of bentonite.
665-885 Limestone; occasional streaks of finely crystalline brown dolomite.
885-87½ Limestone, very dolomitic, cream to light-tan, finely crystalline.
887½-92 Limestone, some dolomitic, some argillaceous, fine-grained.
892-98 Limestone, some dolomitic and tan, some green and argillaceous.
898-900 Limestone, lithographic, almost white.
900-910 Limestone, tan to greenish-gray, argillaceous.
910-1205 Limestone, tan, sublithographic; occasional dolomitic or argillaceous layers.

(Wells Creek)

- 1205-22 Limestone, some very finely dolomitic and argillaceous, light-gray.
1222-26 Dolomite, very finely crystalline, white to cream; trace of green shale.

CAMBRIAN

Knox (Jefferson City)

- 1226-33 Dolomite, creamy-gray, finely crystalline; trace of very fine silt and quartzose gray chert.
1233-44 Dolomite, creamy-gray, medium-crystalline; trace of chert, translucent gray to quartzose and drusy.

1244-53	Dolomite, very dense, fine-grained, gray; little fine silt and some slightly argillaceous dolomite.
1260-70	Dolomite, cream, finely crystalline; chert residue white to quartzose, some large grains of sand; rare green shale.
1270-93	Dolomite, cream, medium to coarsely crystalline; trace of chert, chalky to quartzose, with rare rounded and frosted sand grains.
1293-1305	Dolomite, cream, finely crystalline; rare sand and chert.
1305-21	Dolomite, very finely crystalline, cream; trace of finely disseminated chert and rare sand grains.

Well No. 18 (32). W. O. Allen No. 1 Albert Chism, section 25-R-66, Clark County.

ORDOVICIAN

Maysville (Fairmount)

10-20	Limestone, gray, dense, very fossiliferous; trace of calcareous shale and replacement chert.
20-80	Limestone, very dense, gray, fossiliferous and phosphatic; little fine silt.
80-110	Limestone, very light gray, fossiliferous and phosphatic, interbedded with gray, calcareous and argillaceous siltstone.
110-30	Limestone, as above, with less silt.

Garrard

130-80	Siltstone, calcareous, argillaceous, dark-gray.
180-200	Siltstone, as above, with some fossiliferous and phosphatic limestone.

Cynthiana-Million

200-45	Limestone, very fossiliferous and phosphatic, gray, crystalline; trace of silt.
245-70	Limestone, dark-gray, dense and very fossiliferous; trace of silty shale.
270-95	Limestone, gray, dense, fossiliferous, as above; shale residue is platy instead of silty.
295-340	Limestone, very dense, fine-grained to fossiliferous, dark gray-brown.
340-60	Limestone, very light gray, coarsely crystalline, fossiliferous and phosphatic.
360-75	Limestone, gray, crystalline, fossiliferous, with dark calcareous shale.
375-405	Limestone, light-gray, coarsely crystalline, fossiliferous and phosphatic; very little shale.
405-35	Shale, calcareous, very dark gray-brown; trace of chert.

Lexington

435-70	Limestone, light-gray, fossiliferous, crystalline; some dark calcareous shale; trace of replacement chert.
470-90	Limestone, gray, crystalline and phosphatic, fossiliferous; trace of calcareous shale and trace of replacement chert.
490-580	Limestone, densely crystalline, brown-gray, fossiliferous, some slightly argillaceous.
580-95	Limestone, more argillaceous and with a trace of silt; finely phosphatic.
595-600	Limestone, crystalline, finely phosphatic, fossiliferous.
600-20	Limestone, very finely phosphatic, slightly silty; trace of chert.

Chazy-Black River

620-40	Limestone, very dense, fine-grained, brown, with bentonite and trace of chert.
640-60	Limestone, brown, very dense to crystalline.
660-80	Limestone, very fine grained, brown, slightly dolomitic.
680-95	Limestone, very dolomitic, brown, fine-grained.
695-720	Limestone, finely dolomitic, light-brown.
720-30	Dolomite, cream to tan, medium-grained, sucrose.
730-60	Limestone, dolomitic, fine-grained, light-brown.
760-70	Limestone, very fine grained, bentonitic, greenish-brown.
770-870	Limestone, darker than above, slightly dolomitic, brown.
870-85	Limestone, very fine grained, light-gray to cream.
885-900	Limestone, slightly argillaceous, gray-brown, fine-grained.

- 900-25 Limestone, slightly dolomitic, very fine to sublithographic, cream.
 925-30 Dolomite, slightly calcareous, light-brown, fine-grained.
 930-80 Limestone, light-tan to brown, fine-grained.
 980-1010 Limestone, slightly dolomitic, fine-grained, brown.
 1010-35 Dolomite, calcareous, finely crystalline to sucrose, brown.
 1035-40 As above, with some slightly argillaceous.
 1040-60 Limestone, dolomitic, brown, fine-grained.
 1060-1115 Limestone, very slightly dolomitic and argillaceous, very fine grained, brown.
 1115-40 Dolomite, slightly argillaceous and calcareous, gray-brown, leaving banded shale residue.
 1140-85 Limestone, slightly argillaceous, gray-brown; rare dolomite.
 1185-1231 Dolomite, calcareous, argillaceous, gray-brown, fine-grained.
- (St. Peter)
 1231-40 Sandstone, dolomitic, very fine to very coarse grained.
 1240-62 Sandstone, medium to very coarse grained, poorly sorted, much secondary crystallization.
 1262-70 Dolomite, very fine grained, pale-gray, with very finely disseminated chert; some green shale.
 1270-92 Dolomite, fine-grained, as above, enclosing occasional sand grains; some chert and green pyritic shale.

CAMBRIAN

Potosi-Eminence

- 1292-1300 Dolomite, gray, crystalline, some red; chert, 60%, dense, white.
 1300-05 Dolomite, as above, with very little chert; pyrite.
 1305-10 Dolomite, gray, coarsely crystalline; chert, dense, white, with some pseudo-oolitic, 60%.
 1310-29 Dolomite, as above, but only about 10% chert.
 1329-50 Dolomite, medium-crystalline, light creamy-gray; trace of chert and pyrite; rare sand grains enclosed.
 1350-60 Dolomite, tan, coarsely crystalline, porous; little chalky-white chert and pale-green shale.
 1360-70 Dolomite, as above, without the shale and enclosing very fine to coarse sand grains.
 1370-1405 Dolomite, light-tan, densely crystalline; chert, 50%, translucent, white to brown, and drusy.
 1405-70 Dolomite, densely crystalline, medium-grained, cream; trace of chert; 20% sand, very fine white silt to coarse grains.
 1470-90 Dolomite, cream, finely crystalline, with white quartzose chert.
 1490-1503 Dolomite, pale-gray, coarsely crystalline; trace of rounded and frosted quartz grains enclosed.
 1503-40 Mainly chert, white, chalky to quartzose, very finely porous; trace of druse and secondary quartz growth.
 1540-65 Dolomite, coarsely crystalline, pale-gray, enclosing trace of sand.
 1565-68 Mainly chert, dense to chalky; trace of dolomoldic chert.
 1568-87 Dolomite, cream, densely crystalline; chert, dense, white, some dolomoldic; pyrite.
 1587-1602 Dolomite, very finely siliceous, white; much finely dolomoldic and oolitic chert.
 1602-38 Dolomite, pale-gray, coarsely crystalline, to dolomite, brown, medium-crystalline; little chert druse and rare sand grains.
 1638-69 Dolomite, very finely crystalline, dense and hard, cream to brown; trace of translucent white chert and rare druse.
 1669-1711 Dolomite, brown, sucrose; chert, brown, very dolomoldic, with trace of oolites.
 1711-24 Dolomite, brown, finely pyritic, enclosing rare angular sand and with trace of white dolomoldic chert.
- Elvins
 1724-75 Dolomite, light-gray, fine- to medium-crystalline, sucrose; rare chert, dense; trace of dark shale and silt.
 1775-1800 Dolomite, coarsely crystalline, light-gray; trace of white, dense chert; rare dark shale and silt.

1800-20	Dolomite, fine- to medium-crystalline, light-tan; trace of chert and silty dark shale.
1820-37	Dolomite, brown and white, dense; trace of dolomoldic brown shale.
1837-80	Dolomite, brown, sucrose; rare chert, cream, with pseudo-oolites.
1880-1900	Dolomite, densely crystalline to vugular; 40% chert, white to light-tan, dense.
1900-32	Dolomite, light gray-tan, sucrose; some dense chert.
1932-2000	Dolomite, more finely crystalline, light gray-tan; trace of dense white chert.

Well No. 19 (36). Pure Oil and Stanolind No. 1 Gilbert Hammons, 225' SNL, 250' EWL, section 2-H-67, elevation 1,200 feet, Clay County.

MISSISSIPPIAN

Greenbrier

882-90	Limestone, brown, sublithographic to finely crystalline, rare oolites and translucent brown chert.
890-922	Limestone, very finely dolomitic, cream.
922-30	Limestone, dolomitic, as above, with some green argillaceous limestone.

Borden-New Providence

930-53	Siltstone, green, very fine, glauconitic, with red chert.
953-59	Siltstone, cream to green, richly glauconitic.
959-81	Siltstone, more argillaceous, green, richly glauconitic; some pink chert.
981-1153	Shale, silty, greenish-gray, glauconitic, less silt with depth.
1153-1250	Shale, slightly silty, micaceous, very dark gray.
1250-99	Shale, as above, with some dark red-brown clay.

New Albany

1299-1417	Shale, black, coarse-grained, pyritic and with spores.
1417-50	Black shale, as above, and some interbedded gray-green.
1450-72	Shale, very dark gray, coarser than New Albany and less black.

SILURIAN

Clinton

1472-1530	Shale, green, fine-grained, pyritic, streaked with small amount of dolomite.
1530-53	Shale, green, fine-grained.
1553-80	Shale, as above, streaked with fine-grained, pyritic dolomite.
1580-90	Dolomite, brown, medium- to coarse-crystalline, fossiliferous; some very glauconitic; chert, brown-gray, mottled.
1590-1604	Dolomite, as above, with some very argillaceous dolomite and coarse green shale.

ORDOVICIAN

Richmond

1604-21	Dolomite, fine, argillaceous, brown-gray, interbedded with coarse green shale.
1621-40	Limestone, very argillaceous, gray, some fossiliferous and phosphatic, with bryozoans.
1640-87	Shale, dolomitic, green; some dolomite, dark brown-gray.

Maysville

(Gilbert)

1687-1705	As above, with some finely crystalline, brown limestone.

(Tate)

1705-40	Shale, calcareous, almost silty, brown, interbedded with gray-green shale.
1740-67	Shale, slightly calcareous, dark-red and green.
1767-82	Shale, argillaceous and slightly silty; some very fine, gray, interbedded shale.
1782-1810	As above, with more silt.

(Fairmount)

- 1810-50 Limestone, very dark, some argillaceous; interbedded with calcareous shale, very dark gray, very fossiliferous.
1850-1907 Limestone, gray, crystalline to argillaceous, very fossiliferous, with many large bryozoans.

Garrard

- 1907-61 Shale, calcareous and finely silty, brownish-red and some green; little limestone, fossiliferous.
1961-85 Limestone, slightly dolomitic and phosphatic, interbedded with very slightly calcareous gray shale; trace of very fine silt.
1985-2015 Limestone, bright-brown, very fossiliferous, to gray, phosphatic; interbedded with calcareous gray shale.

Cynthiana-Million

- 2015-41 Limestone, dark-gray, phosphatic, crystalline, fossiliferous; interbedded with dark calcareous shale.
2041-58 Limestone, slightly dolomitic, crystalline, brown-gray, very fossiliferous; much dark-gray shale.
2058-72 Shale, very dark gray, calcareous, some more fossiliferous and calcareous.
2072-92 Limestone, slightly dolomitic, very fossiliferous, with interbedded gray calcareous shales.
2092-2210 Limestone, mottled, fossiliferous and phosphatic, interbedded with a little gray, calcareous shale.
2210-40 Limestone, as above, but more argillaceous.

Lexington

- 2240-54 Limestone, argillaceous, slightly brownish-gray, dense; trace of brown translucent chert.
2254-2301 Limestone, very bright brown, densely crystalline, fine, slightly dolomitic.
2301-21 Limestone, more coarsely crystalline, bright-brown, fossiliferous.
2321-64 Limestone, brown, dense, and fine-grained, some very slightly argillaceous and slightly fossiliferous.
2364-79 Limestone, dark-brown, very fine and densely crystalline, ostracodal; trace of chert and dark shale, as above.
2379-2411 Limestone, slightly dolomitic, dark-brown, densely crystalline, some argillaceous.
2411-42 Limestone, very argillaceous, brown-gray, fossiliferous; trace of replacement chert; limestone, phosphatic.
2442-78 Limestone, crystalline, gray-brown, fossiliferous and phosphatic, with some dark calcareous shale.

Chazy-Black River (Tyrone at top)

- 2478-2507 Limestone, very fine grained, tan, lithographic; some fine bentonite in top, and trace of brown translucent chert.
2507-2646 Limestone, very slightly dolomitic, brown, very fine grained, with traces of greenish-gray shale.
2646-97 Limestone, darker than above and slightly argillaceous, greenish-gray.
2697-2990 Limestone, brown, very fine grained, occasional fragments slightly argillaceous and more gray-brown.
2990-3037 Limestone, slightly dolomitic, brown, lithographic; the dolomite occurs as crystalline streaks in the limestone.
3037-50 Limestone, very smooth, brown, lithographic.
3050-3184 Limestone, very dark brown, smooth, with trace of darker and slightly argillaceous limestone.
3200-07 Limestone, as above.
3207-77 Limestone, very dark brown, fine-grained; trace of slightly dolomitic limestone; rare fragments argillaceous.
3277-3316 Limestone, fine, brown, interbedded with greenish argillaceous limestone.

(Wells Creek)

- 3316-47 Limestone, as above; mainly light-gray dolomite, very slightly silty, fine-grained.

- 3347-57 Dolomite, light-gray, fine to fine-medium, very slightly silty, clastic.
 3357-77 Dolomite, as above, with trace of fine sand.
 3377-82 Dolomite, fine, gray, enclosing poorly sorted sand and larger dolomite crystals (conglomeratic).

CAMBRIAN

Knox

- 3382-3405 Dolomite, fine-grained, gray, and some fine-grained, very dense, light-tan; trace of green pyritic shale.
 3405-27 Dolomite, some fine, mainly coarse, cream to gray, crystalline, vugular.
 3427-43 Dolomite, pale-gray to tan, fine-grained, some medium-crystalline; rare sand grains and white chert.
 3443-73 Dolomite, dense, fine to very coarse crystalline; chert, translucent to chalky, dolomoldic; trace of green pyritic shale.
 3473-3506 Dolomite, densely crystalline, trace pink; mainly gray to tan; chert, gray, dense to dolomoldic.
 3506-40 Dolomite, very fine grained, gray-brown; much translucent chert, occasionally chalky-white and dolomoldic; some green shale.
 3540-97 Dolomite, very finely crystalline, white, with interstitial pyrite; some chert, sandy.
 3597-3610 Dolomite, tan, very fine, densely crystalline, vitreous; trace of quartzite-like chert; bentonite, as above.
 3610-20 Dolomite, light-gray, finely crystalline, slightly chalky; sandy, enclosing rounded and frosted grains; chert, dense, white to translucent.
 3630-40 Dolomite, as above, without sand; brown bentonite.
 3640-59 Dolomite, fine to very coarse crystalline, creamy-tan; rare sand; some vein quartz and translucent chert; pyrite.
 3659-63 Dolomite, very fine, densely crystalline, and very coarse, tan, crystalline.
 3663-76 Dolomite, very finely sucrose, pale-cream, with some pyrite; very little chert.
 3676-81 Dolomite, light-tan, finely crystalline, some coarse; much rounded and frosted sand; translucent chert.
 3681-86 Dolomite and sand, as above; chert, translucent to quartzose.
 3686-94 Dolomite, tan, very dense, fine to very coarse; chert, dense, white to translucent.
 3694-3712 Dolomite, cream, very coarsely crystalline.
 3712-18 Dolomite, fine-medium crystalline, cream; occasional coarse rounded and frosted sand grains; chert, translucent to obscurely oolitic; gray shale and pyrite.
 3718-36 Dolomite, very coarsely crystalline, tannish-gray.
 3736-43 Dolomite, cream, medium-coarse crystalline; chert, white, translucent to tan, quartzose; quartz druse and imperfect oolites.
 3743-61 Dolomite, as above; less chert.
 3761-90 Dolomite, cream; much translucent to quartzose, light-gray chert; some sandy chert below 3773.
 3790-96 Dolomite, cream, coarsely crystalline; chert, dense, translucent; green shale and some sand.
 3796-3806 Dolomite, as above; chert, translucent to gray, quartzose; selenite.
 3806-37 Dolomite, light-tan, densely crystalline, coarse; less chert than above.
 3837-43 Dolomite, cream, medium-crystalline; much translucent to light-gray quartzose chert.
 3843-55 Dolomite, light-tan, densely crystalline, fine to coarse; chert, as above, but less of it.
 3855-62 Dolomite, as above; much chert, chalky and worn.
 3862-68 Dolomite, as above; chert fresher, some almost drusy.
 3868-86 Chert, weathered and chalky.
 3886-3903 Chert, some as above; more fresh, some drusy.
 3903-08 Dolomite, light-tan, medium-coarse, densely crystalline; some weathered chert.
 3908-16 Chert, translucent, white, quartzose.
 3916-24 Chert, as above; little dolomite; chert is slightly dolomitic, weathered, white to translucent, to quartzose.
 3924-35 Chert, chalky-white to translucent.
 3935-42 Chert, as above; dolomite, pale-gray, densely crystalline, with some green, finely pyritic shale.

- 3942-46 Chert, little chalky-white, mainly translucent to quartzose, white.
 3946-51 Some chert, as above; dolomite, very fine grained, pale-gray.
 3951-60 Dolomite, cream, medium-crystalline; chert, some chalky with dolomolds, some translucent with pseudo-oolites; some quartz druse.
 3960-66 Dolomite, gray, medium-crystalline; chert, interstitial, chalky to gray translucent.
 3966-77 Less dolomite than above, chert, chalky to translucent to quartzose; some rounded and frosted sand grains.
 3977-91 Chert, weathered, white, some dense with trace of quartz druse.
 3991-95 Dolomite, finely crystalline, pale creamy-gray, with glauconite as stain and in rare nodules.
 3995-4002 Dolomite, fine-medium crystalline, dense to sucrose, pale-gray.

Well No. 20 (1029). Carlstrom, et al No. 1 John Cash, section 4-C-52, Clinton County.

ORDOVICIAN

Maysville

(Tate)

- 420-35 Dolomite, silty, slightly argillaceous, brown to slightly green.
 435-45 Limestone, very argillaceous, very finely silty, dark-gray, fine-grained

(Fairmount)

- 445-55 Limestone, very argillaceous, dark-gray, fine-grained; slightly fossiliferous; trace of replacement chert.
 455-508 Limestone, dolomitic, argillaceous, dark-gray; some replacement chert.
 508-25 Limestone, brown to tan, fossiliferous, some very argillaceous; some free silt.
 525-50 Limestone, brown, fossiliferous, and lighter, more crystalline; trace of phosphate; interbedded with dark calcareous shale.
 550-55 Limestone, gray, very fossiliferous and phosphatic, interbedded with some dark calcareous shale.

Garrard

- 555-65 Limestone, as above, with much shale, calcareous and almost coarse enough to be silt.
 565-75 Limestone, very coarsely crystalline, fossiliferous, some yellow; interbedded with dark, argillaceous, and silty shale.
 575-605 Shale, calcareous, very silty, with some interbedded limestone, fossiliferous and phosphatic.
 605-15 Limestone, very fossiliferous, phosphatic, crystalline, slightly dolomitic; interbedded with dark calcareous shale.
 615-20 Limestone, light-gray, very fossiliferous and phosphatic, with some interbedded shale.

Cynthiana-Million

- 620-40 Shale, slightly silty, with much dark-gray shale.
 640-70 Limestone, brown, dark, dense to fine-grained, some slightly phosphatic and argillaceous.
 670-80 Limestone, very fossiliferous, phosphatic, gray, crystalline, with some interbedded dark calcareous shale; trace of fine silt.
 680-704 Limestone, very fossiliferous, slightly dolomitic.
 704-08 Limestone, very clean, light-gray, very fossiliferous and slightly phosphatic.
 708-42 Limestone, argillaceous, fine, dense, brown.
 742-62 Limestone, very fossiliferous, phosphatic, dark-gray, with some dark shale.
 762-800 Limestone, very fine, dense, brown, argillaceous; trace of replacement chert.
 800-09 Limestone, light-tan, very coarsely crystalline, fossiliferous (porous); much phosphate.
 809-25 Limestone, as above, with some replacement chert.

Lexington

- 825-41 Limestone, fine, dense, brown, fossiliferous.
 841-918 Limestone, very fine, dense, slightly argillaceous, brown, with traces of replacement chert.

918-72	Limestone, as above, but slightly more shaly.
972-95	Limestone, some finely phosphatic, some dark, very argillaceous; slightly silty.
995-1005	Limestone, very dark gray and very shaly.
1005-12	Limestone, crystalline, fossiliferous.
1012-20	Limestone, as above, with much bentonite.

Well No. 21 (990). Central States Petroleum No. 1 Davis, NE NE section 15-D-53, elevation 935 feet, Clinton County.

MISSISSIPPIAN

Warsaw

55-65	Limestone, very coarsely fossiliferous, with much phosphate.
65-75	Limestone, as above, but some of it is red; many doubly terminated quartz crystals.
75-80	Some limestone, as above; some dark-gray silty shale.

New Providence-Fort Payne

80-180	Shale, slightly silty, very dark gray, very slightly calcareous.
210-25	Shale, green, crinoidal; translucent chert.
225-30	Limestone, greenish-gray, some crinoidal; some translucent chert.

("Beaver")

248-58	Limestone, slightly dolomitic, cream.
258-74	Limestone, less dolomitic, more coarsely crystalline, very fossiliferous, occasional fragments pale greenish-gray.
274-78	Limestone, as above, plus green shale.
278-306	Shale, greenish-gray, some crinoidal.

New Albany

306-10	Green shale, plus pyrite and black shale.
310-30	Black shale.
330-40	Black shale, with some very argillaceous dolomite with pyrite and rounded and frosted sand grains.

ORDOVICIAN

Maysville

(Tate)	
340-65	Dolomite, argillaceous, green to brown.

(Fairmount)

365-405	Dolomite, some as above; some limestone streaks, gray and fossiliferous.
405-40	Limestone, dark grayish-brown, argillaceous, fine-grained, some fossiliferous.
440-45	Shale, dark-gray, calcareous; some fine-grained gray limestone.
445-65	Limestone, gray, argillaceous, fine-grained.
465-70	Limestone, fossiliferous and phosphatic, some argillaceous.

Garrard

470-75	Limestone, crystalline and phosphatic; some slightly argillaceous.
475-80	Limestone, some as above; some argillaceous and silty.
480-85	Limestone, crystalline, some yellow and white, some pyritic; shale, silty and calcareous, gray.
485-500	Limestone, gray, crystalline, phosphatic; little of it dolomitic; shale, silty, calcareous, gray (some limestone, yellow, at 495 feet).
500-15	Limestone, as above, with much gray calcareous shale.

Cynthiana-Million

515-20	Limestone, phosphatic, crystalline, fossiliferous; some shale, as above.
520-80	Limestone, some dolomitic, gray, phosphatic; little calcareous shale (little cleaner with signs of porosity at 560 feet).
580-615	Limestone, finer grained than above, grayish-brown, slightly dolomitic.
615-20	Some dark limestone, as above; some crystalline, phosphatic, with traces of red; some dark calcareous shale.

620-30	Limestone, crystalline, very phosphatic, with some dark calcareous shale.
630-715	Limestone, some darker, finer grained; considerable dark shale (ostracodal).
715-20	Limestone, dark, fine-grained; considerable dark-gray shale.
720-40	Limestone, dark, fine, with some fossiliferous and phosphatic; dark shale.
740-75	Limestone, brown, fine-grained, with some shale.
775	Limestone, with some light-gray, very fine grained; some light-gray chert.

Well No. 22 (989). Dr. D. T. Deaton No. 1 Morrison, section 10-D-52, elevation 864 feet Clinton County.

MISSISSIPPIAN

Warsaw

65-80	Siltstone, gray, slightly calcareous; streak of finely crystalline brown limestone.
80-85	Less siltstone; mainly limestone, very dark gray, fossiliferous, crystalline; little finely sandy.
85-100	Limestone, brown, crystalline and fossiliferous; little finely sandy; geodiferous.
100-15	Limestone, more sandy and argillaceous, finer grained than above.
115-20	Limestone, brown, fossiliferous, few fossils partially replaced by chert.
120-35	Mainly silica, siltstone with geodes.

New Providence-Fort Payne

135-80	Siltstone, dark-gray, argillaceous and slightly calcareous.
180-225	Sample gap.
225-30	Limestone, white, very coarsely crystalline and crinoidal; trace of translucent chert.
250-55	Limestone, coarsely crystalline, as above, with some green shale included; some chert shows red color.
260-65	Shale, crinoidal and fossiliferous, little chert; all pale-green.
325-30	Shale, darker green, still very crinoidal.
360-65	Shale, dark-green, fissile; occasional crinoid fragments and translucent chert.
380-85	Shale, as above.
395-400	Shale, as above.

ORDOVICIAN

Maysville

(Fairmount)

500-20	Some limestone, gray, fossiliferous; some dolomitic, argillaceous, and slightly silty.
520-55	Limestone, dark-gray, fossiliferous and argillaceous; some very fine grained and ostracodal.
555-60	Limestone, some as above; some crystalline, fossiliferous, slightly crinoidal (porous).

Garrard

560-65	Some limestone, slightly dolomitic and crystalline; some slightly silty and dark-gray.
595-600	Limestone, slightly dolomitic, white to yellow-gray, crystalline; some slightly argillaceous.
600-05	Limestone, gray, crystalline and fossiliferous; little of it argillaceous.
605-10	Limestone, some gray, fossiliferous; some dark-gray calcareous shale.
615-30	Limestone, some fossiliferous; some finely silty and argillaceous, gray.

Cynthiana-Million

630-40	Limestone, gray, fossiliferous and phosphatic.
640-50	Limestone, partially dolomitized, porous, crystalline and fossiliferous.
650-55	Limestone, gray, fossiliferous, with some dark calcareous shale.
655-795	Limestone, some fine, gray; some dark-gray calcareous shale, with occasional streaks of limestone that is more crystalline and fossiliferous.

- 795-805 Limestone, coarsely crystalline, fossiliferous and very phosphatic.
 805-45 Limestone, brown, finely crystalline; some replacement chert, brown, argillaceous, and very slightly silty from 820-45.
 845-50 Limestone, brown, very fine crystalline, ostracodal.

Well No. 23 (963). Diamond, et al No. 3 Dickerson, NE SE section 10-D-52, Clinton County.

ORDOVICIAN

Maysville

(Tate)

- 268-306 Dolomite, silty and argillaceous.

(Fairmount)

- 306-48 Limestone, gray, some argillaceous; little replacement chert; limestone is slightly dolomitic.
 348-67 Limestone, argillaceous, dark gray-brown.
 367-98 Some limestone, more crystalline and fossiliferous.
 398-406 Limestone, argillaceous, dark gray-brown, ostracodal.
 406-31 Limestone, some argillaceous, as above; some crystalline, fossiliferous and phosphatic.

Garrard

- 431-37 Limestone, crystalline, white to yellow; some slightly silty.
 437-63 Limestone, a little crystalline, as above; mainly gray and silty.

Cynthiana-Million

- 463-528 Limestone, crystalline, gray, fossiliferous and phosphatic, with interbedded very dark calcareous shales.
 528-40 Limestone, argillaceous, dark gray-brown, fine-grained.

Lexington

- 717-22 Limestone, very fine grained, brown; trace of brown chert and dark shale.
 722-27 Limestone, fine-grained to crystalline, brown.

Well No. 24 (972). Diamond, et al No. 1 Clay Witham, SE SW section 8-D-52, elevation 1,016 feet, Clinton County.

ORDOVICIAN

Maysville

(Fairmount)

- 100-76 Limestone, slightly dolomitic and argillaceous, dark-gray, fossiliferous.
 176-92 Slightly more fine-grained and dense, gray-brown.
 192-224 Limestone, more crystalline and phosphatic, fossiliferous, with darker gray, argillaceous limestone.

Garrard

- 225-32 Limestone, white and yellow, crystalline, some porosity; some dark-gray calcareous shale.
 232-52 Limestone, as above, with some fine silty limestone.

Cynthiana-Million

- 252-88 Limestone, gray, crystalline, phosphatic, with some calcareous gray shale.
 288-312 Limestone, coarsely crystalline, fossiliferous and phosphatic.
 312-28 Limestone, less crystalline; much of it argillaceous.
 328-36 Limestone, argillaceous, dark grayish-brown, fine-grained.
 336-40 Limestone, light greenish-gray, dense.

("Granville")

- 340-50 Limestone, white, coarsely crystalline, some porosity.
 350-53 Limestone, little more dense and brown than above; still crystalline.
 353-58 Limestone, gray, fossiliferous, crystalline, and some dark-gray calcareous shale.

Well No. 25 (974). Diamond and Vawter No. 1 Add Collins, section 12-D-52, Clinton County.

ORDOVICIAN

Maysville

- 259-301 Dolomite, argillaceous, green.
301-13 Dolomite, darker gray, more argillaceous; occasional fragments of gray, fossiliferous limestone.

(Fairmount)

- 313-69 Limestone, coarsely argillaceous; looks like dark-gray dolomite; little fossiliferous.
369-425 Limestone, coarsely argillaceous, and some very fossiliferous.

Garrard

- 425-50 Limestone, some as above; some cleaner, lighter in color; some dolomitic and slightly porous; some finely sandy limestone; gray limestone has trace of yellow calcite.
450-85 Limestone, silty, gray, some fossiliferous.

Cynthiana-Million

- 485-526 Limestone, gray, fossiliferous, slightly phosphatic; some calcareous and granular gray shale.
526-31 Limestone, some gray, fossiliferous, phosphatic; little argillaceous; some dolomite.
531-43 Limestone, argillaceous, finer and dark brownish-gray.
543-51 Limestone, some coarsely crystalline and with some porosity; some dense, fine-grained, and greenish-gray.

(“Granville”)

- 551-61 Limestone, white, coarsely crystalline, some very coarse calcite; some porosity.
561-67 Limestone, some as above; little gray, crystalline.
567-70 Limestone, some crystalline; mainly finer grained, dark gray-brown.

Well No. 26 (979). Diamond and Vawter No. 1 R. Dickerson, section 9-C-52, Clinton County.

ORDOVICIAN

Maysville

(Tate)

- 295-318 Dolomite (trace of black shale), fine- to medium-crystalline, brown to green.
318-45 Dolomite, as above, but slightly argillaceous.

(Fairmount)

- 345-52 Limestone, gray, silty and argillaceous; texture of dolomite; rare fragments crystalline.
352-90 Limestone, dolomitic, dark-gray, some argillaceous; trace of fossiliferous, crystalline, gray limestone.
390-436 Limestone, finer, dark grayish-brown, some fossiliferous; some ostracods.
436-62 Limestone, more fossiliferous, still some ostracods; little phosphate.

Garrard

- 462-75 Limestone, as above, plus some very coarsely crystalline, white, with trace of yellow calcite.
475-93 Limestone, crystalline and porous, white to yellow.
493-525 Limestone, gray, fossiliferous, some slightly dolomitic; shale, gray and calcareous.
525-31 Limestone, some as above; some more crystalline, with some yellow to reddish color.

Cynthiana-Million

- 531-65 Limestone, crystalline and fossiliferous, with much phosphate; some dark calcareous shale.
565-84 Limestone, dark grayish-brown, finer grained than above, fossiliferous; some argillaceous.
584-90 Limestone, as above; some very fine grained, sublithographic.
590-96 Limestone, very coarse and porous, light; some dark calcareous shale.

("Granville")

- 596-605 Limestone, coarsely white and porous, some very coarse calcite.
605-10 Limestone, as above; some darker gray and slightly argillaceous.

Well No. 27 (977). Diamond and Vawter No. 1 R. A. Witham, section 3-D-52, elevation 954 feet, Clinton County.

MISSISSIPPIAN

New Providence

- 230-59 Shale, slightly calcareous, black; trace of chert.
259-322 Shale, slightly calcareous, black.
322-35 Shale, as above, slightly more calcareous; more silt and chert; trace of glauconite.

New Albany

- 335-72 Shale, black, petroliferous; pyrite.

ORDOVICIAN

Richmond

- 372-92 Dolomite, very argillaceous, grayish-brown to green, fine- to medium-grained.
392-404 Dolomite, as above, some silty and green.
404-18 Dolomite, as above, with some limestone, brown, fine-grained, argillaceous, slightly fossiliferous.

Maysville

(Gilbert)

- 418-30 Limestone, fine, brown, slightly argillaceous; trace of dense chert.

(Tate)

- 430-60 Limestone, grayish-brown, fine-grained, very finely silty and argillaceous.
460-76 Limestone, gray, fine, slightly argillaceous; very finely phosphatic in addition of limestone, as above.

(Fairmount)

- 476-83 Limestone, slightly argillaceous, gray, fine-grained, slightly fossiliferous; trace of replacement chert.
483-91 Limestone, argillaceous, fine-grained, grayish-brown; trace of replacement chert.
491-99 Limestone, as above, some more phosphatic.
499-538 Limestone, more fine-grained than usual, slightly argillaceous, gray, finely phosphatic.
538-55 Limestone, as above; more bryozoans.
555-68 Some limestone, brown and ostracodal.
568-80 Limestone, more fossiliferous and crystalline than above.
580-90 Limestone, as above, with some very slightly silty.

Garrard

- 590-95 Limestone, very fossiliferous, crystalline, interbedded with silty, argillaceous limestone.
595-607 Limestone, yellow, white, and gray, crystalline, interbedded with silty, argillaceous limestone.
607-12 Limestone, very fossiliferous, coarsely crystalline, yellow, white, and gray.
612-18 Limestone, as above, with more shale, calcareous, silty (fissile in residue).
618-43 Shale, silty, calcareous, interbedded with some gray crystalline limestone.

Cynthiana-Million

- 643-54 Limestone, gray, crystalline, fossiliferous, interbedded with dark calcareous shale.
 654-65 Limestone, more densely crystalline and argillaceous, finely phosphatic.
 665-78 Limestone, very fossiliferous, gray, phosphatic; little interbedded shale
 ("Granville")
 678-96 Limestone, dolomitic, crystalline, very porous and fossiliferous.
 696-705 Limestone, as above, but more densely crystalline and slightly argillaceous.

Well No. 28 (1443). Hall and Soliday No. 2 R. P. Hicks, extreme southeast corner of section 4-B-54 (Beach Bottom area), elevation 950 feet, Clinton County. Commenced drilling 8-17-49.

MISSISSIPPIANSt. Louis

- 0-10 Limestone, earthy, fine-grained, light-tan.
 10-20 Limestone, brown, fine-grained, dense, sublithographic.
 20-35 Limestone, as above; some slightly argillaceous and containing clastic limestone pellets.
 35-48 Limestone, slightly argillaceous, fine-grained, brown.
 48-70 Shale, calcareous, very dark gray-brown, coarse-grained.

Warsaw

- 70-82 Sandstone, slightly calcareous and argillaceous, very dark gray-brown; sand is fine-grained and well size-sorted.
 82-85 As above, but more argillaceous.
 85-100 Limestone, rubbly, fossiliferous, brown, and slightly mottled. (Salem lithology)
 100-05 Limestone, dolomitic, fine-medium grained, earthy gray-brown.
 105-10 Limestone, mottled gray-brown, fossiliferous and slightly phosphatic.
 110-55 Limestone, enclosing fine-grained sand, well-sorted, brown and slightly phosphatic.

Borden

- 155-65 Shale, slightly calcareous, very dark gray-brown.
 165-95 Shale, as above, with much very dark, mottled, translucent chert.
 195-210 Shale, without the chert.
 210-15 Limestone, crinoidal, light-gray.
 215-40 Limestone, crinoidal and pale-gray, some slightly argillaceous; chert, pale-gray, translucent.
 240-60 Shale, slightly calcareous, dark gray-brown, as above; some darker translucent chert, mottled gray-brown.
 260-95 Shale, gray-green to brown, fine-grained.
 295-305 Limestone, crinoidal, cream, with pale-gray translucent chert.
 305-80 Shale, slightly calcareous, dark gray-brown.
 380-88 Limestone, crinoidal, with pale-gray translucent chert.

New Albany

- 388-420 Shale, black, very petroliferous and fine-grained.

ORDOVICIANMaysville(Fairmount-Tate)

- 420-52 Dolomite, argillaceous, brown, very slightly silty, increasingly argillaceous with depth.
 452-90 Limestone, very argillaceous, fine-grained, dark-brown, with occasional streaks of dolomite.
 490-505 Limestone, as above, with traces of very finely silty limestone.
 505-20 Limestone, as above, with some pale-gray, translucent chert.

Cynthiana-Eden

- 520-30 Limestone, light-brown, very fossiliferous.

- 530-660 Limestone, light-tan, fossiliferous, and some darker brown, very fine grained, slightly argillaceous.
 660-705 Limestone, slightly argillaceous, fine-grained, dark-brown; occasional streaks of fossiliferous limestone.
 705-50 Limestone, very dense, brown, sublithographic, with a trace of slightly argillaceous limestone.

Lexington

- 750-95 Limestone, very dark brown, sublithographic.
 795-900 Limestone, as above, some slightly fossiliferous.
 900-10 Limestone, more gray-brown than above, with some slightly phosphatic.
 910-50 Limestone, brown, very fine grained and dense, slightly argillaceous.
 950-60 Limestone, very fossiliferous and phosphatic. (Logged "Pencil Cave" at 959 feet. No bentonite showing in samples.)

Chazy-Black River

- 960-1360 Limestone, very light tan, fine-grained to lithographic.
 1360-70 Limestone, darker brown than above.
 1370-90 Limestone, pale-cream, lithographic.
 1390-1684 Limestone, dark-brown, lithographic.
 1684-1752 Limestone, pale creamy-gray, lithographic; some brown, fine-grained.

(Wells Creek)

- 1752-74 Dolomite, fine- to medium-crystalline, sucrose, pale creamy-gray.

CAMBRIAN

Knox (Jefferson City)

- 1774-80 Dolomite, fine-medium crystalline, with some dense white chert.
 1780-1820 Dolomite, brown, medium-crystalline, dense; trace of dense white chert.
 1820-25 Dolomite, as above, slightly more fine-grained, and with some green shale.
 1825-50 Dolomite, brown, medium-crystalline; trace of dense white chert.
 1850-60 Dolomite, earthy, fine-grained, gray-brown, slightly argillaceous.
 1860-80 Dolomite, creamy-gray, densely crystalline.
 1880-1925 Dolomite, as above, with trace of white translucent chert.
 1925-2010 Dolomite, pale-gray, medium to coarsely crystalline; coarser fragments pale-gray, with some interstitial chalky-white chert. (Fractured?)
 2010-50 Dolomite, densely crystalline, brown; little chert, as above.
 2050-2110 Dolomite, pale creamy-gray, medium-crystalline; about 10% dense to translucent chert.
 2110-20 Dolomite, medium-crystalline, creamy-gray, with dense white chert.

Roubidoux

- 2120-24 Dolomite, as above, enclosing medium rounded and frosted quartz grains (about 50%).

Well No. 29 (799). Jarvis Bros. No. 1 Guinn Heirs. ?-D-52, elevation 645 feet, Clinton County.

MISSISSIPPIAN

New Providence

- 100-95 Shale, slightly calcareous, very dark gray.
 195-200 Dolomite, argillaceous; some free chert.
 210-20 Shale, calcareous; little chert.
 220-25 Limestone, crinoidal, little pale greenish and dolomitic; some translucent chert. ("Beaver")
 240-55 Dolomite, limestone; some chert.

New Albany

- 265-80 Black shale.
 290-95 Black shale, in contact with dark argillaceous dolomite.

ORDOVICIAN

Maysville

(Tate)

310-15 Dolomite, argillaceous, green.

(Fairmount)

325-450 Limestone, slightly dolomitic, argillaceous, gray.

450-75 Limestone, more crystalline, phosphatic, with some calcareous shale.

Garrard

475-90 Limestone, very coarsely crystalline, with some yellow calcite; interbedded with calcareous siltstone.

490-500 Siltstone, argillaceous and calcareous.

Cynthiana-Million

500-30 Limestone, phosphatic and fossiliferous, with interbedded calcareous shale.

530-60 Limestone, slightly dolomitic, clean, vugular and porous.

560-90 Limestone, darker, finer grained, slightly argillaceous.

590-600 Limestone, clean, white, porous, slightly phosphatic.

600-05 Limestone, darker than above, little argillaceous.

605-09 Limestone, very finely broken, as though drilled in water.

Well No. 30 (992). Jarvis Bros. No. 2 Luttrell, section 10-D-52, elevation 955 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

65-221 Shale, slightly calcareous, dark-gray.

221-52 Limestone, very crinoidal ("Corder").

252-83 Shale, slightly calcareous, gray; trace of dolomite in base.

New Albany

283-318 Black shale.

DEVONIAN

Beechwood

318-27 Contact with limestone, light-tan; some translucent chert, and large rounded and frosted sand grains.

ORDOVICIAN

Maysville

(Tate)

327-90 Dolomite, slightly argillaceous, pale-green.

(Fairmount)

390-490 Limestone, a little dolomitic and argillaceous, slightly fossiliferous.

490-500 Limestone, finer grained, ostracodal.

Garrard

500-619 Limestone, crystalline, white to amber, little calcareous shale.

Cynthiana-Million

619-35 Limestone, more argillaceous, finer grained than above; more brownish-gray.

635-58 Limestone, crystalline, phosphatic, slightly dolomitic.

658-77 Limestone, finer than above; much dark shale.

677-791 Limestone, fine-crystalline, dark brownish-gray, little argillaceous; occasional layers more crystalline and phosphatic.

791-807 Limestone, fine-grained; much light-gray chert.

807-902 Limestone, fine-grained, brown, occasional crystalline streaks; rare shale.

Well No. 31 (1980). Jarvis Bros. No. 2 Pierce, section 22-E-52, elevation 970 feet, Clinton County.

MISSISSIPPIAN

Warsaw

- 0-12 Soil
- 12-20 Limestone, gray, fossiliferous and phosphatic, slightly dolomitic.
- 20-40 Limestone, dolomitic and argillaceous, geodiferous.

New Providence-Fort Payne

- 40-310 Shale, slightly calcareous, very dark.
- 310-20 Some shale is green and glauconitic, with a little tan, silty limestone.

New Albany

- 320-49 Black shale.
- 349-55 Black shale, plus some greenish argillaceous dolomite.

ORDOVICIAN

Richmond

- 355-85 Dolomite, argillaceous, pale-green.

Maysville

(Gilbert)

- 385-95 Dolomite, as above; some fine-grained, argillaceous, gray-tan limestone.

(Tate)

- 395-425 Dolomite, argillaceous, pale-green.

(Fairmount)

- 425-510 Limestone, argillaceous, gray.
- 510-55 Limestone, very fossiliferous and phosphatic; few streaks of calcareous shale.

Garrard

- 555-600 Little silty and argillaceous limestone.

Cynthiana-Million

- 600-70 Limestone, fossiliferous and phosphatic; occasional streaks of calcareous shale; slightly dolomitic.
- 670-90 Limestone, some fossiliferous, some more argillaceous.

("Granville")

- 690-95 Limestone, slightly dolomitic, clean, crystalline, pink-specked.
- 695-705 Limestone, gray, phosphatic, crystalline; some argillaceous.

Well No. 32 (1987). Jarvis Bros. No. 1 Schoopman, section 3-D-52, elevation 942 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 100-15 Shale, slightly calcareous, very dark gray, coarse-grained.
- 145-60 Same.
- 160-65 Same.
- 180-90 Shale, as above, geodiferous.
- 205-10 Shale, very siliceous, looks like limestone, brown-gray.

("Beaver")

- 280-85 Limestone, very crinoidal; some green shale.
- 285-90 Little limestone, as above, with translucent chert; mainly green shale.
- 290-95 Shale, green, crinoidal.

New Albany

- 300-10 Black shale.
- 325-30 Black shale, with some green dolomitic shale.

ORDOVICIAN

Maysville

(Tate)

- 334-39 Dolomite, green to brown, medium-crystalline, slightly argillaceous.
- 339-80 Dolomite, as above.

(Fairmount)

- 380-405 Limestone, gray, argillaceous, some fossiliferous.
- 410-35 Limestone, argillaceous, gray; some replacement chert.
- 435-95 Limestone, brownish-gray, finer grained, some argillaceous.

Garrard

- 495-545 Limestone, gray, fossiliferous, with much gray calcareous shale.

Cynthiana-Million

- 545-50 Limestone, some crystalline, fossiliferous, with trace of yellow calcite, some porosity; interbedded with calcareous shale.
- 550-620 Limestone, as above, without yellow color; phosphatic; some cleaner and more porous from 590-610.

Well No. 33 (991). Jarvis Bros. and Marcell No. 1 Burchett, section 10-C-52, elevation 974 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 110-50 Shale, very dark.
- 150-60 Limestone, sandy, with white gypsum.
- 160-260 Shale, slightly dolomitic, very dark.
- 260-70 Limestone, tan.
- 270-360 Shale, very dark, slightly calcareous.
- 360-410 Shale, as above, with some green and dolomitic.
- 410-20 Shale, green and black.

New Albany

- 420-40 Shale, black.
- 440-50 Black shale and very dark argillaceous dolomite; traces of chert. (Duffin)

ORDOVICIAN

Maysville

(Fairmount)

- 450-70 Shale, very dark and slightly calcareous.
- 470-90 Limestone, argillaceous, slightly dolomitic, very dark gray.
- 500-30 Limestone, argillaceous, gray, fossiliferous.
- 530-40 Less shale and more phosphate.

Garrard

- 540-600 Limestone, crystalline and phosphatic; some silty shale.

Cynthiana-Million

- 600-40 Limestone, crystalline and phosphatic; occasional calcareous shale streaks.
- 640-790 Limestone, finer, brown, argillaceous; occasional layers crystalline.

Well No. 34 (962). Jarvis Bros. and Marcell No. 1 Pierce, section 22-E-52, elevation 961 feet, Clinton County.

MISSISSIPPIAN

New Providence

- 85-305 Shale, slightly calcareous, very dark gray-brown.
- 305-10 Shale, as above; some lighter and rich in glauconite. (Maury of Tennessee)

New Albany

- 310-40 Black shale.

ORDOVICIAN

Richmond

340-55 Dolomite, argillaceous, light greenish-gray

Maysville

(Gilbert)

355-60 Some dolomite, as above; some dark shale, with fine-grained limestone.

(Tate)

360-420 Dolomite, argillaceous, light-green.

(Fairmount)

420-500 Limestone, slightly dolomitic, argillaceous, gray, fossiliferous and phosphatic.

500-35 Limestone, some crystalline, fossiliferous, interbedded with finer shaly limestone.

Garrard

535-40 Limestone, very fossiliferous.

540-65 Limestone, very fossiliferous, white to yellow, crystalline, with some silty limestone interbedded.

565-75 Siltstone, argillaceous, calcareous.

Cynthiana-Million

575-90 Limestone, gray, fossiliferous and phosphatic, slightly argillaceous.

590-650 Limestone, very fossiliferous, crystalline, slightly dolomitic; (apparent porosity); shale breaks rare.

650-55 Limestone, gray, fossiliferous and phosphatic; some calcareous shale streaks.

655-75 Limestone, crystalline to fine-grained, brown, little shale; phosphatic and ostracodal.

675-85 Limestone, white, dolomitic, very clean and porous.

685-93 Limestone, some as above, some gray and phosphatic; little argillaceous material.

Well No. 35 (92). Jarvis and Marcell No. 1 Parrigan, section 21-D-53, elevation 905 feet, completed June 1944, Clinton County.

MISSISSIPPIAN

St. Louis

10-15 Limestone, gray, fine-grained, some slightly argillaceous; some translucent brown chert.

15-70 Limestone, gray-brown, fine-grained to granular, siliceous and argillaceous.

Salem (lithology)

70-85 Limestone, very coarsely crystalline, very fossiliferous, mottled brown.

Warsaw

85-100 Sandstone, slightly calcareous, argillaceous, medium-grained.

100-10 Siltstone, argillaceous and very slightly calcareous.

110-20 Some siltstone, as above, some fossiliferous gray limestone.

120-30 Limestone, some very fossiliferous, some very dark gray shale.

130-45 Limestone, as above, with some dark-gray mottled chert.

New Providence-Fort Payne

145-65 Shale, calcareous or dolomitic, looks like fine-grained dolomite, dark-gray; trace of very dark chert.

165-260 Shale, almost black, very slightly calcareous.

260-80 Shale, silty and slightly calcareous; some chert (geodes).

280-368 Shale, black, slightly calcareous.

New Albany

368-75 Some shale, as above; contact with black carbonaceous shale.

- 375-80 Shale, black, carbonaceous; trace of brown, earthy limestone.
 380-401 Shale, black, carbonaceous; pyrite.

(Duffin)

- 401-03 Contact with dolomite, argillaceous, dark-gray, with little gray chert.
 403-15 Dolomite, very argillaceous, dark-gray, earthy.

ORDOVICIAN

Maysville

(Fairmount)

- 415-20 Limestone, some coarsely crystalline and fossiliferous, some finer and argillaceous, gray.
 420-25 Limestone, some fine-grained, fossiliferous, some very argillaceous, brown-gray.
 425-30 Limestone, fossiliferous to finely silty and argillaceous, gray.
 430-70 Limestone, fossiliferous, some finely dolomitic, some argillaceous.
 470-75 Limestone, little fossiliferous, brown; mainly shale, slightly calcareous, dark-gray.
 475-93 Limestone, some very argillaceous, fine-grained, brownish-gray.

Garrard

- 493-99 Limestone, as above, in contact with limestone, silty.
 499-509 Limestone, coarsely crystalline, white to yellow; little silty limestone.
 509-14 Limestone, slightly dolomitic and silty, some argillaceous, gray.
 514-30 Limestone, some crystalline, fossiliferous, some argillaceous and slightly silty.
 530-46 Limestone, brown, fossiliferous to finely crystalline; little argillaceous limestone.
 546-52 Limestone, crystalline, very fossiliferous, slightly dolomitic.

Cynthiana-Million

- 552-58 Limestone, more densely crystalline and fine-grained than above, brown.
 558-90 Limestone, crystalline, slightly phosphatic, some very argillaceous.
 590-611 Limestone, more finely crystalline, brownish-gray, some argillaceous.
 611-28 Limestone, more coarsely crystalline and fossiliferous, brown to gray, with some argillaceous.
 628-725 Limestone, finer grained and browner than above; some calcareous shale.
 725-45 Limestone, some coarsely crystalline, fossiliferous, tan; little calcareous shale.

Lexington

- 745-891 Limestone, slightly finer and more gray-brown than above; trace of translucent chert in upper five feet.
 891-98 Limestone, some very fine grained, brown; trace of argillaceous and silty limestone.
 898-909 Limestone, very argillaceous, fine-grained, grayish-brown.
 909-32 Limestone, some as above, some more fossiliferous and phosphatic.
 932-60 Limestone, light-cream to dark brownish-gray, granular, some phosphatic; much bentonite.

Chazy-Black River

- 960-65 Limestone, light-tan, lithographic; much bentonite, greener than that above; trace of translucent brown chert.
 965-77 Limestone, very light tan to brown, lithographic.
 977-88 Limestone, fine-grained, brown, slightly bentonitic (clay incorporated in the limestone).
 988-93 Limestone, lithographic, clear-brown, with a little chert the same color.
 993-1000 Limestone, very fine, lithographic, tan to cream; trace of petroliferous stain on some fracture planes.
 1000-20 Limestone, tan, lithographic, with a trace of dolomite in streaks.
 1020-24 Limestone, more dolomitic than above; trace of oily stain.
 1024-35 Limestone, cream to tan, lithographic, with some quite dolomitic.
 1035-41 Limestone, darker, some slightly argillaceous.
 1041-70 Limestone, brown, slightly dolomitic, fine-grained.

- 1070-89 Limestone, brown, slightly argillaceous; little brown chert.
 1089-1120 Limestone, brown, slightly argillaceous, fine-grained.
 1120-1715 Limestone, more dolomitic than above, brown; slightly argillaceous in streaks; some streaks very fine grained and smooth.
 1715-20 Limestone, light creamy-tan, smooth, lithographic.
 1720-29 Limestone, as above, but some is darker brown.

(Wells Creek)

- 1729-39 Dolomite, pale-gray, finely crystalline.
 1739-52 Dolomite, as above, very finely silty.
 1752-57 Dolomite, tan, densely crystalline, fine- to medium-grained; trace of brown bentonite.

CAMBRIAN

Knox

- 1757-67 Dolomite, tan, densely crystalline, fine-grained; trace of quartzose chert.
 1767-70 Dolomite, as above; much chert, white to brown, translucent, some oolitic.
 1770-77 Dolomite, some finely crystalline, pale-gray; mainly very coarsely crystalline, porous, light-tan; little dead oil stain.
 1777-81 Dolomite, very coarsely crystalline, cream, porous.
 1781-97 Dolomite, more fine-grained, tan, finely porous; trace of translucent chert.
 1797-1802 Dolomite, cream, finely crystalline; much chalky-white chert.
 1802-07 Dolomite, tan, very finely crystalline.
 1807-13 Dolomite, as above, with translucent chert the same color; some chert encloses rounded and frosted sand grains and oolites.
 1813-18 Dolomite, tan, medium-crystalline, some porosity; trace of dolomoldic chert.
 1818-23 Dolomite, cream, more coarsely crystalline, porous, more white chert; few rounded and frosted sand grains.
 1823-36 Dolomite, light-tan, very finely crystalline.
 1836-40 Dolomite, medium-crystalline; much bentonite caving.
 1840-50 Dolomite, very finely crystalline, pale creamy-gray; little translucent chert.
 1850-75 Dolomite, tan, sucrose; trace of chert.
 1875-85 Dolomite, very fine grained, slightly argillaceous.
 1885-91 Dolomite, cream, fine to coarsely crystalline.
 1891-96 Dolomite, cream, with much white chert.
 1896-1903 Dolomite, cream, with white chert, as above; encloses some rounded and frosted sand grains; little green shale.
 1903-10 Dolomite, cream, coarsely crystalline; some white chert and trace of green shale.

Note: Reported show of oil at 1744-50 and 1758-67, with water at 1777.

Well No. 36 (978). Kentex Oil Company No. 2 Pearl Milton, SW NE SE section 3-D-52, Clinton County.

ORDOVICIAN

Richmond

- 65-105 Dolomite, silty, medium-crystalline, pale-gray; finely disseminated pyrite.

Maysville

(Tate)

- 105-10 Same, with some limestone, fine-grained, gray.
 110-40 Dolomite, calcareous and silty, gray-green.
 140-55 Limestone, dolomitic, silty, dark-gray.

(Fairmount)

- 155-60 Limestone, some dolomitic and slightly silty, as above; some fine-grained, gray, and fossiliferous.
 160-65 Limestone, dark-gray, fine-grained to fossiliferous, slightly phosphatic and silty.

- 165-75 Limestone, dark-gray, dense to crystalline, fossiliferous, slightly phosphatic, granular; trace of chalcedony.
- 175-80 Limestone, dark brownish-gray, fine-grained; trace of chalcedony; little white chert.
- 180-90 Limestone, slightly dolomitic, phosphatic, fossiliferous; little white chert.
- 190-95 Limestone, grayish-brown, fine-grained to slightly dolomitic and silty; trace of chalcedony.
- 195-200 Limestone, brownish-gray, granular, with some lighter gray, finely phosphatic.
- 200-05 Limestone, dolomitic, granular, fossiliferous.
- 205-40 Limestone, dolomitic, dark brownish-gray, fossiliferous; fragments of bryozoans and brachiopods; few fragments of calcareous shale.
- 240-45 Limestone, gray, very fossiliferous; little calcareous shale.
- 245-50 Limestone, as above, with a little very phosphatic limestone.
- 250-55 Limestone, some as above, some fine-grained and more brown, some slightly dolomitic.
- 255-70 Limestone, very fossiliferous and phosphatic, gray; little calcareous shale (brachiopod and bryozoan fragments).

Garrard

- 270-75 Limestone, some crystalline and fossiliferous, some gray and silty.
- 275-80 Limestone, a little silty, as above; mainly crystalline, slightly dolomitic, fossiliferous.
- 280-305 Limestone, as above, more silty.

Cynthiana-Million

- 305-30 Limestone, crystalline, phosphatic and fossiliferous, with little silty limestone in streaks.
- 330-35 Limestone, darker gray, dolomitic, less residue.
- 335-40 Limestone, as above, with some dark-gray calcareous shale.
- 340-50 Limestone, very phosphatic and fossiliferous, light-colored, crystalline.
- 350-75 Limestone, light gray to white, coarsely crystalline, very phosphatic.
- 375-90 Limestone, same as above, with rare streaks of gray calcareous shale.

("Granville")

- 390-95 Limestone, white, coarsely crystalline, slightly dolomitic; considerable pyrite.
- 402-30 Samples missing.
- 430-47 Limestone, gray, less distinctly crystalline than above, with some calcareous shale; phosphatic.

Lexington

- 447-61 Limestone, very dense, dark-brown, with ostracods.
- 461-77 Limestone, dark-gray, dense to finely crystalline, dolomitic.
- 477-89 Limestone, more crystalline and phosphatic (*Cyclora minuta* rather common).
- 489-504 Limestone, dense, dark-brown, almost lithographic, but still phosphatic.
- 504-12 Limestone, more granular and fossiliferous.
- 512-16 Limestone, gray, crystalline to silty-argillaceous, fossiliferous.
- 516-20 Limestone, gray, quite fossiliferous and argillaceous; fossil impressions preserved in the shale residue.
- 520-24 Limestone, gray, crystalline, phosphatic and fossiliferous.
- 524-28 Limestone, gray, granular and very argillaceous.
- 528-64 Limestone, more crystalline and phosphatic; occasional fragments of fossils partially replaced by chert.
- 564-72 Limestone, fine-grained, dense, brown, almost lithographic; some fossil fragments with a little brownish-gray chert at 568-72.
- 572-76 Limestone, as above, with some light grayish-tan lithographic limestone.
- 576-665 Limestone, brown to gray, occasional fragments lithographic, but slightly coarser in texture than Tyrone; some dolomitic.
- 665-80 Limestone, gray, fine-grained, slightly silty.
- 680-90 Limestone, gray, crystalline, phosphatic and fossiliferous, with little silt.
- 690-700 Limestone, gray, fine-grained, slightly silty and argillaceous.

NOTE: Well stopped at approximate top of Chazy-Black River.

Well No. 37 (205). J. J. Lynn No. 1 Lois Sells, section 16-C-52, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

0-45	Siltstone, argillaceous, dark-gray.
45-55	Siltstone, argillaceous, calcareous, dark-gray.
55-90	Siltstone, argillaceous, dark-gray, geodiferous.
90-115	Shale, silty, very dark gray to black.
115-325	Limestone, gray, fossiliferous, phosphatic, interbedded with gray silty shale.

New Albany

325-62	Shale, black, coarse-grained, carbonaceous.

ORDOVICIAN

Maysville

(Fairmount)

362-70	Limestone, fossiliferous, phosphatic, gray, slightly silty.
370-400	Limestone, argillaceous, silty, gray; some yellow crystalline limestone.
400-30	Limestone, brown to yellow, crystalline, fossiliferous, slightly dolomitic, interbedded with gray silty shale.
430-45	Limestone, brown, crinoidal, dolomitic; trace of red calcite and brown chert.
445-85	Limestone, dolomitic, crinoidal, brown, and some yellow, crystalline; oil stain.

Garrard

485-500	Shale, silty, gray, slightly calcareous, interbedded with yellow to brown phosphatic limestone.
500-10	Limestone, very fossiliferous, gray, with interbedded calcareous siltstone.
510-30	Limestone, fine-grained, slightly dolomitic, brown; trace of silt and brown chert.
530-60	Limestone, gray, crystalline, phosphatic and fossiliferous, interbedded with calcareous and silty shale.

Cynthiana-Million

560-80	Limestone, slightly dolomitic, grayish-brown; trace of shale.
580-605	Limestone, brown, coarsely fossiliferous, phosphatic; trace of replacement silica and dark shale.
605-30	Limestone, very argillaceous, fine-grained, brownish-gray.
630-85	Limestone, very argillaceous, dense, fine-grained, brownish-gray; trace of replacement silica.
685-710	Limestone, fine-grained to crystalline, brown, with interbedded slightly silty shale.

Lexington

710-50	Limestone, brown, fine-grained, some slightly argillaceous; brown replacement silica.
750-65	Limestone, brown, finely crystalline to fossiliferous; little gray silty shale.
765-840	Limestone, dense, fine-grained, very slightly argillaceous; trace of brown chert.
840-70	Limestone, very argillaceous, slightly silty, grayish-brown, phosphatic.
870-90	Shale, calcareous, silty, dark-gray, with some very phosphatic gray limestone.
890-900	Shale, as above; bentonite.
900-12	Limestone, very argillaceous; shale, fissile; trace of replacement silica.

Chazy-Black River

915-20	Limestone, brown, argillaceous to fossiliferous; much bentonite and brown chert.
920-50	Limestone, sublithographic, bentonitic.
950-1015	Limestone, dolomitic, tan to brown, fine-grained; trace of brown shale and chert.

- 1015-95 Limestone, very fine grained, dark-brown; occasional fragments argillaceous.
- 1095-1160 Limestone, very fine grained, argillaceous to sublithographic, rarely fossiliferous, brown; trace of shale and brown chert.
- 1160-85 Limestone, slightly argillaceous, fine-grained to subcrystalline, brown; trace of brown chert.
- 1185-1325 Limestone, very fine grained, brown to gray; little argillaceous limestone and dolomitic limestone.
- 1325-90 Limestone, dolomitic, brown, finely crystalline.
- 1390-1550 Limestone, brown to gray, argillaceous, very fine grained.
- 1550-65 Limestone, very fine grained, argillaceous, brown to gray.

(Wells Creek)

- 1565-85 Limestone, argillaceous, gray; white translucent chert.
- 1585-95 Dolomite, calcareous, finely crystalline, brown; quartzose chert and green shale.
- 1595-1620 Limestone, interbedded with fine dolomite, cream to tan; trace of chert and green shale.

CAMBRIAN

Jefferson City

- 1620-50 Dolomite, fine- to medium-crystalline; white chert, dense to dolomoldic.
- 1650-90 Dolomite, very densely crystalline, fine-grained, brown; chert, quartzose, brown to gray, some dolomoldic and oolitic.
- 1690-1720 Dolomite, very finely crystalline, grayish-tan, occasional fragments coarsely crystalline; chert, dense to quartzose, gray, some mottled, oolitic and dolomoldic.
- 1720-40 Dolomite, very coarsely crystalline, light-tan; chert, chalky, dolomoldic; some green shale.
- 1740-50 Dolomite, tan, finely crystalline; chert, gray to tan, quartzose; some pale-gray, finely disseminated chert.

Roubidoux

- 1750-75 Dolomite, tan, fine-grained, occasional fragments coarsely crystalline; chert, pale-gray, quartzose, some sandy.
- 1775-1830 Dolomite, finely crystalline, brown; chert, brown, quartzose, some finely disseminated.
- 1830-75 Dolomite, gray, fine-grained, to brown, crystalline; chert, gray, quartzose, some sandy.
- 1875-90 Dolomite, brown, medium-crystalline, sucrose; trace of chert and gypsum.

Van Buren-Gasconade

- 1890-1930 Dolomite, finely crystalline, pale-gray, to medium-crystalline, brown; chert, dense, white, with occasional large dolomolds, rare sand grains.
- 1930-50 Dolomite, brown, finely crystalline; chert, pale-gray, quartzose to drusy, some sandy, rare chalky dolomolds.
- 1950-75 Dolomite, finely crystalline, tan, occasional large crystals; chert, gray to tan, quartzose; rare drusy chert, green shale.
- 1975-2080 Dolomite, finely crystalline, tan; rare sand grains; chert, 5%, chalky, dolomoldic and oolitic.
- 2080-2185 Dolomite, pale-gray, finely crystalline, to tan, medium-crystalline; chert, quartzose to chalky; trace of very fine quartz silt and gypsum.
- 2185-2210 Dolomite, tan, medium-crystalline; chert, 15%, some chalky, some with thin-walled dolomolds.
- 2210-40 Dolomite, coarsely crystalline; chert, 50%, dense, cream to gray, some with crystalline quartz and some slightly sandy.
- 2240-60 Dolomite, brown, medium-crystalline, dense; chert, 20%, dense, tan to translucent gray.
- 2260-2330 Dolomite, very finely crystalline, dense, brown; chert, dense, translucent, some finely granular, some quartz druse.
- 2330-50 Dolomite, medium-crystalline, cream; chert, dense, white, 1%, occasional very porous dolomolds.
- 2350-60 Dolomite, pale-gray, medium-crystalline; chert, 50%, pale-gray, dense to quartzose; trace of quartz druse, rare sand grains.
- 2360-75 Dolomite, as above; less chert, some dolomoldic.

Well No. 38 (1001). R. Thos. McDermott No. 3 Cash, SW NW NE SW section 19-D-52, elevation 996 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

95-150	Shale, finely silty, calcareous, dark-gray; geodes.
150-301	Shale, calcareous, dark-gray, some slightly fossiliferous.
301-20	Shale, as above; very fossiliferous, crinoidal, brown limestone.
320-45	Limestone, light-tan, fine-grained, fossiliferous; trace of translucent chert.
345-68	Shale, slightly calcareous, dark-gray; some chert, as above.
368-90	Shale, dark-gray; some crinoidal limestone.
390-413	Shale, green, pyritic; crinoidal limestone.
413-30	Shale, as above, more limestone; translucent chert.

New Albany

430-60	Shale, black, coarse-grained, pyritic.
460-62	Contact of shale with pyritic sand; trace of dense, brown dolomite.

ORDOVICIAN

Maysville

(Tate)	
462-500	Dolomite, silty, argillaceous, grayish-green.

(Fairmount)

500-25	Limestone, slightly dolomitic, argillaceous, slightly fossiliferous.
525-60	Limestone, slightly dolomitic, slightly argillaceous, fossiliferous, phosphatic; trace of gray replacement chert.
560-75	Limestone, more dolomitic than above, light-tan, crystalline, fossiliferous, slightly phosphatic.
575-85	Shale, calcareous, interbedded with fossiliferous limestone.
585-620	Limestone, grayish-brown, finely crystalline, fossiliferous, some interbedded calcareous shale.

Garrard

620-40	Siltstone, calcareous, argillaceous, some interbedded crystalline limestone.
663-75	Limestone, crystalline, phosphatic, gray to yellow; interbedded silty shale.
675-80	Limestone, as above, less shale.

Cynthiana-Million

680-97	Limestone, crystalline, fossiliferous, phosphatic; trace of interbedded shale.
697-709	Limestone, as above, more shale.
709-50	Limestone, gray, very fossiliferous, phosphatic, some interbedded shale.

("Granville")

750-57	Limestone, very coarsely crystalline, fossiliferous, cream to white.

Well No. 39 (997). R. Thos. McDermott and Co., Inc. No. 4 Cash, SE NE NW SW section 19-D-52, elevation 952.76 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

90-119	Sandstone, calcareous, slightly argillaceous, medium grains, subrounded, with milky geode quartz.
119-206	Siltstone, slightly calcareous, very argillaceous, dark-gray; some quartz, as above.
206-54	Siltstone, slightly more calcareous than above.
254-350	Limestone, crystalline, crinoidal; grayish-green shale; much chert, translucent, pale-gray, with dark mottling.
350-437	Sample gap.

ORDOVICIAN

Richmond

437-57

Dolomite, very silty, slightly argillaceous, mainly brown, some green.

Maysville

(Tate)

457-75

Dolomite, calcareous, silty, argillaceous, greenish-gray.

475-500

Limestone, very silty, slightly argillaceous, fine-grained, greenish-gray.

500-17

Limestone, as above; occasional fragments gray, fossiliferous limestone.

(Fairmount)

517-53

Limestone, argillaceous, fine-grained; some fossiliferous and phosphatic; trace of replacement chert.

553-73

Limestone, grayish-brown, finely crystalline, some fossiliferous, some phosphatic, argillaceous; trace of replacement chert.

573-94

Limestone, slightly dolomitic, argillaceous, grayish-brown.

594-631

Limestone, fine-grained, argillaceous to slightly fossiliferous, grayish-brown.

Garrard

631-42

Limestone, light-gray to yellow, crystalline.

642-75

Siltstone, argillaceous, slightly calcareous, gray, interbedded with crystalline, yellow and gray limestone.

675-88

Limestone, gray and yellow, crystalline, with interbedded silt, as above.

Cynthiana-Million

688-706

Limestone, gray, crystalline, fossiliferous, phosphatic; some dark calcareous shale.

706-34

Limestone, crystalline, fossiliferous and phosphatic, grayish-brown; trace of dark calcareous shale.

745-59

Limestone, brown, crystalline, fossiliferous, finely phosphatic, argillaceous.

("Granville")

759-65

Limestone, crystalline, very porous and vugular, cream, (biohermal).

765-70

Limestone, white to pale-pink, crystalline, very porous.

770-75

Limestone, gray, crystalline, fossiliferous, phosphatic.

Well No. 40 (1012). R. Thos. McDermott and Co., Inc. No. 2 Dickens, W corner NW SW section 19-D-52, elevation 936.18 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

220-80

Shale, calcareous, very dark gray; some geode chert.

320-40

Shale, slightly calcareous, greenish-gray; translucent chert; trace of limestone.

340-60

Limestone, crinoidal, pale-gray; translucent chert.

360-70

Limestone, as above; some shale.

New Albany

370-407

Shale, black, carbonaceous, coarse-grained.

ORDOVICIAN

Maysville

(Tate)

407-55

Siltstone, slightly argillaceous, calcareous, green to brown.

(Fairmount)

455-70

Limestone, argillaceous, gray, fossiliferous, phosphatic; trace of replacement chert.

470-510

Limestone, as above; some slightly dolomitic.

510-30

Limestone, argillaceous, slightly dolomitic, gray, fossiliferous.

- 540-70 Limestone, gray, fossiliferous, phosphatic, with interbedded gray shale.
580-600 Limestone, as above.

Garrard

- 600-21 Siltstone, argillaceous, slightly calcareous, interbedded with gray and yellow limestone.
621-50 Limestone, very fossiliferous, phosphatic, slightly silty; some calcareous shale.

Cynthiana-Million

- 650-80 Limestone, fossiliferous, gray, phosphatic, with interbedded gray shale.
697-708 Limestone, as above; more shale.
708-14 Limestone, grayish-tan, finely crystalline, finely phosphatic; much shale.

("Granville")

- 714-20 Limestone, cream, fossiliferous, biohermal.
720-22 Limestone, gray, phosphatic, fossiliferous, slightly argillaceous.

Well No. 41 (1008). R. Thomas McDermott and Co., Inc. No. 3 Dickens, NW SW section 19-D-52, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 95-115 Siltstone, argillaceous, calcareous, dark-gray.
115-270 Shale, silty, calcareous; less silt with depth.
270-90 Limestone, very fossiliferous, gray, mottled; trace of shale and chert.
300-20 Shale, dark-gray, interbedded with green, silty shale.
337-70 Limestone, fossiliferous, light-gray; much chert and green shale.

ORDOVICIAN

Maysville

(Tate)

- 434-40 Contact of black shale with siltstone, calcareous, argillaceous, green to brown.
440-48 Limestone, argillaceous, fossiliferous, gray.
448-70 Limestone, very argillaceous, fine to silty, dark-gray.

(Fairmount)

- 470-505 Limestone, argillaceous, fossiliferous, phosphatic, gray, interbedded with finely silty, calcareous shale; trace of replacement chert.
516-65 Limestone, grayish-brown, fossiliferous, phosphatic, interbedded with calcareous shale.
575-85 Limestone, as above; trace of silt.

Garrard

- 585-601 Limestone, crystalline, phosphatic, fossiliferous, slightly argillaceous.
601-16 Limestone, as above; some yellow, crystalline.
616-56 Limestone, crystalline, gray and yellow, interbedded with siltstone, calcareous, gray.

Cynthiana-Million

- 656-90 Limestone, gray, very fossiliferous, phosphatic, interbedded with dark calcareous shale.
690-705 Limestone, argillaceous, gray, slightly fossiliferous.
705-20 Limestone, fossiliferous, phosphatic, gray, with interbedded gray shale.

("Granville")

- 720-31 Limestone, cream, coarsely crystalline, biohermal.
731-36 Limestone, gray, crystalline, phosphatic, argillaceous.

Well No. 42 (1013). R. Thos. McDermott and Co., Inc. No. 4 Dickens, NW SW section 19-D-52, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 100-60 Siltstone, calcareous, argillaceous, gray.
182-240 Shale, slightly calcareous, very dark gray.
240-85 Shale, as above; some limestone, brown, fine-grained.
285-305 Shale, slightly calcareous, silty, greenish-gray.
305-50 Shale, slightly calcareous, dark-gray; trace of translucent chert.
350-72 Limestone, dense to coarsely crystalline, crinoidal; much translucent chert.
372-90 Siltstone, calcareous, argillaceous, green to brown.

New Albany

- 390-423 Shale, black, carbonaceous, coarse-grained.

ORDOVICIAN

Maysville

(Tate)

- 460-78 Siltstone, grayish-green, calcareous, argillaceous.

(Fairmount)

- 478-500 Limestone, slightly silty, argillaceous, fossiliferous, phosphatic.
500-30 Limestone, argillaceous, gray, fossiliferous; trace of replacement chert.
530-75 Limestone, as above; no chert.
575-620 Limestone, gray and yellow, crystalline, fossiliferous, some interbedded shale.

Garrard

- 620-50 Limestone, as above, interbedded with siltstone.

Cynthiana-Million

- 663-712 Limestone, gray, phosphatic, fossiliferous, with interbedded shale.

("Granville")

- 731-42 Limestone, cream, coarsely crystalline, biohermal.

Well No. 43 (1006). R. Thos. McDermott and Co., Inc. No. 3 Guthrie, NE NE SW section 19-D-52, elevation 996 feet, Clinton County.

MISSISSIPPIAN

Warsaw

- 54-74 Dolomite, enclosing fine sand, brown, with calcareous fossil fragments.
74-90 Limestone, dolomitic, argillaceous, sandy.

New Providence-Fort Payne

- 90-176 Siltstone, calcareous, argillaceous, dark-gray, coarse-grained.
176-208 Siltstone, more argillaceous than above, very dark grayish-brown.
208-80 Siltstone, argillaceous, slightly calcareous, very dark gray.
280-330 Shale, calcareous, silty; trace of translucent chert.
330-52 Shale, as above, interbedded with brown, crinoidal limestone; much translucent, bluish-gray chert.
352-408 Limestone, crinoidal, much translucent chert, interbedded with gray to greenish-gray shale.

New Albany

- 408-51 Shale, black, carbonaceous, coarse-grained.

ORDOVICIAN

Richmond

- 451-59 Dolomite, silty, greenish-gray to brown.

Maysville

(Gilbert)

- 459-75 Limestone, slightly dolomitic, brown, fine-grained.

(Tate)
 475-500 Limestone, very silty, slightly argillaceous, greenish-gray.
 500-10 Siltstone, dolomitic, greenish-gray.

(Fairmount)
 510-25 Limestone, argillaceous, fossiliferous, greenish-gray.
 525-45 Limestone, very argillaceous, gray, slightly silty, some phosphatic and fossiliferous; trace of replacement chert.
 545-85 Limestone, brown, dense to fossiliferous, some very argillaceous.
 585-95 Limestone, very fossiliferous, phosphatic, gray, much silt.
 595-605 Limestone, more brown than gray, finer grained than above, less silt; trace of replacement chert.
 605-35 Limestone, slightly argillaceous, dolomitic, finely crystalline, fossiliferous, phosphatic.

Garrard
 635-75 Note: Samples mixed. Either caving Mississippian or fracture; much pyrite.
 675-700 Limestone, gray, fossiliferous, phosphatic, slightly silty; trace of yellow crystalline limestone.

Cynthiana-Million
 700-33 Limestone, slightly dolomitic, gray, very fossiliferous and phosphatic; trace of shale.
 733-51 Limestone, fine-grained to crystalline, brown; trace of shale.

("Granville")
 751-72 Limestone, cream, coarsely crystalline, biohermal; trace of pink calcite.
 772-75 Limestone, coarsely crystalline, gray, fossiliferous, phosphatic, slightly argillaceous.

Well No. 44 (995). R. Thos. McDermott and Co., Inc. No. 4 Guthrie, SE corner NE SW section 19-D-52, elevation 968.5 feet, Clinton County.

MISSISSIPPIAN

Fort Payne
 316-36 Limestone, finely glauconitic, brown; trace of translucent chert.
 336-56 Limestone, brown, fine-grained, argillaceous, some crinoidal; glauconite and translucent gray chert.

New Providence
 356-76 Shale, dark-green; trace of chert, as above.
 376-96 Shale, as above; some limestone.

New Albany
 396-409 Shale, black, coarse-grained, carbonaceous.
 430-32 Shale, as above.

ORDOVICIAN

Richmond
 432-35 Siltstone, dolomitic, tan, fine-grained.

Maysville
 (Tate)
 475-500 Siltstone, dolomitic, slightly calcareous, argillaceous, fine-grained, green to brown.
 500-20 Limestone, finely dolomitic, silty, argillaceous, grayish-brown.

(Fairmount)
 520-30 Limestone, as above; some gray limestone, fossiliferous, fine-grained.
 530-40 Limestone, slightly dolomitic, fossiliferous, argillaceous, grayish-brown.
 540-72 Limestone, fine-grained, brown, dense, fossiliferous; some calcareous shale; trace of chert.
 572-625 Limestone, grayish-brown, fine-grained, slightly argillaceous, fossiliferous.

Garrard

- 625-59 Limestone, grayish-brown, crystalline, fossiliferous, interbedded with calcareous shale and siltstone; trace of yellow, crystalline calcite.
 659-68 Limestone, yellow and gray, crystalline, fossiliferous; calcareous shale.
 668-91 Limestone, as above, less shale.

Cynthiana-Million

- 691-734 Limestone, gray, fossiliferous, phosphatic, with interbedded calcareous shale; trace of very fine silt.
 734-42 Limestone, grayish-brown, crystalline, fossiliferous, phosphatic; trace of calcareous shale.
 742-54 Limestone, grayish-brown, fine-grained, slightly argillaceous, fossiliferous.

('Granville')

- 754-69 Limestone, cream, very coarsely crystalline, porous, vugular, trace of pink color (biohermal).
 769-74 Limestone, more gray than above, slightly phosphatic.

Well No. 45 (1003). R. Thos. McDermott No. 4 J. M. Hay, SE SE SW section 12-D-52, elevation 983 feet, Clinton County.

MISSISSIPPIANWarsaw

- 105-10 Limestone, brownish-gray, fossiliferous, phosphatic, some argillaceous.
 160-76 Limestone, brown, fossiliferous, crystalline, sandy, streaked with green shale.
 176-81 As above, more shale.

New Providence-Fort Payne

- 181-332 Shale, calcareous, siliceous, dark brownish-gray; occasional geodes.
 332-85 Shale, as above; some interbedded crinoidal limestone.
 385-420 Limestone, argillaceous, interbedded with shale, very dark, glauconitic.
 420-34 Shale, as above; some limestone, light-tan, fine-grained.

New Albany

- 434-71 Shale, black, carbonaceous, pyritic.

ORDOVICIANMaysville

(Tate)

- 471-505 Dolomite, argillaceous, silty, green to brown.
 505-13 Dolomite, as above; some gray limestone.

(Fairmount)

- 513-27 Limestone, slightly dolomitic, slightly argillaceous, gray, phosphatic.
 527-77 Limestone, argillaceous, brownish-gray, fine-grained to fossiliferous; trace of replacement chert.
 577-603 Limestone, argillaceous, grayish-brown, fossiliferous, slightly phosphatic.
 622-29 Limestone, grayish-brown, argillaceous, fine-grained.

Garrard

- 650-59 Limestone, silty, argillaceous, gray.
 667-95 Limestone, gray, fossiliferous, phosphatic, some interbedded silty shale.

Cynthiana-Million

- 705-33 Limestone, argillaceous, gray, fossiliferous.
 733-46 Limestone, some as above, some crystalline; trace of silt.
 746-53 Limestone, finer grained than above, more argillaceous, grayish-brown.

('Granville')

- 753-60 Limestone, crystalline, fossiliferous, white; trace of pink calcite.
 760-80 Limestone, crystalline, cream, porous (biohermal).

Well No. 46 (1005). R. Thos. McDermott No. 6 Hay, SW corner SE SW section 12-D-52, elevation 949.3 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 220-42 Siltstone, argillaceous, calcareous, very fine grained, dark-brown.
- 295-317 Limestone, crinoidal, greenish-gray; green shale and translucent chert.

New Albany

- 317-47 Shale, black, carbonaceous, coarse-grained.

ORDOVICIAN

Maysville

(Tate)

- 347-90 Siltstone, slightly argillaceous, dolomitic, brown to gray.
- 390-410 Some siltstone, as above; some limestone, fossiliferous, phosphatic.

(Fairmount)

- 410-30 Limestone, slightly dolomitic, fossiliferous, phosphatic; trace of dark shale and replacement chert.
- 430-40 Limestone, argillaceous, grayish-brown, phosphatic.
- 440-70 Limestone, grayish-brown, fossiliferous, phosphatic, argillaceous; trace of replacement chert.
- 480-510 Limestone, grayish-brown, fossiliferous, slightly phosphatic; interbedded calcareous shale.
- 510-22 Limestone, grayish-brown, fine-grained, slightly argillaceous, fossiliferous.

Garrard

- 522-60 Limestone, gray and yellow, crystalline, fossiliferous; much interbedded silty shale.
- 560-70 Limestone, grayish-brown, fossiliferous, finely phosphatic; trace of silt, as above.
- 570-80 Limestone, yellow and gray, crystalline, some argillaceous.

Cynthiana-Million

- 580-600 Limestone, light grayish-brown, crystalline, very fossiliferous, finely phosphatic; rare shale.
- 600-30 Limestone, gray, very fossiliferous, phosphatic; little interbedded calcareous shale.
- 640-50 Limestone, fine-grained, slightly argillaceous, some interbedded shale.

(''Granville'')

- 650-63 Limestone, coarsely crystalline, very fossiliferous, cream to pink (biohermal).
- 663-64 Limestone, gray, crystalline, phosphatic.

Well No. 47 (1004). R. Thos. McDermott No. 1 Larry McWhorter, SE SW NE NW section 19-D-52, elevation 974.26 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 223-339 Shale, calcareous, very siliceous, dark-gray.
- 339-60 Shale, as above; interbedded crinoidal limestone; trace of free chert.
- 360-70 Limestone, crinoidal; much gray, translucent chert, fossiliferous.
- 370-80 Limestone and chert, as above; dark calcareous shale.
- 380-88 Limestone, finely dolomitic, some argillaceous; trace of glauconite.
- 388-402 Shale, calcareous, dark-gray.
- 402-09 Shale, green, siliceous, pyritic; little free chert.
- 409-20 Limestone, dolomitic, some crinoidal, some green, argillaceous; translucent chert.

New Albany

- 420-48 Shale, coarse-grained, black, carbonaceous.

ORDOVICIAN

Maysville

(Tate)

- 448-55 Dolomite, brown, medium-crystalline; green shale; trace of gray chert.
- 460-73 Siltstone, dolomitic, brown to green.
- 473-80 Siltstone, as above, more argillaceous.
- 480-504 Limestone, slightly dolomitic, very argillaceous, silty, dark-gray.

(Fairmount)

- 504-40 Limestone, slightly argillaceous, fine-grained, brownish-gray, slightly phosphatic; trace of replacement chert.
- 540-65 Limestone, slightly argillaceous, grayish-brown, fossiliferous; some chert.
- 565-85 Limestone, gray, crystalline, fossiliferous, phosphatic; interbedded gray shale.
- 585-606 Limestone, more argillaceous than above, slightly fossiliferous, dark-gray.

Garrard

- 606-20 Limestone, gray and yellow, crystalline, fossiliferous, phosphatic; some interbedded gray shale.
- 620-50 Limestone, as above; interbedded calcareous, silty shale.
- 650-60 Limestone, crystalline, very fossiliferous, yellow, with interbedded siltstone.

Cynthiana-Million

- 660-85 Limestone, argillaceous, gray, finely crystalline, fossiliferous, phosphatic.
- 685-93 Limestone, very fossiliferous, phosphatic, light-gray, coarsely crystalline.
- 693-733 Limestone, more fine-grained than above, grayish-brown, densely crystalline, slightly argillaceous; trace of replacement chert.
- 733-43 Limestone, gray, very fossiliferous, phosphatic, crystalline.

("Granville")

- 743-59 Limestone, cream, coarsely crystalline, fossiliferous, porous (biohermal).
- 759-63 Limestone, grayish-brown, argillaceous, finely phosphatic.

Well No. 48 (1000). R. Thos. McDermott and Co., Inc. No. 2 Virgil McWhorter, SE corner SW NE NW section 19-D-52, elevation 998.52 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 216-84 Shale, calcareous, siliceous, dark-gray.
- 284-333 Shale, more calcareous than above, very dark brownish-gray; free selenite.
- 333-75 Shale, calcareous, dark-gray; trace of interbedded argillaceous limestone; worn and stained chert.
- 375-88 Shale, more greenish-gray; chert, as above.
- 388-401 Shale, greenish-gray, calcareous; free chert.

New Albany

- 401-37 Shale, black, coarse-grained, pyritic.

ORDOVICIAN

Richmond

- 437-58 Dolomite, argillaceous, brown, fine-grained.
- 458-70 Dolomite, greenish-gray, silty, fine-grained.

Maysville

(Gilbert)

- 470-87 Limestone, slightly dolomitic, argillaceous, dark-brown; trace of brown chert.

(Tate)
 487-514 Siltstone, calcareous, argillaceous, greenish-gray; much pyrite.
 514-27 Siltstone, as above; some interbedded limestone.

(Fairmount)
 527-46 Limestone, argillaceous, gray, phosphatic, fossiliferous.
 546-56 Limestone, some very finely silty and argillaceous, some fossiliferous; trace of chert.
 556-85 Limestone, slightly dolomitic, silty, fossiliferous, slightly phosphatic; trace of chert.
 585-605 Limestone, slightly argillaceous, slightly dolomitic, grayish-brown.
 605-42 Limestone, more argillaceous than above, grayish-brown, fine-grained.

Garrard
 642-84 Limestone, argillaceous, finely silty, gray; some interbedded fossiliferous, yellow limestone.
 684-92 Limestone, crystalline, fossiliferous, slightly phosphatic.
 692-700 Limestone, as above; some yellow, crystalline.

Cynthiana-Million
 700-16 Limestone, very fossiliferous, phosphatic, light-gray; little interbedded calcareous shale.
 716-27 Limestone, as above, slightly dolomitic.
 738-49 Limestone, crystalline, fossiliferous, phosphatic; some interbedded calcareous shale; trace of chert.
 749-67 Limestone, brownish-gray, crystalline, fossiliferous, slightly phosphatic; some calcareous shale.

("Granville")
 767-80 Limestone, slightly dolomitic, cream, very coarsely crystalline, fossiliferous (biohermal).
 780-86 Limestone, gray, fossiliferous, phosphatic; interbedded dark calcareous shale.

Well No. 49 (1007). R. Thos. McDermott and Co., Inc. No. 2 Piercy, SE NE section 19-D-52, Clinton County.

MISSISSIPPIAN

Warsaw
 100-20 Limestone, slightly sandy, gray, fossiliferous, phosphatic; trace of gray chert.

New Providence-Fort Payne

120-60 Siltstone, very coarse grained, calcareous, argillaceous.
 160-280 Shale, calcareous, silty, silt content decreasing with depth.
 300-40 Limestone, argillaceous, fine-grained, dark grayish-brown, glauconitic.
 340-60 Shale, very slightly calcareous, dark-gray.
 360-401 Shale, calcareous, gray to green.

New Albany

401-51 Shale, black, coarse-grained, carbonaceous, pyritic.

ORDOVICIAN

Maysville

(Tate)
 451-75 Siltstone, calcareous, argillaceous, green.

(Fairmount)
 475-500 Limestone, fossiliferous, phosphatic, gray, with interbedded shale; trace of replacement chert.
 520-60 Limestone, argillaceous, fossiliferous, phosphatic, grayish-brown; trace of replacement chert.
 560-95 Limestone, argillaceous, fine-grained, grayish-brown, slightly fossiliferous.

Garrard

- 595-600 Limestone, fossiliferous, slightly phosphatic; trace of silt.
 600-15 Limestone, as above; some yellow, crystalline.
 615-30 Siltstone, argillaceous, calcareous, gray, interbedded with yellow and white crystalline limestone.
 640-50 Limestone, gray, very fossiliferous, phosphatic; trace of silt.

Cynthiana-Million

- 650-80 Limestone, gray, very fossiliferous and phosphatic; trace of fine silt.
 680-710 Limestone, gray, very fossiliferous and phosphatic; rare shale.
 710-35 Limestone, as above, more shale.

("Granville")

- 735-52 Limestone, very coarsely crystalline, biohermal, white.
 752-55 Limestone, gray, fossiliferous, slightly argillaceous.

Well No. 50 (999). R. Thos. McDermott and Co., Inc. No. 1 Sawyer, NW NE NW section 22-D-52, elevation 1025.33 feet, Clinton County.

MISSISSIPPIANWarsaw

- 20-25 Limestone, crystalline, pale-gray, fossiliferous; chert, 50%, pale-gray, fossiliferous.
 25-40 Limestone, very dense, fine-grained, grayish-brown, slightly silty.
 40-50 Shale, silty, slightly calcareous, dark-gray.
 50-55 Limestone, sandy, slightly argillaceous, grayish-brown; sand, medium-grained, subrounded.
 85-95 Limestone, slightly silty, fine-grained, grayish-brown, fossiliferous.
 95-115 Limestone, slightly dolomitic, brown, fossiliferous, enclosing fine sand.

New Providence-Fort Payne

- 115-45 Siltstone, coarse-grained, argillaceous, calcareous, dark-gray.
 155-60 Siltstone, as above.
 160-65 Limestone, crystalline, fossiliferous, grayish-brown, with gray, mottled chert and interbedded shale.
 165-90 Shale, slightly calcareous, finely silty, dark grayish-brown.
 190-200 Shale, as above; limestone, fine-grained, light-gray; trace of chert.
 200-10 Limestone, crinoidal, greenish-gray.
 245-70 Limestone, argillaceous, light greenish-gray; much chert, translucent and fossiliferous.
 270-90 Limestone, cream, crystalline, crinoidal; translucent chert; trace of green shale.
 290-315 Shale, calcareous, dolomitic, fine-grained, pale-green, fossiliferous; translucent chert.
 315-30 Limestone and green shale, very fossiliferous, crinoidal.
 330-50 Shale, slightly calcareous, green, fossiliferous; trace of gray chert.
 350-55 Green clay.
 355-75 Limestone, cream, crinoidal; trace of green shale, translucent chert.
 375-95 Shale, slightly calcareous, green.

New Albany

- 395-425 Shale, black, carbonaceous, coarse-grained.

ORDOVICIANMaysville(Tate)

- 425-43 Siltstone, argillaceous, calcareous, greenish-gray.
 443-50 Dolomite, silty, argillaceous, green.

(Fairmount)

- 450-70 Dolomite, calcareous, slightly argillaceous, grayish-brown; trace of replacement chert.
 480-500 Dolomite, as above.
 500-10 Shale, dolomitic, calcareous, some fossiliferous; trace of replacement chert.

- 520-40 Limestone, slightly dolomitic, dark grayish-brown, argillaceous.
 540-60 Limestone, argillaceous, greenish-gray.
 560-70 Limestone, dolomitic, slightly argillaceous, fossiliferous, grayish-brown.

Garrard

- 570-85 Limestone, dolomitic, argillaceous, silty, grayish-brown.
 585-605 Siltstone, calcareous, argillaceous, gray; some crystalline, yellow limestone.
 605-15 Limestone, dolomitic, argillaceous, grayish-brown.

Well No. 51 (998). R. Thos. McDermott and Co., Inc. No. 2 Sawyer, NW SE SW section 19-D-52, elevation 1021.7 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 90-102 Limestone, silty, slightly argillaceous, gray; resinous brown chert.
 102-22 Limestone, dark grayish-brown, argillaceous, phosphatic, fossiliferous; trace of silt and chert.
 122-42 Siltstone, argillaceous, calcareous, dark-gray.
 142-222 Siltstone, very slightly calcareous, argillaceous, fine-grained, dark-gray.
 250-91 Siltstone, argillaceous, slightly calcareous, fine-grained, dark-gray.
 291-310 Limestone, brown, crinoidal; much translucent, bluish-white chert; some dark-gray shale.
 362-70 Limestone, very fossiliferous, light-gray, crinoidal; some translucent, gray chert.
 370-76 Limestone, as above; calcareous shale.
 386-408 Limestone, cream, crinoidal, coarse-crystalline; much translucent, bluish-gray chert and green shale.
 425-34 Limestone, as above, in contact with black shale.

ORDOVICIAN

(Tate)

- 492-520 Siltstone, argillaceous, calcareous, greenish-gray, very fine grained; trace of chert.

(Fairmount)

- 520-22 Limestone, fossiliferous, phosphatic, argillaceous; replacement chert.
 522-50 Dolomite, calcareous, fossiliferous, argillaceous, dark-gray.

NOTE: Fairmount section shortened by faulting or samples inadequate.

- 568-78 Limestone, very argillaceous, dark-gray, fossiliferous, slightly silty; trace of chert.
 578-98 Limestone, very silty and argillaceous, gray; some fragments fossiliferous and phosphatic.
 598-615 Limestone, fossiliferous, grayish-brown, less argillaceous than above.

Garrard

- 615-30 Limestone, gray, fossiliferous, phosphatic, silty.
 630-40 Limestone, silty, as above; yellow, crystalline limestone.
 640-50 Siltstone, calcareous, argillaceous, fine-grained, gray.
 650-80 Limestone, fossiliferous, phosphatic, with interbedded silty shale.

Cynthiana-Million

- 690-710 Limestone, gray, finely phosphatic, fossiliferous; trace of silt.
 710-20 Limestone, as above; some fine-grained, brown, argillaceous.
 720-41 Limestone, finer grained than above, slightly argillaceous, brown.

("Granville")

- 741-49 Limestone, cream, with occasional pink specks, crystalline, very fossiliferous (biohermal).
 749-77 Limestone, gray, phosphatic, fossiliferous, slightly argillaceous, dolomitic.

Well No. 52 (1010). R. Thos. McDermott and Co., Inc. No 3 Tuggle, SE corner SW NW section 19-D-52, elevation 945.3 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 100-200 Siltstone, slightly argillaceous, calcareous, dark-gray, becoming more argillaceous with depth; trace of milky quartz.
- 200-65 Shale, calcareous, slightly silty, dark-gray.
- 265-80 Limestone, dolomitic, dense, brown; translucent chert; glauconite.
- 280-300 Limestone, as above; some calcareous shale.
- 300-45 Limestone, cream to gray, crinoidal, slightly dolomitic; dolomoldic chert.
- 345-65 Shale, green, pyritic.
- 365-74 Limestone, slightly argillaceous, gray; trace of translucent chert.

New Albany

- 374-405 Shale, black, carbonaceous, coarse-grained.

ORDOVICIAN

Maysville-Richmond

(Tate and some Richmond)

- 405-35 Siltstone, dolomitic, slightly argillaceous, green.
- 435-80 Dolomite, silty, argillaceous, green, some brown.

(Fairmount)

- 480-530 Limestone, dolomitic, slightly argillaceous, gray; trace of translucent chert.
- 530-80 Limestone, argillaceous, dolomitic, fossiliferous, phosphatic.
- 580-90 Limestone, as above; some finer, grayish-brown.

Garrard

- 595-630 Siltstone, slightly calcareous, argillaceous, gray, interbedded with fossiliferous, gray limestone.
- 630-60 Limestone and siltstone, as above, less silt with depth; trace of yellow calcite.

Cynthiana-Million

- 660-70 Limestone, light grayish-brown, crystalline, fossiliferous, phosphatic, with little interbedded calcareous shale.
- 670-99 Limestone, as above; trace yellow, crystalline.
- 699-705 Shale, calcareous, dark-gray, little limestone as above.
- 705-15 Limestone, slightly argillaceous, brown, fine-grained.

("Granville")

- 720-29 Limestone, cream, crystalline, biohermal, trace pink.
- 729-35 Limestone, gray, crystalline, phosphatic, fossiliferous; trace of shale.

Well No. 53 (1009). R. Thos. McDermott and Co., Inc. No. 4 John Tuggle, SW NW section 19-D-52, Clinton County.

New Albany

- 359-91 Shale, black, carbonaceous, coarse-grained.

ORDOVICIAN

Maysville

(Tate)

- 391-440 Siltstone, calcareous, argillaceous, greenish-gray to brown.
- 440-60 Siltstone, as above, interbedded with gray limestone.

(Fairmount)

- 460-500 Limestone, gray, fossiliferous, phosphatic, interbedded with slightly greenish-gray shale.
- 500-30 Limestone, as above; trace of replacement chert.
- 530-50 Limestone, gray, fossiliferous, phosphatic, with interbedded gray shale.
- 550-600 Limestone, brown, fossiliferous, interbedded with gray, calcareous shale.

Garrard

- 600-20 Siltstone, argillaceous, slightly calcareous, gray, interbedded with some limestone.
 620-50 Siltstone, argillaceous, calcareous, gray.
 650-60 Siltstone, as above; yellow, crystalline limestone.

Cynthiana-Million

- 660-700 Limestone, gray to yellow, crystalline, fossiliferous, interbedded with slightly silty gray shale.
 700-09 Limestone, very fossiliferous, cream, crystalline, trace pink.

("Granville")

- 709-17 Limestone, slightly dolomitic, very fossiliferous, biohermal, cream.
 717-23 Limestone, gray, very fossiliferous, phosphatic, slightly argillaceous.

Well No. 54 (1011). R. Thos. McDermott and Co., Inc. No. 8 Williams, NE section 9-D-52, elevation 972.35 feet, Clinton County.

MISSISSIPPIANNew Providence-Fort Payne

- 40-60 Limestone, silty, argillaceous, dark-gray.
 60-265 Shale, slightly calcareous, very dark gray.
 265-85 Limestone, tan, fossiliferous; translucent chert.
 285-300 Limestone, fossiliferous, as above; siltstone, very fine grained, green.
 300-10 Shale, greenish-gray.
 310-30 Limestone, light-tan, fossiliferous, oil stain; translucent chert.

New Albany

- 338-69 Shale, black, carbonaceous, coarse-grained.

ORDOVICIANMaysville

(Tate)

- 369-430 Siltstone, slightly argillaceous, calcareous, greenish-gray.

(Fairmount)

- 430-50 Limestone, gray, slightly fossiliferous, argillaceous, phosphatic.
 450-90 Limestone, as above; trace of replacement chert.
 490-560 Limestone, argillaceous, gray, fossiliferous, phosphatic.

Garrard

- 570-90 Limestone, gray and yellow, crystalline, slightly silty; trace of calcareous shale.
 590-610 Limestone, gray, fossiliferous, phosphatic, interbedded with silty shale.
 610-30 Limestone, as above; some yellow.

Cynthiana-Million

- 630-50 Limestone, gray, fossiliferous, phosphatic, with interbedded shale.
 650-90 Limestone, as above, less shale.

("Granville")

- 690-700 Limestone, crystalline, phosphatic, gray to red; trace of interbedded shale.
 700-15 Limestone, cream, fossiliferous, biohermal, with some pink.
 715-17 Limestone, gray, fossiliferous, phosphatic; trace of shale.

Well No. 55 (970). Murphy and Buskirk No. 2 W. L. Agee, SW SE NW section 12-D-52, elevation 930 feet, Clinton County.

MISSISSIPPIANNew Providence-Fort Payne

- 0-100 Limestone, impregnated with silica, not quite chert, light-gray.
 100-60 Limestone, as above, very siliceous, some argillaceous and green; occasional silica as free chert.

- 160-90 Shale, green, crinoidal.
 190-220 Limestone, crinoidal, white, with some white translucent chert.
 220-50 Shale, green and very crinoidal.
 250-87 Shale, green, fine-grained.

New Albany

- 287-315 Shale, black, carbonaceous.

(Duffin)

- 315-25 Contact of shale with dolomite, argillaceous, very dark grayish-brown.

ORDOVICIAN

Maysville

(Gilbert)

- 325-45 Limestone, gray, some dolomitic, dense; trace of chert, same color.

(Tate)

- 345-95 Dolomite, argillaceous, green.

(Fairmount)

- 395-420 Limestone, argillaceous, fossiliferous, very phosphatic; some replacement chert.
 420-25 Limestone, very phosphatic and fossiliferous, argillaceous; trace of red calcite.
 425-35 Limestone, some as above without red color, some sandy.
 435-65 Limestone, some argillaceous, some fossiliferous.
 465-75 Limestone, argillaceous, finer grained than above.
 475-85 Limestone, fossiliferous, phosphatic, with dark calcareous shale streaks.
 485-510 Limestone, some interbedded dolomitic, crystalline limestone, with dark calcareous shale.

Garrard

- 510-20 Limestone, some as above; some dark-gray shale.
 520-25 Limestone, silty and argillaceous, gray.
 525-30 Limestone, fossiliferous, gray, interbedded with silty and argillaceous limestone.
 530-65 Limestone, fossiliferous and phosphatic; little calcareous shale and silt.

Cynthiana-Million

- 565-600 Limestone, slightly dolomitic, phosphatic; some porosity.
 600-05 Limestone, argillaceous, darker and finer grained than above.
 605-10 Limestone, fine-grained, light-gray, with very fine phosphatic inclusions.
 610-15 Limestone, some porous and crystalline; some dark-gray calcareous shale.

("Granville")

- 615-25 Limestone, white, crystalline, porous.
 625-30 Limestone, finer grained, finely phosphatic, with some dark calcareous shale.
 630-34 Limestone, fossiliferous and phosphatic, gray, little calcareous shale.

Well No. 56 (971). Murphy and Buskirk No. 3 W. L. Agee, NE NW NE SW section 12-D-52, elevation 934 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 115-25 Limestone, very crinoidal; little free translucent chert.
 125-30 Limestone, as above, with some dark-gray shale.
 130-35 Siltstone, argillaceous, green; some translucent chert.
 135-45 Limestone, crinoidal, with translucent chert, interbedded with dark-gray shale.
 145-50 Shale, grayish-green, calcareous (texture of dolomite).
 150-210 Shale, green, crinoidal.
 210-50 Limestone, fine-grained to crinoidal, light-gray.
 250-85 Shale, green, crinoidal.

New Albany

285-320 Shale, black, carbonaceous.

ORDOVICIAN

Maysville

(Tate)

320-65 Dolomite, brown, medium-crystalline; some green, argillaceous.

(Fairmount)

365-440 Limestone, slightly dolomitic, argillaceous, gray.

440-75 Limestone, argillaceous, more fine-grained than above.

475-95 Limestone, gray, crystalline, fossiliferous and phosphatic.

Garrard

495-510 Limestone, very slightly dolomitic, crystalline; trace of yellow calcite.

510-50 Limestone, as above; some gray shale and silt.

Cynthiana-Million

550-55 Limestone, much more argillaceous (texture of dolomite).

555-75 Limestone, coarsely crystalline, fossiliferous and phosphatic; little dark calcareous shale.

575-614 Limestone, finer and more argillaceous.

(“Granville”)

614-29 Limestone, white, very coarsely crystalline and vugular.

629-33 Limestone, finer and darker, some phosphatic and argillaceous.

Well No. 57 (965). Murphy and Buskirk No. 4 W. L. Agee, NE NW NE SW section 12-D-52, elevation 888 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

115-95 Shale, green, crinoidal.

195-215 Limestone, pale grayish-green, argillaceous; much translucent light chert.

215-45 Shale, green, fine-grained.

New Albany

245-51 Shale, black, carbonaceous.

(Duffin)

278-81 Dolomite, very argillaceous, dark-gray.

281-85 Dolomite, as above; some oil-stained.

ORDOVICIAN

Maysville

(Gilbert)

285-95 Limestone, slightly dolomitic, dense, grayish-tan; some chert.

(Tate)

295-315 Dolomite, tan to green, medium-crystalline, argillaceous.

315-30 Some dolomite, as above; some calcareous and more gray.

(Fairmount)

330-80 Limestone, some dolomitic, some argillaceous; some limestone, phosphatic and fossiliferous.

380-420 Limestone, more brown than above, fine and argillaceous.

420-55 Limestone, some more fossiliferous, phosphatic; calcareous shale.

Garrard

455-70 Limestone, crystalline, fossiliferous; some yellow calcite.

470-85 Shale, silty and calcareous, gray.

485-95 Limestone, slightly dolomitic and sandy, pale-gray.

495-510 Limestone, fossiliferous and phosphatic, little slightly dolomitic, argillaceous and silty.

Cynthiana-Million

- 510-15 Limestone, some finely dolomitic and argillaceous, a little crystalline; much coarsely crystalline calcite and selenite.
 515-25 Limestone, some dolomitic, as above; some crystalline, fossiliferous and phosphatic.
 525-40 Limestone, crystalline, phosphatic and fossiliferous, light-gray.
 540-55 Limestone, as above, but slightly darker and slightly dolomitic.
 555-60 Limestone, finely dolomitic, dark grayish-brown; little argillaceous.
 560-65 Limestone, coarsely crystalline, fossiliferous and phosphatic.
 565-75 Limestone, finer, darker, more argillaceous than above; ostracods.

("Granville")

- 575-98 Limestone, coarsely crystalline, vugular, white.
 598-602 Limestone, more finely crystalline than above, dark-brown, some of it argillaceous.

Well No. 58 (798). Murphy and Buskirk No. 5 W. L. Agee, NE corner NW SW section 12-D-52, elevation 672 feet, Clinton County.

MISSISSIPPIANNew Providence

- 10-35 Shale, green, crinoidal, with some free translucent chert.
 35-40 Free chert, as above, in contact with black shale.

New Albany (top 37 feet)

- 40-65 Shale, black, carbonaceous.

ORDOVICIANRichmond

- 65-80 Dolomite, argillaceous, green, medium-grained.

Maysville

(Gilbert)

- 80-85 Limestone, fine-grained and dense, grayish-brown; some chert.

(Tate)

- 85-120 Dolomite, slightly argillaceous, green.

(Fairmount)

- 120-80 Limestone, slightly dolomitic and argillaceous, phosphatic and fossiliferous.
 180-240 Limestone, argillaceous, more fine-grained than above, brownish-gray.
 240-55 Limestone, fossiliferous and phosphatic, with calcareous dark-gray shale interbedded.

Garrard

- 255-70 Limestone, silty and argillaceous, dark-gray.
 270-80 Limestone, some as above; some crystalline, with yellow calcite.
 280-310 Limestone, some crystalline, some silty and argillaceous.

Cynthiana-Million

- 310-40 Limestone, crystalline, fossiliferous, little phosphatic.
 340-70 Limestone, argillaceous, finer, grayish-brown, interbedded with thin beds of fossiliferous, phosphatic limestone.

("Granville")

- 370-90 Limestone, white, crystalline and very porous.

Well No. 59 (797). Murphy and Buskirk No. 6 Agee, SE SW SE NW section 12-D-52, elevation 893 feet, Clinton County.

MISSISSIPPIANFort Payne-New Providence

- 40-50 Dolomite, slightly argillaceous; much pyrite and geode quartz.
 50-60 Shale, calcareous, very dark gray.

- 110-85 Shale, as above, little limestone interbedded; some free translucent chert.
 185-210 Limestone, slightly dolomitic, cream; some geode quartz.
 210-55 Shale, gray, crinoidal.

New Albany

- 255-84 Shale, black, carbonaceous.

ORDOVICIAN

Maysville

- (Tate)
 284-95 Dolomite, densely crystalline, some oil-stained and some pale-green.
 295-330 Dolomite, slightly argillaceous, pale-green.

(Fairmount)

- 345-85 Limestone, slightly dolomitic and argillaceous, fossiliferous.
 385-450 Limestone, slightly argillaceous, finer than above and more brown.

Garrard

- 450-95 Limestone, some crystalline, some argillaceous and silty.

Cynthiana-Million

- 495-545 Limestone, crystalline and phosphatic, some argillaceous.
 545-65 Limestone, slightly dolomitic, with shale streaks.
 565-80 Limestone, some very coarse, some argillaceous; gastropods.
 580-84 Limestone, more fine-grained and argillaceous.
 584-86 Limestone, some dark, as above, argillaceous; some light, crystalline, and porous, with trace of red calcite.

(“Granville”)

- 586-98 Limestone, white, crystalline, porous.
 598-601 Limestone, dark-gray, finer grained than above and more argillaceous.

Well No. 60 (964). Murphy and Buskirk No. 7 W. L. Agee, SE NE NE SW section 12-D-52, elevation 935 feet, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 105-40 Shale, slightly calcareous, dark-gray.
 140-70 Limestone, white; much chert and crinoid fragments.
 170-75 Limestone, pale-green, silty and siliceous.
 175-80 Limestone, very siliceous; much translucent light-gray chert.
 180-225 Shale, slightly calcareous, very dark gray.
 225-65 Shale, green, very crinoidal, with translucent chert.
 265-75 Limestone, very fossiliferous and porous, white (“Beaver”).
 275-85 Shale, green, fine-grained.

New Albany

- 285-90 Shale, green and black, carbonaceous.

ORDOVICIAN

Maysville

- (Tate)
 320- Bottom of shale; contact with dolomite, brown to green, medium-crystalline.
 320-50 Dolomite, slightly argillaceous, green.

(Fairmount)

- 350-410 Limestone, dolomitic and argillaceous, some fossiliferous.
 410-75 Limestone, finer grained than above, gray, argillaceous, some fossiliferous.

Garrard

- 475-85 Limestone, some crystalline, fossiliferous, some silty and argillaceous.

- 485-520 Limestone, crystalline, with much yellow calcite, interbedded with some argillaceous and calcareous gray siltstone.

Cynthiana-Million

- 520-50 Limestone, very phosphatic, crystalline, with some calcareous shale.
550-95 Limestone, very crystalline, phosphatic and porous.
595-605 Limestone, very fine grained, gray, argillaceous.

("Granville")

- 605-28 Limestone, white, very porous and crystalline.
628-31 Limestone, darker, crystalline, and some argillaceous, gray.

Well No. 61 (968). Murphy and Buskirk No. 1 George Davidson, SW SE section 16-C-52, elevation 761.1 feet; completed 5-8-43; shut in with 60 pounds rock pressure; Clinton County.

MISSISSIPPIAN

New Providence

("Beaver")

- 167-72 Limestone, dolomitic, with much pyrite; some chert and milky quartz; trace of green shale.
172-78 Siltstone, dolomitic, pale-green and brown; some translucent chert and milky quartz, as above.
178-90 Dolomite, slightly silty, dark grayish-brown, little pyrite; gray chert and white gypsum.
190-220 As above. This is composite sample and occupies interval which should be New Albany. Driller logged base of black shale at 210 feet.

ORDOVICIAN

Maysville

(Fairmount)

- 220-40 Dolomite, very dark grayish-brown, silty.
240-45 Dolomite, as above, with some limestone, dark-gray, dense to crystalline.
245-55 Limestone, dark-gray, granular, some of it argillaceous and dolomitic, some slightly silty; few fossils.
255-70 Limestone, as above, with some that is gray and dense, slightly fossiliferous.
270-80 Same, with some limestone, very fossiliferous, with fragments of bryozoans and brachiopods; phosphatic.
280-85 Limestone, gray, granular and argillaceous, with only the fossiliferous portions crystalline and phosphatic.

Garrard

- 285-305 Limestone, dark-gray, silty and argillaceous, more fossiliferous.
305-10 Limestone, very dolomitic, coarsely crystalline, light-gray and deep-yellow, mottled; trace of shale in residue.
310-20 Limestone, as above, with some greenish-gray, silty and argillaceous limestone.

Cynthiana-Million

- 320-30 Limestone, partially dolomitic, coarsely crystalline, very fossiliferous, light-gray.
330-40 Limestone, as above, with a little very dark gray shale.
340-55 Limestone, partially dolomitized, fossiliferous; little gray shale.
355-60 Limestone, as above, very phosphatic.

("Granville")

- 360-65 Limestone, dolomitic, coarsely crystalline, white to light-gray, phosphatic and fossiliferous, with fragments of bryozoans.
365-70 Limestone, more gray and slightly less dolomitic than above. (Rhynchidictya)
380-400 Limestone, dolomitic, dark-gray, granular, with trace of dark-brown fine silt in residue.
400-05 Limestone, dolomitic, lighter gray, more coarsely crystalline.

- 405-20 Limestone, dark-brown, densely crystalline, ostracod limestone; trace of dark-gray, calcareous shale.
- 420-25 Limestone, white to pale-gray, coarsely crystalline, only slightly dolomitic, very fossiliferous and phosphatic.
- 425-35 Limestone, argillaceous, very dark gray, dense.
- 435-50 Limestone, as above, with some dark-gray, crystalline, fossiliferous and phosphatic.
- 450-75 Limestone, very dark brown, densely crystalline, ostracodal; trace of dark-brown, calcareous shale.
- 475-80 Same as above, with some gray, more coarsely fossiliferous limestone.
- 480-85 Limestone, dark-gray, densely crystalline, with gray calcareous shale.
- 485-95 Limestone, densely to more coarsely crystalline, brown; only trace of calcareous shale.
- 495-500 Limestone, brown, dense to crystalline, fossiliferous, with rare partially silicified fossils; little calcareous shale.
- 500-20 Limestone, very dark brown to brownish-gray, some ostracodal; little calcareous shale.
- 520-25 Limestone, dark-gray, crystalline to argillaceous.
- 525-30 Limestone, light-gray, coarsely crystalline, very phosphatic.

Lexington

- 530-625 Limestone, more brown and dense than above, some sublithographic; little dark calcareous shale, ostracods.
- 625-60 Limestone, lighter tan, cleaner, dense to crystalline; brachiopod fragments.
- 660-70 Limestone, light-tan, dense to lithographic; some argillaceous, with very fine sand grains included.
- 670-80 Limestone, as above, with some gray, granular; some quite argillaceous.
- 680-85 Limestone, dark-gray, nodular, and very phosphatic; some is argillaceous and silty.
- 685-90 Limestone, gray, crystalline, fossiliferous and phosphatic, interbedded with silty and argillaceous darker gray limestone.
- 690-710 Limestone, very dark gray, granular, argillaceous and finely sandy.
- 710-25 Shale, grayish-brown, bentonitic, with some pale-green bentonite containing flakes of biotite.

Chazy-Black River

- 725-30 Limestone, brown, crystalline, dense, fossiliferous; almost black, fine-grained, argillaceous limestone, leaving porous shale residue, and some bentonite. (Carters of Tennessee)
- 730-35 Limestone, cream to brown, crystalline, finely mottled with phosphate.
- 735-40 Limestone, brown, dense to crystalline; some with finely disseminated bentonitic material; trace of brown translucent chert.
- 740-50 Limestone, cream to brown, very fine, lithographic, with fresh bentonite.
- 750-55 Limestone, "bird's-eye", with little finely disseminated bentonite.
- 755-80 Limestone, clear brown, lithographic; bentonite caving.

(Lebanon)

- 780-85 Limestone, as above, with some brown, crystalline, dolomitic limestone.
- 785-800 Limestone, as above, with trace of dolomoldic brown chert; still bentonitic.
- 800-10 Limestone, cream to tan, lithographic, with rare enclosed dolomite rhombs; bentonite, green and brown.
- 810-45 Limestone, tan, lithographic, some dolomitic; trace of dolomoldic chert at base.
- 845-55 Limestone, dolomitic and lithographic, as above; little very dark and argillaceous; little very dark brown chert.
- 855-65 Limestone, tan, lithographic and dolomitic.
- 865-80 Limestone, some as above, some argillaceous.
- 880-95 Limestone, brown, lithographic; trace of dolomite; little dark-brown chert.

(Ridley)

- 895-905 Limestone, very dolomitic, brown.
- 905-10 Limestone, tan to gray, lithographic, some dolomitic; little argillaceous; trace of finely disseminated silica.
- 910-30 Limestone, less dolomitic and argillaceous; trace of fine silt.

Well No. 62 (86). Murphy and Buskirk No. 1 Noah Selvidge, NE SE NE section 5-B-54, in Beach Bottom area, completed August 1943, Clinton County.

MISSISSIPPIAN

Warsaw

- 0-10 Limestone, sandy, very dark gray, fossiliferous and phosphatic.
- 10-20 Limestone, coarsely crystalline, mottled gray, with some phosphate.
- 20-55 Limestone, very slightly dolomitic, finely crystalline, gray.
- 55-60 More dolomitic and slightly porous.
- 60-90 Limestone, argillaceous, darker gray, fine-grained.

Fort Payne

- 90-120 Limestone, very argillaceous, gray; much chert, gray, mottled to translucent.
- 120-35 Limestone, densely crystalline, light-gray to tan; some chert, as above.
- 135-45 Dolomite, calcareous and slightly argillaceous; chert, as above.
- 145-210 Limestone, crystalline, crinoidal, light-gray, with some chert.
- 210-30 Limestone, very dolomitic, crinoidal, some chert.

New Providence

- 230-40 Shale, calcareous, very dark gray, with many brachiopod spines and some glauconite.
- 240-97 Shale, slightly calcareous, very dark gray.
- 297-302 Shale, as above, with a little greenish-gray calcareous shale.

New Albany

- 302-23 Shale, black, coarse-grained, carbonaceous.
- 323-31 Shale, as above, in contact with dolomite, argillaceous, very dark brown.

ORDOVICIAN

Maysville

(Tate)

- 331-60 Dolomite, very finely crystalline, silty and slightly argillaceous.
- 360-72 Dolomite, slightly silty, finely crystalline.

(Fairmount)

- 372-451 Limestone, argillaceous, dark-brown, interbedded with some dark calcareous shale; occasional ostracods.
- 451-64 Limestone, as above, with some gray, crystalline, and fossiliferous.

Garrard

- 464-82 Limestone, gray, crystalline, fossiliferous, with much yellow crystalline limestone; trace of silt.
- 482-88 Limestone, as above, with more gray.
- 488-540 Limestone, more brown than gray, very argillaceous, slightly phosphatic.

Cynthiana-Million

- 540-60 Limestone, phosphatic, fossiliferous, crystalline, light-gray, some porosity. Position of "Granville." Reported 300,000 cubic feet of gas.
- 560-605 Limestone, dense, brown, fine-grained to argillaceous.
- 605-40 Limestone, very argillaceous, dark-brown, with many ostracods.
- 640-92 Limestone, slightly argillaceous, brown, dense.
- 692-97 Limestone, as above, with some gray, crystalline, and phosphatic beds.

Lexington

- 697-730 Limestone, fine-grained, to brown, crystalline, very slightly argillaceous.
- 730-850 Limestone, sublithographic, brown.
- 850-90 Limestone, gray, argillaceous to crystalline, fossiliferous and phosphatic.

Chazy-Black River

- 890-920 Limestone, argillaceous, dark-gray to green, with much bentonite, fine-grained.
- 920-90 Limestone, tan, lithographic, with trace of bentonite.
- 990-1060 Limestone, lithographic, brown, with trace of brown chert at 1020.

- 1060-1120 Limestone, as above, with occasional fragments showing finely crystalline brown dolomite.
 1120-1495 Limestone, very fine grained, brown, with rare finely crystalline dolomite.
 1495-1597 Limestone, slightly more dolomitic than above; some slightly argillaceous, darker brown.
 1597-1646 Limestone, argillaceous, very dark gray-brown, fine-grained.
 1646-79 Limestone, finely dolomitic and silty, with some greenish-brown color.

(Wells Creek)

- 1679-90 Sharp change to dolomite, medium-crystalline, pale-gray, with trace of translucent chert.
 1690-1702 Dolomite, pale-gray, enclosing fine sand and some quartzose chert. Dolomite is detrital.

CAMBRIAN

Knox

- 1702-30 Dolomite, finely crystalline, brown, to coarse-crystalline; trace of dolomoldic chert and green shale.
 1730-40 Dolomite, white to brown, finely crystalline to very coarse; trace of vitreous to oolitic chert.
 1740-60 Dolomite, brown to cream, fine to coarsely crystalline; rare rounded and frosted quartz grains enclosed.
 1760-62 Mainly chert, enclosing rounded and frosted sand grains.
 1762-90 Dolomite, tan, finely crystalline; trace of chert, as above.
 1790-98 Dolomite, cream, fine-grained to very coarsely crystalline; trace of green dolomoldic shale.
 1798-1837 Dolomite, light-gray; finely crystalline; trace of chalky chert and rounded and frosted sand grains.

Note: Reported a little oil but no water in the Knox.

Well No. 63 (966). Murphy and Buskirk No. 1 S. T. Simpson, SE SW SW section 8-D-53, completed 8-30-43, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 18-45 Siltstone, gray, fossiliferous; some chert; geodes.
 45-60 Some as above; mainly very dark gray, slightly calcareous shale.
 60-65 Limestone, very finely dolomitic, fossiliferous, with some enclosed chert.
 65-160 Shale, very dark gray, slightly calcareous, with streak of fossiliferous limestone at 100 feet.
 160-205 Limestone, gray to greenish, fossiliferous, crinoidal and argillaceous; considerable translucent white chert.
 205-50 Shale, green, claylike; includes many fossil fragments, making it calcareous.
 250-75 Limestone, cream, finely dolomitic, fossiliferous, with some chert.
 275-313 Dark-green shale, fossiliferous as 205-250.

New Albany

- 313-43 Black shale.
 343-48 Black shale; trace of sand and pyrite at contact with dolomite, finely crystalline, tan to green.

ORDOVICIAN

Maysville

(Tate)

- 348-50 Limestone, dolomitic, dense, tan to pale-green.
 350-60 Same, with some worn in the lower part.
 360-405 Dolomite, greenish-gray, slightly argillaceous.

(Fairmount)

- 405-20 More calcareous, grayish-brown; occasional fragments fossiliferous.
 420-40 Limestone, dolomitic and slightly silty, argillaceous, gray; occasional fossil fragments.

- 440-85 Limestone, dark-gray, fine-grained, ostracodal; interbedded with some very dark gray dolomitic limestone, some argillaceous.
 485-520 Limestone, fine-grained, dark gray-brown, some very argillaceous; fragments of ostracods.
 520-25 Limestone, as above, with some more coarsely crystalline, phosphatic and fossiliferous.

Garrard

- 525-50 Limestone, and silty and argillaceous limestone, gray.
 550-60 Same, with some yellow mottled, crystalline limestone.
 560-640 Limestone, phosphatic, crystalline, fossiliferous; little is argillaceous and dolomitic, porous.
 640-50 Limestone, finer grained than above, dark gray-brown, ostracodal and argillaceous.

Cynthiana-Million

- 650-70 Limestone, fossiliferous, phosphatic and porous.
 670-720 Limestone, finer grained, dark brownish-gray, some argillaceous.
 720-30 Limestone, more coarsely crystalline and phosphatic.

Lexington

- 730-861 Limestone, brown, fine-grained, ostracodal; occasional streaks of argillaceous limestone.

Well No. 64 (976). Vawter, et al No. 1 Irene Logsdon, SW NE section 9-C-52, Clinton County.

MISSISSIPPIAN

New Providence-Fort Payne

- 7-25 Sandstone, slightly calcareous, fine-grained.
 25-31 Limestone, gray, mottled, crystalline, slightly argillaceous.
 31-37 Sandstone, slightly calcareous, geodiferous.
 37-293 Siltstone, argillaceous, dark-gray, becoming more argillaceous toward base until it gets to be almost black, slightly calcareous shale with some geodiferous material.
 293-304 Shale, as above, with some fine-grained, dolomitic, tannish-gray limestone.
 304-17 Shale, dark, and some green, with few crinoid fragments and some translucent chert.

New Albany

- 317-41 Black shale, with some pyrite.
 341-47 Black shale, with a little dark, oily-looking dolomite.

ORDOVICIAN

Maysville

(Fairmount)

- 347-53 Dolomite, argillaceous, dark grayish-brown; trace of soft white gypsum.
 353-69 Dolomite and limestone, dark grayish-brown, argillaceous.
 369-423 Limestone, argillaceous, dark grayish-brown.
 423-54 Limestone, some argillaceous, some crystalline, phosphatic and fossiliferous.

Garrard

- 454-60 Limestone, slightly dolomitic, argillaceous.
 460-71 Limestone, argillaceous and slightly silty, gray.
 471-77 Limestone, slightly dolomitic and argillaceous.
 477-89 Limestone, as above, some of it more crystalline.
 489-501 Limestone, argillaceous, with some dark-gray shale.

Cynthiana-Million

- 501-37 Limestone, fossiliferous, phosphatic, and gray; some shale.
 537-700 Limestone, finer grained, brownish-gray, with occasional beds more crystalline.

Well No. 65 (1020). Chester Bryson No. 1 O. Z. Smith, Cumberland County.

ORDOVICIAN

Maysville

(Fairmount)

40-91 Limestone, fossiliferous, phosphatic and slightly argillaceous, gray, crystalline.

Garrard

91-98 Limestone, some silty.

98-104 Limestone, silty, and some coarsely crystalline with yellow mottling.

104-75 Limestone, sandy and argillaceous, gray.

Cynthiana-Million

175-248 Limestone, crystalline, gray, some argillaceous; fossiliferous.

248-99 Limestone, crystalline, white to gray, little porosity.

299-339 Limestone, argillaceous, dark gray-brown.

339-80 Limestone, clean, crystalline to dense, tan; trace of replacement chert.

380-400 Limestone, tan, fine-grained, ostracodal; little gray to brown chert.

Well No. 66 (1022). Diamond, et al No. 5 W. V. Brake, Cumberland County.

ORDOVICIAN

Maysville

(Tate)

20-25 Black shale contact with dolomite, silty, grayish-green.

25-55 Dolomite, medium-crystalline, tan to green, slightly argillaceous; trace of light-gray, microspecked chert.

55-86 Dolomite, gray, argillaceous; some gypsum.

(Fairmount)

86-135 Limestone, slightly dolomitic, argillaceous, gray.

141-47 Limestone, argillaceous; little slightly dolomitic, gray, fossiliferous.

155-60 Limestone, as above.

168-201 Limestone, gray, fossiliferous, some argillaceous.

Garrard

207-13 Limestone, coarsely crystalline and fossiliferous, some yellow.

219-25 Limestone, dark-gray, silty.

234-48 Limestone, silty.

Cynthiana-Million

248-69 Limestone, gray, phosphatic and fossiliferous.

276-314 Limestone, more crystalline and fossiliferous than above.

323-30 Limestone, finer grained, darker gray than above.

330-57 Limestone, crystalline, fossiliferous, phosphatic.

357-64 Limestone, dark-brown, finer grained.

364-560 Limestone, dark-brown, fine-grained, ostracodal; some brown translucent chert at 471-84.

Well No. 67 (1023). Diamond, et al No. 1 W. M. Harding, Vaughn Creek, Cumberland County.

ORDOVICIAN

Maysville

(Tate)

120-25 Dolomite, gray to tan, crystalline, some silty; trace of black shale.

125-50 Dolomite, green to tan, crystalline, some silty; pyrite; trace of chert at base.

(Fairmount)

155-60 Dolomite, less silty, dark-gray.

175-80 Dolomite, dark-gray, slightly argillaceous.

180-275 Dolomite, calcareous, dark-gray, looks argillaceous; some phosphate.

275-85 Limestone, coarsely crystalline, fossiliferous and phosphatic; dolomitized and porous.

Garrard

- 285-90 Same, with a trace of very fine sand.
 290-95 Dolomite, porous, oil-stained, coarsely crystalline.
 295-315 Same, with some dark-gray sandy and shaly limestone.
 315-20 Same, plus some limestone, dolomitic, crystalline and porous.

Cynthiana-Million

- 320-30 Limestone, coarsely crystalline, dolomitic and phosphatic. (Reported oil, 60 barrels per day.)

Well No. 68 (1027). Joe Riddell No. 1 O. Z. Smith, Cumberland County.

ORDOVICIAN

Cynthiana-Million

- 296-313 Limestone, gray, fine-grained, fossiliferous (Zygospira); some dark calcareous shale.
 313-22 Limestone, gray, crystalline, very fossiliferous and phosphatic; some calcareous shale.
 322-27 Limestone, finer grained, many phosphatic small gastropods.
 327-56 Limestone, fine-grained, brown, fossiliferous; several ostracods; occasional streak of dark calcareous shale.
 356-70 Limestone, fossiliferous, with many Zygospira; much silty and argillaceous limestone.
 370-80 Limestone, crystalline, fossiliferous and phosphatic; trace of chert.

Lexington

- 380-400 Limestone, finer grained, brown, fossiliferous, with some more crystalline.
 400-07 Limestone, sublithographic, tan to brown.
 407-70 Limestone, as above; little white translucent chert to 412; brown chert below, but only a trace.
 470-519 Limestone, fine-grained, brown.
 519-22 Limestone, as above; trace of bentonitic limestone.
 522-29 Limestone, very dark gray, argillaceous; some bentonitic.
 529-33 Limestone, more crystalline than above; some very argillaceous; Ceratopsis.
 533-72 Limestone, very dark and argillaceous, fossiliferous.
 572-79 Limestone, brown, fine-grained to crystalline, fossiliferous; some mottled; some argillaceous.

Chazy-Black River

- 579-84 Limestone, tan, fine to crystalline; trace of tan chert and bentonite.
 584-90 Limestone, tan, lithographic, with some bentonite.
 590-602 Limestone, tan to cream, lithographic; traces of cream chert.
 602-08 Limestone, fine-grained, grayish-tan.

Well No. 69 (1025). Vawter, et al No. 1 R. L. Spears, Cumberland County.

ORDOVICIAN

Maysville

(Fairmount)

- 155-255 Limestone, argillaceous, fossiliferous; little chert and phosphate.

Garrard

- 255-72 Limestone, as above, plus some coarsely crystalline, with trace of yellow calcite.
 272-323 Limestone, dark-gray, silty and argillaceous.

Cynthiana-Million

- 323-55 Limestone, crystalline; some phosphatic, fossiliferous; some argillaceous.
 355-65 Limestone, finer grained, grayish-brown, fossiliferous; some argillaceous.
 365-73 Limestone, more coarsely crystalline, phosphatic.

- 373-95 Limestone, crystalline, fossiliferous; some coarse calcite; little argillaceous limestone.
- 395-400 Limestone, granular and argillaceous, dark-gray.

Well No. 70 (1024). No. 12 Ben Huddelston, Cumberland County.

ORDOVICIAN

Garrard

- 150-60 Limestone, some fossiliferous, some sandy, and some argillaceous.

Cynthiana-Million

- 160-70 Limestone, some very argillaceous, some fossiliferous, gray.
- 170-90 Limestone, some fossiliferous and phosphatic; some coarse, dark-gray argillaceous limestone.
- 190-200 Limestone, as above, with less shale.
- ("Granville")
- 200-25 Limestone, coarsely crystalline, phosphatic, and pink-specked; little calcareous shale.
- 225-31 Limestone, some as above, some with calcareous gray shale.
- 231-60 Limestone, gray, crystalline and phosphatic; little calcareous shale.
- 260-89 Limestone, grayish-brown, more fine-grained, some still calcareous; rare streaks of more fossiliferous and phosphatic limestone.
- 289-307 Limestone, some as above; much dark-gray calcareous shale.
- 307-25 Limestone, some brown, densely crystalline; little calcareous shale.
- 325-31 Limestone, little as above, fossiliferous; mainly very argillaceous and slightly silty, dark-gray.
- 331-43 Shale, calcareous, as above; some limestone, fossiliferous and phosphatic.

Lexington

- 343-76 Limestone, dense, fine-grained, grayish-brown; little calcareous shale; trace of tan replacement chert.
- 376-94 Limestone, dense, fine-grained, brown, sublithographic; little brown chert.
- 394-400 Limestone, as above, with a little gray, argillaceous, and granular.
- 400-11 Limestone, brown, fine-grained to finely crystalline; little brown replacement chert.

Well No. 71 (1026). No. 1 C. W. Wells, Cumberland County.

ORDOVICIAN

Maysville

(Fairmount)

- 155-211 Limestone, some fossiliferous, gray; some darker calcareous shale.

Garrard

- 211-25 Limestone, as above, with some more crystalline, containing yellow calcite.
- 225-70 Limestone, silty, dark-gray.

Cynthiana-Million

- 270-75 Limestone, as above, plus some crystalline, fossiliferous and phosphatic.
- 275-86 Limestone, crystalline, fossiliferous and phosphatic; some dark calcareous shale.
- 286-99 Limestone, finer, dark-gray, very argillaceous.
- 299-305 Same, some more fossiliferous.
- 305-62 Limestone, finer grained, dark-gray, argillaceous.
- 362-81 Limestone, as above, plus some crystalline and slightly worn, phosphatic.
- 381-402 Limestone, finer grained, brownish-gray, some argillaceous.

Well No. 72 (3). Inland Oil and Gas Company No. 1 Fraley, section 24-T-77, elevation 796 feet, completed 9-3-40, Elliott County. Logged show of oil at 720-99, shows of gas at 800-10, 923-30, 1315-24, 1470-75, 1572-81, 1700-05, with enough to light at total depth.

PENNSYLVANIAN

33-34	Sandstone, medium- to coarse-grained, micaceous and sideritic.
34-45	Sand and shale, micaceous, dark-gray and sandy.
45-51	Shale, very dark gray, smooth, fine-grained, slatelike; little reddish fire clay.
51-57	Shale, dark-gray, micaceous, sandy; little coal.
57-60	Sand, medium-coarse grained, loose, angular; some micaceous.
60-65	Sand, very coarse grained, loose, white.
65-72	Sand, as above, plus some dark sandy shale.
72-77	Mainly dark-gray siliceous shale; little fire clay and coal; rare siderite nodules in shale.
77-84	Sandstone, fine-grained, well-sorted grains, well-cemented, including small pellets of siderite.
84-88	Sandstone, as above, saturated; some dark-gray micaceous shale.
88-92	Sandstone, as above; little coal and gray fire clay containing plant fossils.
96-101	Sand, very fine grained, gray, hard, tightly cemented, micaceous and banded.
101-11	Sand, coarse-grained, poorly sorted, angular; streaks of fine, sandy shale.
111-252	Sand, very coarse to medium-grained; poorly sorted, angular, white, clean, conglomeratic in part.
252-57	Sand, as above, plus dark-gray sandy shale.
260-66	Shale, dark-gray, with some reddish fire clay.
266-71	Clay, gray, with many siderite nodules.

MISSISSIPPIAN

Glen Dean

271-81	Limestone, dark-gray and light-tan, dense, very crinoidal.
281-86	Limestone, light-tan, dense, very crinoidal.
286-93	Same as above; some dark-gray, mottled with tan, crinoid plates.
293-98	Limestone, gray, coarsely crystalline, obscurely oolitic, with some glauconitic, giving greenish tint.

Greenbrier

298-300	Limestone, as above, plus a little greenish shale.
300-06	Limestone, light-tan, dense, fine-grained, and some very finely crystalline, light-tan dolomite.
306-12	Limestone, cream, obscurely oolitic and slightly dolomitic.
312-23	Limestone, almost white, coarsely crystalline, with indistinct oolites.
323-32	Limestone, light-tan to cream, almost lithographic in texture.
332-40	Limestone, dense, brown, and hard.
340-46	Limestone, as above, with a shale break, some dark-gray, some dark-green, enclosing sand grains.
346-52	Limestone, very dense, white to cream, slightly dolomitic; some particles show fragmentation and cementation by clear calcite.
352-60	Limestone, very dense, light-gray; some oolitic, but with conglomeratic texture.
360-84	Limestone, light creamy-gray, lithographic.
384-91	Limestone, same lithographic type, but darker gray-brown.
391-98	Limestone, as above; break of slightly argillaceous limestone; some limestone that looks like microscopic conglomerate, with small rounded fragments (apparently not oolites) cemented together.

St. Louis

398-405	Dolomite, white, very finely crystalline; rare large rounded and frosted sand grains.
405-12	Dolomite, white, finely crystalline; many fragments with rounded openings where oolites were dissolved; little included sand.
412-25	Dolomite, fine-grained, some fine porosity, tan, some glauconitic.
425-28	Limestone, finely dolomitic, brown to gray, dense; some shows dolomite rhombs distinctly.

- 428-33 Limestone, light-cream, dolomitic, with rhombs isolated; encloses large rounded and frosted sand grains.

Lower Mississippian

- 433-52 Sandstone, gray, dense, hard, slightly calcareous and argillaceous.
 452-503 Shale, dark-gray, very sandy.
 503-08 Shale, dark-gray, micaceous and sandy.
 508-620 Same, with occasional dark-red shale streaks and a little quartzitic sand.
 620-26 Some shale, as above, plus sandstone, fine-grained, hard, micaceous, reddish-brown.
 626-32 Finer, more argillaceous, and darker.
 633-40 Shale, very dark gray, sandy and micaceous.
 640-67 Same, with occasional hard, fine sandstone streaks.
 667-74 More sand than above; light-gray, with apparently a little siderite--as in Pennsylvanian.
 674-81 Sandstone, light-gray, fine-grained, rounded; grains conspicuous against dull cement.
 686-92 (Steel line measurement) - Sandstone, same, but less well cemented.
 692-707 Sandstone, as above, plus some dark-gray, slightly argillaceous sand.
 707-82 Sand, fine-grained, rounded as above the break.

Sunbury

- 782-99 Sand, as above, plus some black shale.

Berea-Bedford

- 799-804 Sandstone, medium-fine grains, light-gray.
 903-23 Sandstone, medium to fine grains, well-sorted, light-gray.
 923-30 Sandstone, hard, and some very argillaceous.
 930-45 Sandstone, as above; argillaceous break.
 945-52 Shale, very dark gray, micaceous and sandy.
 952-60 Shale, dark-gray, smoother than above.

New Albany

- 960-1324 Black shale with spores.
 1324-42 Shale, gray-green, with much pyrite (cubes).
 1342-98 Shale, gray and black; occasional fragments of shale are calcareous.

DEVONIAN

Huntersville

- 1398-99 Change from shale; some rounded and frosted sand cemented with limestone and pyrite; mainly brown dolomite, tight and cherty.
 1399-1404 Dolomite, brown, coarsely crystalline, some enclosing pyrite; little pyrite and rounded sand, as above; no chert.
 1404-09 Limestone, light-gray, crystalline, with dolomite rhombs enclosed, giving sandy appearance; some pyrite enclosed also.
 1409-31 Limestone, as above, with little spicular, mottled chert, slightly dolomitic.
 1431-34 Limestone, dolomitic, as above; about 20% chert, dark-gray, translucent.
 1434-43 Limestone, almost white, coarsely crystalline, with fine dark mottling; no chert.

SILURIAN

Salina

- 1443-52 Limestone, same as above; mainly dolomite, very finely crystalline, some light-gray and slightly argillaceous.
 1452-93 Dolomite, very fine grained, gray, little of it argillaceous (some of it laminated); occasional fragments in residue show banding of argillaceous dolomite with very black carbonaceous shale.
 1493-99 Dolomite, more crystalline than above; less dull; dense and tight.
 1499-1508 Dolomite, as above; rare gray chert with oolites.
 1508-39 Same kind of dolomite; no apparent oolites.
 1539-48 Same kind of dolomite, plus occasional fragments of greenish shaly sand.
 1548-56 Dolomite, brown, crystalline, coarser than above.
 1556-63 Dolomite, brown, sucrose; some porosity.
 1563-89 Dolomite, more densely crystalline and hard.

- 1589-99 Dolomite, very hard, finely crystalline, and dense; rare fragments of very dark gray shale.
 1599-1607 Dolomite, dense, hard, finely sandy; occasional fragments of grayish-green to dark-gray shale.
 1607-13 Dolomite, dense, fine-grained, gray, rather than brown; occasional fragments include fine to medium sand grains.

Lockport

- 1613-30 Dolomite, dense, hard, crystalline, gray.
 1630-40 Dolomite, some fine-grained and slightly argillaceous, some medium-grained and slightly porous.
 1640-50 Dolomite, dark-gray, some mottled with dark rounded oolites; some slightly argillaceous.
 1650-60 Dolomite, dark-gray, medium-crystalline, glassy.
 1660-66 Dolomite, medium crystals, more brown, porous; many fragments show rounded openings partially filled with crystals of dolomite.
 1666-95 Dolomite, gray, some sucrose, some dense, some slightly argillaceous, leaving dark porous residue similar to the break in the "Corniferous" in Big Sinking Field.
 1695-1700 Dolomite, brownish-gray, medium crystals, with beautifully distinct rhombs.
 1700-13 Dolomite, distinctly crystalline; little of it with dark, claylike material in interstices.

"Big Six"

- 1713-23 Same, with introduction of dolomitic sand, grains rounded, well-sorted, and fine; some of it glassy and quartzitic.
 1723-33 Mainly dolomitic sand; leaves residue of porous quartzitic sand (some grains are quartz-cemented so that the fracture cuts across the grains).
 1733-42 Some laminated, dark and light, with darker portions being slightly argillaceous dolomitic sand.
 1742-51 Sand, medium-fine grains, partially quartz- and partially dolomite-cemented.
 1751-62 Sand, as above, with some grayish, slightly calcareous or dolomitic shale.

Clinton

- 1762-69 Shale, some grayish and finely sandy, some maroon.
 1769-75 Sand, very fine grained, dense, light-gray; some gray and maroon shale.
 1775-1821 Mainly maroon shale; some grayish, shaly, fine sand.
 1821-87 Very dark red shale.
 1887-93 Shale, darker red, rare fragments of quartzitic sand with glauconite.
 1893-98 Shale, dark-red, with a little dark-gray to greenish-gray shale.
 1898-1904 Shale, most of the red has become more gray; much green, fissile and glauconitic shale.
 1904-15 Shale, grayish-green, fissile; rare fragments of quartzitic and glauconitic sand.
 1915-22 Shale, as above, with few fragments of densely crystalline dolomite.
 1922-31 Single sample shows: red and green shales; glauconitic, quartzitic sand; crystalline, light-gray dolomite; oolitic hematite.
 1931-62 Shale, mainly dark-red, hematitic; little green, fissile shale.
 1962-70 Green and red fissile shale.
 1970-88 Shale, mainly green; some dolomite, a little of it crystalline, some argillaceous, green.
 1988-97 Shale, mainly dark-gray, fissile; occasional hematite fragments.
 1997-2003 Some medium-crystalline dolomite; mainly oolitic hematite.
 2003-12 Hematite and dark gray-green shale.

Position of Brassfield

- 2012-20 Shale, dark gray-green; little dolomite.

ORDOVICIAN

Richmond

- 2082-92 Shale, coarse-grained, red, some gray-green shale.
 2092-2115 Shale, very slightly dolomitic, coarse-grained, gray-green, trace red.
 2115-50 Shale, as above, interbedded with gray-green, crystalline, phosphatic limestone.

Maysville

- 2150-80 Limestone, very argillaceous, brownish-gray.
2180-2200 Limestone, argillaceous, as above, interbedded with gray, phosphatic, crystalline limestone.
2200-22 Limestone, gray-brown, argillaceous, rare crystalline streaks, ostracodal, some phosphatic *Cyclora minuta*.
2222-60 Limestone, gray-brown, slightly argillaceous; many bryozoans.
2260-2376 Limestone, densely crystalline, brown, fossiliferous; little argillaceous limestone.
2376-2402 Limestone, gray-brown, slightly argillaceous, some very fossiliferous, with ostracods and bryozoans.

Garrard

- 2402-2500 Limestone, coarsely crystalline, light-gray, fossiliferous, phosphatic, with interbedded calcareous siltstone.
2500-50 Siltstone, argillaceous, calcareous, without interbedded limestone as above.
2550-65 Same siltstone as above; much crystalline limestone.

Cynthiana-Million

- 2565-2613 Limestone, coarsely crystalline, fossiliferous, vugular; some interbedded calcareous gray shale.
2613-2711 Limestone, gray, crystalline, fossiliferous, interbedded with gray, calcareous to fissile shale.
2711-47 Limestone, slightly argillaceous, gray-brown, fossiliferous.
2747-2830 Limestone, argillaceous, gray-brown; dark calcareous shale.
2830-50 Limestone, very fine grained, brown, argillaceous; trace of translucent brown chert.
2850-2940 Limestone, crystalline, fossiliferous, phosphatic, gray.

Lexington

- 2940-3038 Limestone, fine-grained to subcrystalline, brown, slightly argillaceous, some fossiliferous.
3038-3143 Limestone, fine-grained, brown, slightly more argillaceous than above; trace of silt at 3080-90; chert replacement of fossils where limestone is slightly phosphatic at 3085-3100.

Chazy-Black River

- 3143-90 Limestone, lithographic, cream to gray-green, bentonitic.
3190-3200 Limestone, fine, lithographic; rare brown chert and finely crystalline, brown dolomite.
3200-30 Limestone, very fine grained, some finely argillaceous, gray-brown.
3230-92 Limestone, very fine, tan, lithographic.
3292-3328 Limestone, very finely dolomitic, brown, fine-grained.
3328-3450 Limestone, very fine grained, brown.
3450-70 Limestone, finely dolomitic, brown.
3470-3577 Limestone, lithographic, brown.
3577-3600 Limestone, finely dolomitic, brown.
3600-3766 Limestone, fine-grained, brown; rare fragments slightly dolomitic.
3766-3861 Limestone, very finely argillaceous and dolomitic, more gray-brown.
3861-70 Dolomite, fine-grained, light-gray, argillaceous.
3870-3966 Limestone, very dark brown, dense, slightly argillaceous, with some finely dolomitic and silty.

(St. Peter)

- 3966-74 Sandstone, dolomitic, very fine rounded grains, occasional medium grains.
3974-88 Sandstone, fine to coarse, poorly sorted, dolomitic; green shale streaks.
3988-4035 Sandstone, as above, without dolomite cement.

CAMBRIAN

Potosi

- 4035-83 Dolomite, coarsely crystalline, cream; trace of gray, quartzose chert and green shale, as above.
4083-92 Dolomite, darker gray, coarsely crystalline; much white, interstitial chert, leaving dolomolds after acid treatment.

- 4092-4102 Dolomite, fine-medium crystalline, gray; fine, interstitial chert.
 4102-15 Dolomite, fine- to coarse-crystalline; chert residue, white to gray, dense to finely granular.
 4115-25 Dolomite, fine-crystalline, light-gray; chert residue dense, white, some finely dolomoldic; small white chert oolites in quartzose matrix.

Elvins

- 4125-35 Dolomite, coarsely crystalline, gray, vugular; some glauconite, green shale, pyritic.
 4135-52 Dolomite, medium-crystalline, tan, sucrose; trace of chert, dolomoldic.
 4152-62 Dolomite, fine- to medium-crystalline, tan; insoluble residue, silt to coarse sand; chert, chalky, with lacy dolomolds; trace of banded druse.
 4162-81 Dolomite, fine, dense to sucrose, brown-gray; fine silt to coarse, secondarily crystallized sand; some glauconite.
 4181-85 Dolomite, medium-crystalline, tan; trace of pyritic silt.
 4185-91 Dolomite, fine- to coarse-crystalline, tan; silt and green pyritic shale.

Well No. 73 (203). Petroleum Exploration No. 1 James Tipton, in extreme southwest corner of section 22-P-68, elevation 1,370 feet, commenced in April 1948, Estill County. 17,000 cubic feet of gas at 2100 feet, salt water at 2880 feet.

MISSISSIPPIAN

Greenbrier ("Big Lime")

- 105-17 Limestone, fine-grained, white, slightly oolitic and fossiliferous.
 117-52 Limestone, very fine grained, white to pale-green or tan; trace of white to tan chert.
 152-62 Limestone, finely dolomitic, earthy, cream-colored, with chert, as above.
 162-84 Limestone, as above, with some very fine silt and finely disseminated glauconite.

Lower Mississippian

- 184-220 Shale, silty, green, with much glauconite.
 220-62 Siltstone, slightly argillaceous, green.
 262-90 Siltstone, more gray than above; much darker.
 290-450 Shale, very slightly silty, dark-gray.
 450-650 Shale, very dark gray, coarse-grained.
 650-75 Shale, gray, as above, with some dark-red and green.

New Albany

- 675-777 Shale, black, coarse-grained, carbonaceous.
 777-804 Shale, as above, with some pyritic green shale.

SILURIAN

Lockport

- 804-22 Dolomite, brown, crinoidal, medium-coarse crystalline, very porous and vugular.
 822-45 Dolomite, medium-coarse crystalline, very vugular, porous; show of oil.

Clinton

- 845-51 Shale, slightly silty, green, some fissile.
 851-61 Shale, clayey to fissile, light-green.
 861-989 Shale, as above, with much glauconite.
 989-1015 Shale, dark-maroon, some green, with some yellow crystalline dolomite.
 1015-31 Shale, fine-grained, green, fissile, with many limonite oolites.

Brassfield

- 1031-43 Dolomite, coarse-crystalline, yellow, with trace of dead oil stain; tiny hematitic gastropods.
 1043-61 Dolomite, medium, sucrose, gray to green, with glauconite; trace of gray, fossiliferous chert.

ORDOVICIAN

Richmond

- 1061-1218 Dolomite, slightly calcareous, green, argillaceous, and very slightly silty.

Maysville

- 1218-45 Limestone, slightly dolomitic, dark-gray, slightly argillaceous.
1245-72 Limestone, slightly argillaceous, gray-brown; trace of replacement chert.
1272-1303 Limestone, slightly argillaceous and silty, greenish-gray; rare fossil fragments.
1303-58 (Tate lithology) Siltstone, greenish-gray, argillaceous, calcareous.

(Fairmount)

- 1358-1436 Limestone, gray, very fossiliferous and phosphatic; streaked with calcareous gray shale.

Garrard

- 1436-40 Limestone, very silty; fine-grained sand.
1440-69 Limestone, slightly dolomitic and silty, cream to yellow, crystalline.
1469-85 Siltstone, calcareous, some almost fine sand.
1485-1525 Limestone, slightly silty, fossiliferous and phosphatic, gray.

Cynthiana-Million

- 1525-51 Limestone, light-gray, fossiliferous and phosphatic, very slightly argillaceous (unusually clean for this section).
1551-82 Limestone, slightly darker gray than above and slightly more argillaceous; trace of replacement silica.
1582-1731 Limestone, gray, fossiliferous and phosphatic; traces of dark calcareous shale.
1731-69 Limestone, as above, with little more shale; some replacement chert.
1769-1800 Limestone, crystalline, fossiliferous and phosphatic, light-gray.

Lexington

- 1800-62 Limestone, fine-grained, brownish-gray, very dense, and very slightly argillaceous.
1862-1900 Limestone, densely crystalline, gray, finely phosphatic; trace of mottled, fossiliferous chert.
1900-34 Limestone, gray-brown, densely crystalline, fossiliferous.
1934-76 Limestone, gray-tan, crystalline, fossiliferous, phosphatic; trace of fossiliferous chert.

Chazy-Black River (Tyrone at top)

- 1976-2005 Limestone, cream, lithographic; trace of chert; bentonite in base.
2005-13 Limestone, gray-brown, densely crystalline to argillaceous.
2013-43 Limestone, dense to subcrystalline, tan; chert, same color as limestone.
2043-92 Limestone, brown, very fine grained, some very slightly argillaceous.
2092-2107 Limestone, finely dolomitic, tan, almost sucrose.
2107-2412 Limestone, very fine grained, brown to slightly gray-brown, dense.
2412-45 Limestone, finely dolomitic, brown, dense.
2445-2628 Limestone, very fine grained, very slightly argillaceous, with rare streaks of finely dolomitic limestone.
2628-45 Limestone, very finely dolomitic, slightly argillaceous (leaves banded shale characteristic of this zone in residue).
2645-60 Dolomite, slightly calcareous, brown, fine-grained; some gray and finely clastic.
2660-72 Limestone, dolomitic, slightly argillaceous.

(St. Peter)

- 2672-76 Sandstone, very poorly sorted, fine-grained, enclosing larger grains; some dolomite cement.
2676-80 Dolomite, sandy, light tan-gray, finely crystalline.
2680-97 Dolomite, with much sand enclosed; large grains enclosed in fine matrix.
2697-2704 Shale, slightly calcareous, very dark gray-brown; rare fine silt.
2704-11 Dolomite, pale-gray, studded with fine and very coarse sand.
2711-20 More sand than above; trace of gray-green shale.
2720-28 Sandstone, medium to coarse, rounded and frosted; occasional angular grains.
2728-37 Sandstone, with dolomite cement.

CAMBRIAN

Knox

2727-2880

Dolomite, light-tan, fine-crystalline to sucrose; much enclosed pyrite; trace of chert, very dense, white to chalky.

Well No. 74 (17). South Central Petroleum Company No. 1 A. Garrett, CNL NW SW 21-P-68, elevation 1,274 feet (plane table), Estill County.

MISSISSIPPIAN

Greenbrier

16-22

Limestone, gray-brown, fine-grained; much chert, secondary replacement, some dense and translucent.

22-36

Limestone, cream to pale-green, very fine grained; translucent chert to drusy, mottled, less than above.

36-41

Limestone, white, very fine grained, clean.

41-50

Limestone, as above, with some tan, finely dolomitic limestone.

50-60

Limestone, some finely dolomitic, as above; some tan, with very small oolites; rare sand in residue.

60-67

Trace of limestone, as above; mainly silt, glauconitic and argillaceous, with trace of green shale.

67-100

Siltstone, argillaceous, micaceous, glauconitic, slightly calcareous, greenish-gray.

100-15

Siltstone, argillaceous, micaceous, gray, slightly calcareous; some chert.

115-55

Siltstone, coarser than above (almost sand size), very well sorted, slightly calcareous and argillaceous.

155-81

Siltstone, as above, finer.

181-252

Shale, silty, dark greenish-gray.

252-520

Shale, slightly silty, coarse, almost black.

520-35

Shale, coarse-grained, dark-gray, with some dark-maroon.

535-57

Shale, very dark gray-green to dark-maroon, coarse-grained.

557-63

Shale, as above, some silt.

New Albany

563-69

Shale, black, very carbonaceous.

569-671

Shale, black, coarse-grained; some pyrite; occasional small red spores

671-90

Shale, as above, interbedded with green pyritic shale.

SILURIAN

Lockport

690-93

Contact with dolomite marked by conglomerate. Dolomite, light-gray, medium-crystalline, vugular.

693-700

Dolomite, light-gray, very crinoidal and vugular.

700-06

Contact of dolomite, very fine, gray, with shale, very finely silty, gray-green, fissile.

Clinton

706-12

Shale, very finely silty, gray-green, some shale fissile.

712-28

Shale, less silty than above; trace of maroon shale.

728-802

Shale, gray-green to maroon, fissile; much darker than is usual in the Clinton, with much less of the maroon.

802-43

Shale, very fissile, very dark gray-green.

843-54

Dolomite, densely crystalline, fine-grained, cream.

854-80

Dolomite, densely crystalline, medium-grained, cream to gray, slightly glauconitic; some shale, as above.

880-90

Shale, very fine grained, fissile.

Brassfield

890-905

Dolomite, dense, very fossiliferous, crinoidal; some fossiliferous shale.

905-15

Dolomite, medium-coarse crystalline, very fossiliferous, cream, with some glauconite; trace of finely mottled chert.

915-25

Dolomite, gray, medium-coarsely crystalline, fossiliferous.

ORDOVICIAN

Richmond

925-47

Shale, slightly dolomitic, green, with trace maroon.

- 947-65 Dolomite, slightly argillaceous, gray-green, medium-crystalline and dense.
 965-70 Some dolomite, as above; some more coarsely crystalline and vugular, with oil stain.
 970-81 Dolomite, slightly argillaceous, as above.
 981-87 Dolomite, more argillaceous, with some more green and slightly glauconitic.
 987-1000 Dolomite, slightly argillaceous, very fine grained.
 1000-13 Dolomite, as above, slightly silty.
 1013-47 Dolomite, slightly argillaceous, fine-grained, gray-green. (Dolomite looks more argillaceous than is indicated by the residue. Probably much fine clay is lost in washing.)

Maysville

- 1047-65 Limestone, very slightly argillaceous, dark-gray, fine-grained, dense, and slightly fossiliferous.
 1065-75 Limestone, as above, with some fine dolomite, more green.
 1075-85 Limestone, gray, fossiliferous, slightly argillaceous, dense; trace of replacement chert.
 1085-1135 Limestone, gray, slightly fossiliferous, fine-grained, dense; with trace of phosphate.
 1135-90 Limestone, finely silty and argillaceous; shale content greenish-gray.
 1190-1260 Limestone, very fossiliferous, phosphatic, with little interbedded dark calcareous shale.
 1260-65 Limestone, unusually clean, coarsely crystalline, white to yellow.
 1265-70 Some limestone, as above, some more shaly.
 1270-76 Limestone, very argillaceous, gray, fine-grained.
 1276-88 Limestone, gray, crystalline, phosphatic, little calcareous shale.

Garrard

- 1288-94 Limestone, crystalline, very fossiliferous, with little enclosed fine sand to silt; trace of oil.
 1294-1305 Limestone, as above, but silica is silt size.
 1305-19 Limestone, very clean, crystalline, fossiliferous; trace of fine silt; porous.
 1319-25 Limestone, very argillaceous, and calcareous shale, gray; some very fine silt.
 1325-60 Limestone, gray, densely crystalline, finely phosphatic, interbedded with fine, calcareous, silty shale.

Cynthiana-Million

- 1360-95 Limestone, very fossiliferous, phosphatic, gray, clean; very small residue.
 1395-1490 Limestone, very coarsely crystalline, very fossiliferous, phosphatic, clean; very small residue of black shale.
 1490-1535 Limestone, as above, slightly darker and slightly more shaly material.
 1535-51 Limestone, very fossiliferous, phosphatic, with little interbedded dark calcareous shale.
 1551-69 As above, with trace of replacement chert.
 1569-1615 Limestone, gray, phosphatic, fossiliferous; very small residue of black shale.
 1615-39 Limestone, as above, with trace of replacement chert.
 1639-51 Limestone, gray-brown, densely crystalline, fossiliferous, slightly phosphatic; some replacement chert.

Lexington (Trenton)

- 1651-71 Limestone, much more fine and dense; some replacement chert.
 1671-1707 Limestone, very fine, gray-brown, almost lithographic; trace of calcareous shale.
 1707-26 Limestone, very clean, fossiliferous, very slightly phosphatic.
 1726-39 Limestone, gray, crystalline, fossiliferous and phosphatic, with trace of replacement chert.
 1739-84 Limestone, gray, very fine grained, dense, very slightly fossiliferous and phosphatic.
 1784-1805 Limestone, finely crystalline, dense, slightly brown-gray, very fossiliferous, some phosphatic.

- 1805-31 Limestone, more fossiliferous, crystalline, and phosphatic, with some gray fossiliferous chert.
 1831-40 As above, with trace of fine silt.

High Bridge (Tyrone at top)

- 1840-44 Limestone, very fine, lithographic, creamy-tan to brown.
 1844-63 Limestone, as above, with trace of green calcareous shale (no free bentonite).
 1863-77 Limestone, very fine, creamy-tan to brown, with some free bentonite and a little cream, earthy to brown, translucent chert; trace of dolomite.
 1877-1901 Limestone, very fine, light-brown, with trace of bentonitic shale.
 1901-54 Limestone, very fine grained to lithographic, light to bright brown.
 1954-60 As above, some very finely dolomitic.
 1960-80 Dolomite, calcareous, fine, sucrose, brown.
 1980-93 Limestone, lithographic to very finely crystalline.
 1993-2025 Limestone, very fine grained, brown, with some green-gray calcareous shale.
 2025-2108 Limestone, very fine, lithographic, tan; occasional traces of chert.
 2108-50 Limestone, lithographic; trace of dolomite; trace of oil stain at 2125-31.
 2150-2281 Limestone, very fine, brown to gray, with little gray-green, slightly argillaceous limestone.
 2281-87 Limestone, fine, as above, some pseudo-oolitic; much brown, finely crystalline dolomite.
 2287-2312 Limestone, as above, with less dolomite.
 2312-31 Limestone, very fine, tan to cream.
 2331-80 Limestone, fine-grained, dark-brown, with some darker greenish-gray shale.
 2380-2400 Limestone, very fine grained, brown.
 2400-21 Limestone, very dolomitic, very fine grained, gray-brown.
 2421-32 Limestone, very fine, gray-brown, trace cream.
 2432-82 Limestone, darker brown, fine-grained, with little interbedded calcareous banded shale; rare dolomite streaks.
 2482-88 Limestone, very fine grained, dark-brown; some slightly argillaceous.
 2488-2510 Limestone, finely dolomitic and argillaceous, gray.
 2510-22 Dolomite, slightly calcareous, gray to brown, very fine grained, enclosing rare medium grains; some shale.
 2522-30 Dolomite, very fine grained, argillaceous.
 2530-36 Dolomite, very fine, slightly calcareous, argillaceous, dark-brown.
- (St. Peter)
 2536-50 Sandstone, dolomitic, very fine grained, with occasional coarse grains, light-gray; some gray-green shale.
 2550-77 Sandstone, slightly dolomitic, fine, with occasional large rounded and frosted grains; stringers of greenish shale.
 2577-81 Sandstone, very poorly sorted, friable, with shale streaks.
 2581-86 Sandstone, better sorted than above, medium to coarse, very friable and porous.

NOTE: Gas. Drilled another 6 inches, more gas; another 6 inches, making total depth about 2587, more gas. Gauged $8\frac{1}{2}$ million cu. ft.

Well No. 75 (603). South Central Petroleum Company No. 2 Garrett, CNL SE 22-P-68, elevation 1,367 feet (plane table), Estill County, Furnace area.

MISSISSIPPIAN

Greenbrier ("Big Lime")

- 42-50 Limestone, cream, very oolitic, weathered; some shale and sandstone from above.
 50-69 Limestone, light-brown, fine-grained, oolitic.
 69-84 Limestone, pale-cream, fine-grained; trace of translucent tan chert.
 84-106 Limestone, as above; chert, as above; some green color in both.
 106-31 Limestone, cream, to darker gray-brown with depth, very finely dolomitic, earthy.

Lower Mississippian (Borden group)

- 131-41 Siltstone, argillaceous, calcareous, gray-green; much fine glauconite and occasional very large rounded sand grains.
141-66 Siltstone, as above, without glauconite or sand.
166-78 As above, with trace of reddish limestone.
178-207 Siltstone, as above; some very fine sand.
207-22 Siltstone, fine, argillaceous, gray-green, slightly calcareous.
222-46 Siltstone, less argillaceous, more gray than green.
246-53 Shale, slightly silty, trace red.
253-460 Shale, slightly silty, dark-gray, coarse.
460-639 Shale, coarse, some fissile, very dark gray, with traces of rusty-red and green.

New Albany

- 639-764 Shale, black, carbonaceous, sometimes pyritic, with interbedded fissile green shale in base.

SILURIAN

Lockport

- 764-68 Dolomite, at contact, with some enclosed sand, phosphate, and pyrite, gray-brown.
768-74 Dolomite, vugular to dense, gray-brown, worn and pyritic.

Clinton

- 774-95 Shale, very finely silty, green.
795-826 Shale, very fissile, greenish-gray, with occasional streaks red.
826-900 Shale, dark-gray, fissile, trace green and red.
900-25 Shale, dark-green, very fissile.
925-37 Shale, as above; dolomite, dark, much glauconite.
937-47 Shale, as above; dolomite, brown, crystalline, mottled with oily stain; trace of chert, same color.
947-52 Shale, green, fissile, little dolomite as above; oolitic hematite.
952-60 Shale, green, fissile.
960-76 Dolomite, tan-yellow, crystalline, fossiliferous, with some green fissile shale.

Brassfield

- 976-86 Dolomite, crystalline, gray to yellow, glauconitic, with gray mottled chert.
986-91 Dolomite, medium-crystalline to crinoidal; trace of shale and dense chert.
991-1000 Dolomite, light-tan to gray, crystalline, glauconitic.

ORDOVICIAN

Richmond

- 1000-18 Shale, dolomitic, gray to slightly green; residue fissile, almost silty shale.
1018-30 Dolomite, slightly argillaceous, gray-green, some calcareous.
1030-61 Dolomite, argillaceous, slightly calcareous, with streaks of more crystalline dolomite showing oily stains. All of this looks more argillaceous than residue indicates -- argillaceous content fine clay that is dispersed in acid.
1061-87 Dolomite, very argillaceous, greenish-gray; residue small for above reasons.
1087-1122 As above, with trace of very fine silt.

Maysville

- 1122-34 Limestone, argillaceous, slightly dolomitic, dark-gray; trace of chert.
1134-46 Limestone, more dolomitic and argillaceous, finely silty, gray-green.
1146-52 Limestone, slightly argillaceous, very dark gray; some silty, as above; some fossiliferous and phosphatic.
1152-70 Limestone, argillaceous, dark-gray, some fossiliferous; trace of replacement chert.
1170-1206 Limestone, slightly argillaceous, gray, slightly fossiliferous, fine-grained.

- 1206-44 Limestone, slightly argillaceous and finely silty, fine-grained, slightly greenish-gray; amount of silt increases with depth.
 1244-76 Limestone, fine, gray, fossiliferous; trace of shale and occasional fragments of replacement chert.
 1276-1302 Limestone, more fossiliferous and phosphatic than above.
 1302-21 Limestone, crystalline to dense, very fossiliferous and phosphatic, tan to gray; trace of fine shale.
 1321-42 Limestone, crystalline, fossiliferous; some phosphatic; some yellow, crystalline; trace of fine silt.
 1342-54 Limestone, very fossiliferous, as above, trace yellow.

Garrard

- 1354-69 Limestone, very fossiliferous, clean, cream to almost yellow; trace of very fine sand and shale.
 1369-80 As above, with much more of the very fine sand and shale, (40%).
 1380-91 Limestone, as above, with more very fossiliferous and crystalline limestone.
 1391-1409 Limestone, very fossiliferous, argillaceous, gray, with some interbedded gray fissile shale.
 1409-21 Limestone, fossiliferous, gray, with some silt and shale, as above.

Cynthiana-Million

- 1421-32 Limestone, slightly dolomitic, gray, crystalline, very fossiliferous and phosphatic, very small residue.
 1432-63 As above.
 1463-83 Limestone, gray, very fossiliferous and phosphatic, crystalline; only trace argillaceous; very small residue.
 1483-93 Limestone, some as above, some more brown, crystalline.
 1493-1503 Limestone, brown, crystalline, finely phosphatic.
 1503-49 Limestone, gray, densely crystalline, fossiliferous, phosphatic, with small residue of shale.
 1549-78 Slightly more argillaceous than above.
 1578-91 Limestone, crystalline, phosphatic and fossiliferous, very little shale.
 1591-1646 Limestone, gray, densely crystalline, fossiliferous and phosphatic; trace of shale; trace of replacement chert at 1624-40.
 1646-93 Limestone, brownish-gray, densely crystalline, fossiliferous and phosphatic, very small residue of shale; trace of replacement chert.
 1693-1718 Limestone, brown, very densely crystalline, phosphatic; little argillaceous, gray, with replacement chert.

Lexington (Trenton)

- 1718-30 Limestone, more fine-grained, brown, dense, slightly argillaceous.
 1730-48 Limestone, very slightly argillaceous, sublithographic, brown.
 1748-81 Limestone, very fine grained, gray-brown, argillaceous.
 1781-1800 Limestone, finely crystalline, gray-brown, finely phosphatic, clean; very small residue.
 1800-19 Limestone, much darker, slightly more argillaceous, phosphatic; trace of replacement chert.
 1819-65 Limestone, densely crystalline, brown-gray; trace argillaceous and slightly phosphatic.
 1865-84 Limestone, pale-gray, crystalline, fossiliferous and phosphatic; trace of chert.
 1884-96 More chert than above; some gray, translucent.

Chazy-Black River (Tyrone at top)

- 1896-1901 Contact with Tyrone, very fine grained, lithographic, light-cream to tan, with trace of chert in residue.
 1901-24 Limestone, tan, lithographic to finely crystalline; trace of brown translucent chert and bentonitic green shale.
 1924-34 Limestone, very finely lithographic, with chert.
 1934-2016 Limestone, lithographic, tan to slightly gray, with traces of dolomite.
 2016-39 Dolomite, slightly calcareous, light-tan, fine-medium crystalline.
 2039-85 Limestone, gray-tan, very slightly argillaceous.
 2085-2126 Limestone, very fine grained, light-tan.
 2126-60 Limestone, light-tan, very fine grained; trace of tan chert.

- 2160-65 Limestone, tan, fine-grained, trace crystalline; trace of chert.
 2165-70 Limestone, tan, as above; some white, dense, to slightly dolomitic.
 2170-88 Limestone, tan, dense; trace of dolomite.
 2188-2256 Limestone, fine-grained, light-tan; some slightly greenish and argillaceous.
 2256-93 Limestone, more gray than tan, fine-grained, but not lithographic, argillaceous.
 2293-2327 Limestone, very fine, lithographic, cream to bright-brown.
 2327-52 Limestone, tan, dolomitic.
 2352-72 Limestone, brownish-gray, streaked with dark-gray.
 2372-91 Limestone, with traces of dolomite rhombs, brown.
 2391-2428 Limestone, tannish-gray, very slightly argillaceous, fine-grained.
 2428-41 Limestone, very smooth lithographic brown.
 2441-57 Limestone, fine-grained, light-gray.
 2457-80 Limestone, very finely dolomitic, gray, slightly argillaceous.
 2480-92 Limestone, very fine grained, some lithographic.
 2492-2515 Limestone, very finely dolomitic, gray.
 2515-33 Limestone, more argillaceous, gray-brown, slightly banded.
 2533-88 Limestone, slightly argillaceous and finely dolomitic, gray.
 2588-94 Limestone, very dolomitic and argillaceous, dark-brown; residue is finely porous dark shale, some almost silty.

Top St. Peter 2596

- 2594-2601 Some dolomitic limestone, as above; mainly sandstone, slightly dolomitic, very fine grained, grains rounded, enclosing occasional coarse rounded and frosted grains.
 2601-07 Some dark dolomitic and argillaceous limestone, as above.
 2607-14 Sandstone, dolomitic, well sorted, fine-grained, enclosing occasional medium to coarse rounded and frosted grains.
 2614-21 As above, with more of the coarser grains; occasional fragments of dark dolomitic shale.
 2621-32 Dolomite, sandy and argillaceous, brown to dark-gray; residual sand, some almost silty, some very coarse rounded and frosted; shale residue porous, gray, banded.
 2632-38½ Sandstone, dolomitic, more coarse-grained than above; still some gray shale and trace of gray dense chert.
 2638½-44 Sandstone, medium to coarse grains, friable, rounded and frosted, with occasional grains showing secondary enlargement.
 2644-57 Sandstone, very poorly sorted, very fine to coarse, angular to rounded and frosted or broken.

Top Knox 2657

- 2657-62 Dolomite, very fine, crystalline, light-tan; trace of dense chert enclosing some of the sand grains.
 2662-68 Fragments blown out of the hole: sucrose, brown dolomite, with trace of sand and green shale.
 2668-74 Dolomite, very fine grained, dense; trace of chert, white, very finely porous; trace of rounded and frosted sand, some chert-cemented.
 2674-93 Dolomite, very fine grained to medium-crystalline, slightly sucrose; trace of translucent chert; clusters of sand and silt in residue.
 2693-2704 Dolomite, very finely crystalline, light-tan, very slightly silty; chert, dense, white to finely porous.
 2704-10 Dolomite, as above; 30% chert.
 2710-16 Dolomite, pale grayish-tan, slightly coarser than above, finely sucrose; rare glauconite in dolomite; chert, pale gray-white to pink, trace of druse, and some very finely dolomitic chert.
 2716-21 Dolomite, very dense, fine-crystalline, creamy-gray; chert, 10%, dense, white to chalky; trace of crystalline quartz.
 2721-28 Dolomite, as above; some sand, coarse, rounded and frosted, with some grains showing secondary crystal growth; trace of pinkish-tan chert.
 2728-34 Dolomite, very fine, cream, less dense than above; trace of rotten chert, and coarse sand and pyrite.
 2734-41 Dolomite, white, medium-crystalline to coarse, porous; trace of coarse sand and pyrite.

- 2741-47 Dolomite, very fine grained, white, rotten-looking; very small residue; rare sand grains and pyrite.
- 2747-52 Dolomite, very fine and very coarse, cream; chert, 5%, rotten, white, with some pale-greenish, claylike, finely pyritic, with occasional very large dolomoids.
- 2752-57 Dolomite, very fine and very coarse, cream; 30% residue of sandstone, quartz- or pyrite-cemented, medium-grained, angular; occasional large rounded and frosted grains; chert, rotten, chalky to pinkish-gray, fresh.
- 2757-63 Dolomite, pale creamy-gray, medium-coarse crystalline; chert, dense, white to chalky; some sand, as above.
- 2763-69 Dolomite, dark-gray, coarse-crystalline, vugular; trace of chalky-white chert, sand and pyrite, and fine green shale, enclosing sand grains.
- 2769-76 Dolomite, light-gray, medium-crystalline, sucrose; much chert, chalky-white, dense to finely dolomoidic.
- 2776-83 Dolomite, as above, less chert; trace of green pyritic shale.
- 2783-89 As above, with still less residue.
- 2789-93 Dolomite, light-tan, medium-coarse crystalline, porous; small residue of chalky-white chert, sand, fine green shale, and pyrite.

Well No. 76 (19). South Central Petroleum No. 1 James Smith, NE corner NW SW 22-P-68, elevation 1,201 feet, Estill County.

LOWER MISSISSIPPIAN

- 0-22 Siltstone, slightly argillaceous, pale-gray.
- 22-37 Siltstone, more argillaceous than above.
- 37-55 Siltstone, argillaceous, some very slightly calcareous and green.
- 55-87 Siltstone, very argillaceous, gray, occasional streak slightly calcareous.
- 87-135 Shale, very slightly silty, trace calcareous, with some red clay at 115-20.
- 135-330 Shale, very dark gray, very slightly silty; rare fragments calcareous.
- 330-431 Shale, coarse-grained, almost silty, very dark gray.
- 431-47 Shale, coarse-grained, dark-red, with some green.
- 447-59 Shale, green, coarse-grained.

New Albany

- 459-562 Shale, black, carbonaceous, with spores.
- 562-76 Shale, as above, with some green shale interbedded.
- 576-85 Shale, some black, much green, fissile and pyritic.

SILURIAN

Lockport

- 585-89 Contact with dolomite, fine-medium, sucrose to crinoidal; much pyrite and pyritic sand.
- 589-97 Dolomite, medium-crystalline, light-gray, very vugular; some pyrite.
- 597-602 As above, slight oil stain.

Clinton

- 602-21 Shale, very finely silty, pyritic, pale gray-green.
- 621-31 Shale, some still slightly dolomitic and very finely silty.
- 631-48 Shale, green, fissile.
- 648-90 Shale, green, fissile, with occasional streaks of red shale.
- 690-720 Shale, very fine, some fissile, some clayey.
- 720-36 Shale, as above, with much glauconite.
- 736-42 Dolomite, medium-crystalline, cream to green, some argillaceous, some glauconitic.
- 742-47 Some dolomite, as above, with shale, both red and green; glauconite.
- 747-57 Shale, green, some fissile.
- 757-70 Dolomite, slightly argillaceous, some densely crystalline, streaked with dead oil; trace of hematite oolites.
- 770-86 Some dolomite, argillaceous; mainly green fissile shale.

Brassfield

- 786-97 Dolomite, yellow, crystalline, with hematite oolites enclosed; much shale.
- 797-805 Dolomite, very coarsely crystalline, porous, pyritic, with little interbedded shale.

- 805-14 Dolomite, gray-tan, medium-crystalline, vugular, porous.
 814-20 Dolomite, medium-crystalline, gray to slightly green, very slightly argillaceous and glauconitic.

ORDOVICIAN

Richmond

- 820-42 Shale, dolomitic, gray-green, fine-grained.
 842-54 Same, with more gray and mottled limestone.
 854-83 Dolomite, argillaceous, as above, with trace of silt; some gray mottled dolomite.
 883-947 Dolomite, bright-green, silty, and gray, argillaceous; some trace red at 898.

Maysville

- 947-60 Dolomite, as above, with some dark limestone.
 960-73 Dolomite, silty, green, argillaceous, some slightly calcareous.
 973-80 Limestone, very dark gray, argillaceous, fine-grained.
 980-94 As above, with trace of chert.
 994-1029 Limestone, very dark gray, fine-grained; some very finely phosphatic.
 1029-57 Limestone, fossiliferous and phosphatic, with some greenish and silty.
 1057-81 Limestone, gray to green, finely argillaceous and slightly silty.
 1081-85 Some dark-gray, slightly argillaceous, fine and fossiliferous limestone.
 1085-1131 Limestone, gray, fossiliferous, phosphatic; some interbedded calcareous, fossiliferous shale; trace of replacement silica.
 1131-55 Limestone, as above, without chert.

Garrard

- 1155-74 Limestone, crystalline, fossiliferous and phosphatic; some yellow, crystalline; some interbedded calcareous shale.
 1174-86 Limestone, very fossiliferous, crystalline, light-gray; little interbedded silt and shale.
 1186-1208 Siltstone, to fine sand, calcareous and argillaceous, light-gray.
 1208-50 Limestone, gray, very fossiliferous, slightly phosphatic and silty.

Cynthiana-Million

- 1250-94 Limestone, gray, crystalline, very fossiliferous and phosphatic, very clean.
 1294-1323 As above, with occasional pink calcite rhombs.
 1323-1450 Limestone, gray, fossiliferous and phosphatic, with some interbedded calcareous shale.
 1450-65 Limestone, very fossiliferous, phosphatic, clean, light-gray.
 1465-1502 Limestone, gray, fossiliferous and phosphatic; trace of replacement chert.
 1502-25 As above, with some cream, very clean, crystalline limestone.
 1525-50 Limestone, gray, more densely crystalline, finely phosphatic, with mottled gray chert and trace of calcareous gray shale.

Lexington

- 1550-72 Limestone, brown-gray, densely crystalline to sublithographic; trace of chert.
 1572-89 Limestone, densely crystalline to sublithographic, with trace of brownish-gray shale in residue.
 1589-1609 Limestone, browner, sublithographic, some fossiliferous; trace of calcareous shale.
 1609-20 Limestone, densely crystalline, light-tan, clean, very slightly phosphatic.
 1620-72 Limestone, fine, gray-brown, dense, slightly argillaceous.
 1672-78 Limestone, gray, tan, some crystalline, fossiliferous, some slightly argillaceous.
 1678-1716 Limestone, crystalline, very fossiliferous and phosphatic, with replacement chert.
 1716-28 Limestone, as above, with trace of fine silt.

High Bridge (top Tyrone)

- 1728-34 Limestone, lithographic, light-tan; chert, same color.
 1734-45 Limestone, bentonitic, gray-green.
 1745-69 Limestone, tan, lithographic, rare fragment finely crystalline; bentonite and trace of tan chert.

- 1769-90 Limestone, very argillaceous, (30% residue); fine, light-colored shale.
 1790-1805 Limestone, fine, yellow-tan, very slightly dolomitic, with gray-green bentonite.
 1805-27 Limestone, very finely dolomitic, light-tan.
 1827-42 Limestone, fine, cream to brown.
 1842-57 Dolomite, calcareous, finely crystalline, light-tan, sucrose.
 1857-76 Limestone, very fine grained, tan.
 1876-1910 Limestone, some lithographic, some slightly shaly, more gray than above.
 1910-46 Limestone, very fine to fine-crystalline; trace of dolomite.
 1946-90 Limestone, fine to finely crystalline, light-tan; trace of chert, same color as limestone.
 1990-2001 Limestone, very fine, brown, some argillaceous.
 2001-23 Limestone, as above; trace of replacement chert.
 2023-28 Limestone, lithographic, tan to gray, very slightly argillaceous; trace of very fine rounded sand in residue.
 2028-2148 Limestone, lithographic, tan to brown, very slightly argillaceous.
 2148-61 Limestone, very dolomitic, light-tan.
 2161-80 Limestone, very dolomitic, light-tan, fine-grained.
 2180-92 Limestone, subcrystalline, slightly more gray.
 2192-2219 Limestone, fine to subcrystalline, gray-tan.
 2219-73 Limestone, brown to dark-gray, sublithographic; trace argillaceous, with rare dolomolds in shale.
 2273-97 Limestone, finely dolomitic and slightly argillaceous, gray.
 2297-230 Limestone, very smooth, brown, lithographic.
 2302-63 Limestone, very smooth, lithographic, as above, interbedded with some grayer and slightly shaly.
 2363-2410 Limestone, increasingly dolomitic with depth, fine-grained, gray-brown.
 (St. Peter)
 2410-25 Dolomite, fine, gray-tan, with fine rounded sand and rare coarser grains enclosed; trace of dark shale.
 2425-31 Dolomite, fine to medium crystalline, creamy-gray; sand clusters, rounded; trace of dark shale.
 2431-49 As above, with more dark shale.
 2449-56 Sandstone, dolomitic, fine to very coarse (50% residue), some secondary crystallization.
 2456-68 Dolomite, sandy (20% sand), with trace of green shale.

Well No. 77 (20). South Central Petroleum Company No. 1 Hood Wise, CNL section 21-P-68, elevation 1,237½ feet, Estill County.

MISSISSIPPIAN

Greenbrier ("Big Lime")

- 21-37 Limestone, fossiliferous, cream, rubbly.
 37-53 Limestone, cream, fine-crystalline, with irregular oolites.
 53-75 Limestone, fine-grained, dense, cream to tan, almost earthy in texture.
 75-90 Limestone, as above, with cream, dense chert in top and pink, translucent chert in base.
 90-120 Limestone, very finely dolomitic; trace of pink translucent chert.

Lower Mississippian

- 120-75 Siltstone, slightly argillaceous, calcareous, gray-green; much glauconite.
 175-214 Siltstone, very slightly argillaceous, coarse-grained, almost fine-sand size.
 214-320 Shale, slightly silty, dark-gray, less silt with depth.
 320-56 Shale, dark-gray, coarse-grained.

Fault-Loss of 60 feet of section

- 356-494 Shale, dark-gray, coarse-grained.
 494-509 Shale, dark-gray and maroon, fine-grained.
 509-21 Shale, greenish-gray, coarse to fissile.

New Albany

- 521-628 Shale, black, coarse-grained, carbonaceous and pyritic; spores.
 628-49 Shale, as above, with some green pyritic shale.

SILURIAN

Clinton

- 649-79 Shale, slightly silty, gray-green, some fissile.
679-770 Shale, greenish-gray, fissile; rare red fragments.
770-82 Shale, as above, with trace of very glauconitic dolomite.

Estimated top of Brassfield at 835 feet.

Well No. 78 (23). South Penn. Oil Company and Petroleum Exploration No. 1 Wiseman and Cornett, section 23-P-67, elevation 716 feet, Estill County.

SILURIAN

Clinton

- 15-45 Shale, slightly silty and dolomitic, green.
45-115 Shale, green and maroon, fine-grained.
115-25 Shale, bright-green, fissile.
125-35 Shale, green and some red; much glauconite.
135-55 Shale, green and red, some dolomitic and much glauconite.
155-65 Limestone, yellow to gray, mottled, crystalline, pyritic; some interbedded shales (Oldham).
165-80 Shale, green and maroon, little dolomite, as above, with glauconite.
180-95 Dolomite, argillaceous, green and brown, glauconitic and pyritic, with green shale.

Brassfield

- 195-220 Dolomite, gray, coarsely crystalline, fossiliferous; slightly oil-stained.
220-25 Dolomite, light-gray, glauconitic; some slightly silty and argillaceous.

ORDOVICIAN

Richmond

- 225-35 Dolomite, very argillaceous, gray-green, slightly silty.
235-95 Dolomite, gray, crystalline, fossiliferous and phosphatic; trace argillaceous and slightly silty.
295-385 Siltstone, dolomitic and argillaceous, green; traces of red.

Maysville

(Gilbert)

- 385-95 Limestone, slightly dolomitic, argillaceous, very dark gray-brown; trace of replacement chert.

(Tate)

- 395-430 Limestone, very fine grained, gray, finely phosphatic, slightly argillaceous; trace of replacement chert.
430-45 As above, with trace of fine siltstone.
445-55 Limestone, very fine grained, argillaceous, greenish-gray.
455-70 Siltstone, slightly argillaceous and dolomitic, greenish-gray.
475-85 Limestone, slightly silty and argillaceous, dark-gray, slightly fossiliferous.
495-500 Siltstone, slightly dolomitic and argillaceous, green.

(Fairmount)

- 510-25 Limestone, slightly argillaceous and phosphatic, dense; trace of replacement chert.
525-60 Limestone, more crystalline than above, with interbedded dark calcareous shale.
560-75 Limestone, as above, with trace of silt.
575-90 More silt than above.
590-600 Limestone, gray and yellow, coarsely crystalline; trace of silt.

Garrard

- 600-25 Siltstone, coarse-grained, calcareous and argillaceous, gray.
625-45 Limestone, gray, crystalline, very fossiliferous and phosphatic, slightly silty.
645-60 Limestone, gray, very fossiliferous and phosphatic.
660-75 Limestone, as above, with trace of silt.

Cynthiana-Million

- 675-85 Limestone, very fossiliferous, gray, with much dark calcareous shale.
 685-755 Limestone, very fossiliferous, gray, phosphatic; some porous.
 755-800 Limestone, more densely crystalline, gray, argillaceous, with fossils, phosphate and replacement chert.
 800-50 Limestone, as above, with much more dark calcareous shale.
 850-70 Limestone, clean, crystalline, very fossiliferous, gray, phosphatic.
 870-945 Limestone, more dense and argillaceous, slightly phosphatic; trace of replacement chert.

Lexington

- 945-1030 Limestone, very finely argillaceous, dense, brown to gray-brown; rare replacement chert.
 1030-75 Limestone, very fine grained, dense, gray, slightly argillaceous.
 1075-95 Limestone, crystalline, gray, fossiliferous and phosphatic; trace of shale.
 1095-1150 Limestone, coarsely crystalline, fossiliferous and phosphatic; chert, gray-white, fossiliferous.

Chazy-Black River (Tyrone at top)

- 1150-70 Limestone, very fine grained, tan; much bentonite and some tan chert.
 1170-1200 Limestone, very fine, light-tan to greenish-gray, bentonitic.
 1200-1545 Limestone, very fine grained, brown; rare dolomite rhombs; rare streaks slightly argillaceous.
 1545-1810 Limestone, slightly more dolomitic, very fine grained, with streaks argillaceous and slightly darker than above (Murfreesboro lithology).

(St. Peter)

- 1810-68 Sandstone, fine- to medium-grained, friable to quartz-cemented, poorly sorted.

CAMBRIANKnox

- 1868-2050 Dolomite, with much dense dolomoldic chert; trace of silt.

Well No. 79 (25). Trenton Development Company No. 1 H. G. Bicknell, one mile east of Beaver Pond Church on north side of highway, 24-N-66, completed Dec. 1946, Estill County.

Sample gap from 0-78 feet.

SILURIANLockport

- 78-83 Shale, black, carbonaceous, with spores and pyrite; trace of dolomite, gray, densely crystalline, and pyritic.
 83-88 Dolomite, gray, medium-crystalline, slightly vugular.
 88-93 Dolomite, very fine, white, porous.
 93-98 Dolomite, very light, crystalline, vugular to tight, gray, slightly argillaceous.

Clinton

- 98-103 Shale, green, some slightly dolomitic, some pyritic, some clayey.
 103-246 Composite sample, probably represents last screw above 246: shale, green, glauconitic, plus dolomite, tightly crystalline, glauconitic, and pale gray-green.
 246-52 Clay, green and some red.
 252-58 Shale, green, fissile, some slightly dolomitic; trace of pyritic dolomite.
 285-303 Shale, green, and some very densely crystalline dolomite.

Brassfield

- 303-08 Dolomite, coarsely crystalline, dense, crinoidal; trace of chert and pyrite.
 308-45 Sample gap.

ORDOVICIAN

Richmond-Maysville

- 345-50 Shale, red and green.
- 350-68 Shale, bright-green, hard.
- 368-423 Composite sample: shale, dolomitic, gray, streaked with fossiliferous, shaly limestone.
- 423-523 Composite sample: limestone, brownish-gray, finely crystalline to slightly argillaceous, fossiliferous.
- 523-70 Limestone, crystalline, fossiliferous, phosphatic, interbedded with dark-gray calcareous shale.

Garrard (top probably at 690)

- 570-735 Composite sample, probably from last screw: represents Garrard siltstone.

Million

- 735-85 Composite sample, probably covering part of the Garrard sample from last screw: limestone, very fossiliferous, crystalline and phosphatic; trace shaly.
- 785-835 Sample gap.
- 835-78 Limestone, crystalline, phosphatic and fossiliferous, with interbedded shale.
- 878-85½ Limestone, very cleanly crystalline and phosphatic.
- 885½-93 Limestone, very fossiliferous and phosphatic.
- 893-900 Limestone, more densely crystalline than above, slightly argillaceous.
- 900-15 Limestone, with very finely disseminated phosphate; trace of gray chert.

Cynthiana

- 915-35 Limestone, more fine-grained, dense, crystalline, gray-brown, less phosphatic and more shaly than above.
- 935-40 Limestone, as above, but more argillaceous.
- 940-50 Some limestone, as above; some brown, densely crystalline.
- 950-90 Limestone, very fossiliferous, phosphatic, interbedded with dark, dense, calcareous shale.
- 990-1000 Limestone, very fossiliferous and phosphatic, crystalline, green to brown; little calcareous shale.
- 1000-20 Limestone, more dense and argillaceous.
- 1020-30 Limestone, tan, densely crystalline.
- 1030-40 Limestone, brown, densely crystalline, some finely phosphatic.
- 1040-50 Limestone, very fossiliferous and phosphatic; trace of shale.
- 1050-55 As above, plus some very dense, fine-grained, brown.

Lexington

- 1055-65 Limestone, dense, brown, as above, plus some brown, more crystalline, fossiliferous and phosphatic.
- 1065-80 Limestone, brown, sublithographic; trace of tan chert.
- 1080-90 Limestone, brown, very dense to very finely crystalline, slightly fossiliferous; only trace of phosphate.
- 1090-1110 Limestone, some slightly dolomitic, some slightly argillaceous; chert, translucent, tan.
- 1110-25 Limestone, very finely crystalline, dense; trace of brown chert; ostracods.
- 1125-30 Limestone, as above, plus some more coarsely crystalline and phosphatic.
- 1130-55 Limestone, more crystalline and fossiliferous, gray-brown; trace of dolomite.
- 1155-65 Limestone, crystalline, fossiliferous and phosphatic, brown, interbedded with calcareous shale.
- 1165-70 Limestone, brown, finely crystalline; trace of dolomite, very slightly argillaceous.
- 1170-90 Limestone, dense, brown, partly argillaceous.
- 1190-1210 Limestone, densely crystalline, brownish-gray, fossiliferous.
- 1210-20 Limestone, very densely crystalline, brown, with some interbedded argillaceous, darker; little finely disseminated phosphate.
- 1220-30 Limestone, more phosphatic, with a trace of fossiliferous chert.

- 1230-40 Limestone, gray, crystalline, phosphatic, with interbedded argillaceous limestone; trace of chert, as above.
 1240-50 Limestone, cream to light-gray, crystalline, very fossiliferous, finely phosphatic; chert, and a trace of calcareous shale.

Tyrone ("Pencil Cave" at top) - Chazy-Black River

- 1250-55 Bentonite, and some very fine limestone.
 1255-60 Limestone, fine, brown, lithographic, bentonitic; trace of brown translucent chert.
 1260-70 Limestone, fine, bentonitic; trace of chert.
 1270-80 Limestone, tan, fine to subcrystalline; trace of translucent brown chert.
 1280-1300 More chert than above; some dolomite, very hard.
 1300-10 Limestone, lithographic, brown; trace of dolomite.
 1310-25 Same plus some greenish-brown, argillaceous limestone.
 1325-30 Limestone, lithographic; trace of dark shale.
 1330-50 Limestone, brown, lithographic to very finely crystalline.
 1350-60 Limestone, cream to tan, lithographic.
 1360-70 Sample gap.
 1370-80 Limestone, very finely dolomitic, brown.
 1380-1400 Limestone, very clear, brown, fine.
 1400-05 Limestone, some finely dolomitic; trace of dark shale.
 1405-35 Limestone, as above; some green shale.
 1435-45 Limestone, slightly dolomitic, clear brown.
 1445-95 Sample gap.
 1495-1500 Limestone, very slightly dolomitic, brown.
 1500-10 Sample gap.
 1510-20 Limestone, cream to tan, lithographic.
 1520-25 Limestone, finely dolomitic, brown; trace of shale.
 1525-30 Limestone, very fine, brown.
 1530-40 Limestone, slightly dolomitic.
 1540-1605 Limestone, brown, fine to subcrystalline.
 1605-50 Limestone, very fine, occasional fragments of dark shale.
 1650-60 Limestone, very fine grained, some very light and smooth.
 1660-1725 Limestone, very fine, smooth, brown; trace of darker shaly limestone.
 1725-1820 Limestone, very fine, brown, with traces of dolomite.
 1820-50 Limestone, very finely dolomitic, dark-brown, with a trace of black shale.
 1850-85 Limestone, very dark brown and slightly argillaceous.
 1885-95 Limestone, brown, fine-grained; some greenish-gray, argillaceous.
 1895-1920 Limestone, dark-brown, with a trace of dark shale.
 1920-35 Limestone, very finely dolomitic and slightly shaly, dark-brown.
 1935-45 Limestone, as above, plus dolomite, tan, very finely crystalline.
 1945-50 Dolomite, tan, very fine, enclosing slightly larger grains.
 1950-60 Limestone, very dark, slightly argillaceous and dolomitic.
 1960-70 As above, plus a trace of fine silt.

(St. Peter)

- 1970-77 Dolomite, fine, very dark brown, some fine silt; trace of sand.
 1977-82 Sandstone, dolomitic, very fine grained, some greenish-gray shale.
 1982-87 Sandstone, more coarse-grained; sand is dolomitic.
 1987-91 Dolomite, very finely crystalline, gray-tan, some dark-green shale.

CAMBRIAN

Knox

- 1991-96 Dolomite, as above, with some chert.
 1996-99 Dolomite, very finely crystalline, tan, pyritic.
 1999-2005 Dolomite, very finely broken, tan, finely crystalline, porous; trace of sand and very fine silt.
 2005-10 Dolomite, as above, with trace of translucent white chert.
 2010-17 Dolomite, as above, with trace of quartz silt.
 2017-19 $\frac{1}{2}$ Sandstone, dolomitic, fine-grained.
 2019 $\frac{1}{2}$ -31 Dolomite, very fine grained, but badly iron-stained; residue shows fine chert, translucent, hard, with a trace of silt.
 2031-33 Dolomite, as above; trace of very fine sand.
 2033-35 Dolomite, as above, evenly crystalline (fluffy).

- 2035-37 Dolomite, fine-grained, very finely silty; occasional sand grains; some green shale.
- 2037-42 Dolomite, finely crystalline, slightly silty; occasional broken, rounded and frosted sand grains; trace of green shale.
- 2042-44 Dolomite, very fine, enclosing fine, dark pyrite and large broken, rounded and frosted sand grains.
- 2044-57 Dolomite, tan, very densely crystalline; some pyrite; tan, translucent chert, some dull-white chert; trace of broken sand.
- 2057-65 Dolomite, almost white, very finely crystalline, enclosing rounded and frosted sand, porous.
- 2057-63 (S. L. M.) Dolomite, cream, medium-crystalline; no evidence of porosity; chert, translucent to quartzose, pale-gray.
- 2063-65 Dolomite, cream, medium-crystalline; small residue of finely broken white chert and pale-green shale; sand rare.
- 2065-67 Dolomite, cream, densely crystalline; very small residue of chert and rare sand grains.
- 2067-72 Missing.
- 2072-74 Dolomite, cream, medium-crystalline; very small residue of translucent chert and pale-green shale.
- 2074-79 Dolomite, as above; very small residue; pyrite, green shale, and fine silt.
- 2079-82 Dolomite, cream, finely crystalline; very small residue of broken, rounded and frosted sand grains.
- 2082-85 Dolomite, as above; residue very fine sand.
- 2085-88 Dolomite, as above; 15% finely broken sand, originally fine to medium, rounded and frosted.
- 2088-94 Dolomite, pale-gray, very finely crystalline; residue is 15% of original sample; chert, pale-gray, translucent, some drusy, with fresh crystalline quartz; rare rounded and frosted sand grains.
- 2094-2100 Dolomite, finely crystalline, cream; chert, translucent, pale-gray, with occasional dolomolds; rare sand grains and pyrite.
- 2100-05 Dolomite, light-tan, less fine than above; chert, more chalky-white.
- 2105-10 Dolomite, as above; almost no chert.
- 2110-23 Dolomite, light-tan, medium-crystalline; chert is very quartzose, light-gray; some broken sand and pyrite; very small residue.
- 2123-24 Dolomite, cream, finely crystalline; very small residue of fine chert.

Well No. 80 (18). Wood Oil Company No. 1 Paul Rodgers, SE corner SW SE section 4-O-68, elevation 785 feet, Estill County.

DEVONIAN

Sellersburg

- 249-57 Dolomite, medium-crystalline, tan, dense to vugular; trace of translucent chert.

SILURIAN

Lockport

- 257-77 Dolomite, gray, crinoidal, densely crystalline; trace of argillaceous dolomite.
- 277-301 Dolomite, very silty, slightly argillaceous, gray.
- 301-12 Dolomite, very light gray, vugular and clean.
- 312-19 Dolomite, very silty and argillaceous, fine-grained, gray.

Clinton

- 319-40 Shale, greenish-gray, fissile, fine-grained.
- 440-45 Shale, bright-green and maroon, fine-grained.
- 445-51 Dolomite, glauconitic, with some shale (Oldham).
- 451-90 Shale, green, fine-grained; maroon in top five feet.
- 490-500 Shale, green, with some coarse, yellow and white dolomite; hematite oolites.

Brassfield

- 500-26 Dolomite, yellow and white, coarsely crystalline, pyritic; trace argillaceous.
- 526-34 Dolomite, as above, with dull to translucent chert; some glauconite.

ORDOVICIAN

Richmond

- 534-618 Composite sample: shale, slightly dolomitic, silty, gray-green.
618-78 Composite sample: shale, silty as above.

Maysville

(Gilbert)

- 678-83 Limestone, argillaceous, dark gray-brown, fossiliferous.
683-98 Siltstone, argillaceous, dolomitic; trace of fossiliferous limestone.

(Tate)

- 698-774 Composite sample: limestone, slightly argillaceous, dark-gray, with ostracods; trace of green shale.
774-804 Siltstone, very argillaceous, calcareous, green, with trace maroon.

(Fairmount)

- 804-68 Composite sample: limestone, slightly argillaceous, gray, crystalline, fossiliferous and phosphatic; partly silicified bryozoans.
868-912 Limestone, slightly argillaceous; some coarsely crystalline, gray, with yellow calcite.

Garrard

- 912-31 Limestone, gray, with yellow calcite, coarsely crystalline, interbedded with calcareous and argillaceous siltstone.
931-56 Limestone, crystalline, white to yellow; some gray, phosphatic, fossiliferous.
956-61 Siltstone, argillaceous and calcareous, gray.

Cynthiana-Million

- 961-1120 Composite sample: limestone, very fossiliferous, phosphatic, gray, with some calcareous gray shale.
1120-1260 Composite sample: limestone, very fossiliferous, crystalline; trace of fissile shale.

Lexington

- 1260-1330 Composite sample: limestone, very fine grained, dense, with ostracods.
1330-1450 Composite sample: limestone, fossiliferous and phosphatic, crystalline; trace of replacement chert and dark shale.
1450-70 Limestone, as above; trace of fossiliferous chert.

Chazy-Black River (Tyrone at top)

- 1470-85 Limestone, very fine, lithographic, creamy-gray; trace of bentonite.
1485-90 Limestone, slightly argillaceous, gray; some bentonite.
1490-1932 Large composite samples: limestone, very fine grained, tan.
1932-67 Limestone, very fine grained, lithographic, almost white to dark-brown; rare dolomite rhombs enclosed.
1967-2025 Composite sample: limestone, very fine, gray-tan, trace argillaceous.
2025-85 Limestone, very dark, argillaceous, fine-grained. (Murfreesboro lithology)
2085-2175 Limestone, finely dolomitic, gray; some banded, with trace of silty, calcareous shale. (Joachim lithology)

(Wells Creek—St. Peter)

- 2175-88 Dolomite, pale-gray, fine-grained, sandy; sand, well-sorted, fine rounded grains, with rare larger rounded and frosted grains.
2188-2204 Sandstone, slightly dolomitic, gray, well-sorted, very fine, rounded, with rare coarse grains.
2204-06 Dolomitic sand, as above, with shale, brown to black, and some pyrite.
2206-30 Composite sample: dolomite, sandy and argillaceous, gray.

CAMBRIAN

Knox

- 2230-2375 Composite sample: dolomite, very fine grained, cream; trace of dense white chert, some very finely porous.
2375-85 Dolomite, dark-gray, very coarsely crystalline, dense; chert, white to chalky, dolomoldic.

2385-2400	Dolomite, clean, light-gray, very coarsely crystalline.
2400-30	Dolomite, coarsely crystalline, cream; trace of white chert; trace of rounded and frosted sand.
2430-40	Sand, dolomitic, very poorly sorted; trace of gray shale.
2440-2514	Composite sample: dolomite, cream, coarsely crystalline; chert, white, translucent, to banded druse, some gray, quartzose chert; trace of rounded sand grains.
2514-25	Dolomite, as above; chert, dense, to chalky-white to gray, quartzose; some poorly sorted sand.
2525-33	Dolomite, coarsely crystalline, pale-gray; trace of chalky chert with rare dolomolds; trace of poorly sorted sand.
2533-73	Composite sample: dolomite, pale-gray; chert, white to pale-gray, quartzose.
2573-2651	Dolomite, as above; chert, 5%, dull-white to gray, quartzose; trace of sand.

Well No. 81 (62). Keeneland Race Track No. 1 Fee (drilled for water), section 11-S-59, Fayette County.

ORDOVICIAN

Lexington

15-25	Limestone, very fossiliferous and argillaceous; trace of chert.
25-30	Limestone, very fossiliferous and phosphatic, with some interbedded dark calcareous shale; trace of chert.
30-70	Limestone, very fossiliferous and phosphatic, little interbedded gray calcareous shale; trace of chert.
70-155	Limestone, as above, with rare silicified fossils.
155-70	Limestone, as above, with more of the silicified fossils.
170-75	Shale, calcareous, very dark gray.
175-85	Shale, as above, and some crystalline limestone with red inclusions.
185-210	Limestone, gray, fossiliferous and phosphatic, with some interbedded calcareous shale and many of the fossils silicified.

Chazy-Black River (estimated top at 220 feet)

430-570	Limestone, fine, lithographic, brown, with occasional fragments slightly argillaceous, gray-brown.
570-630	Limestone, lighter in color than above, and streaked with fine-grained dolomite.
630-50	Limestone, very smooth, lithographic, brown.
650-735	Limestone, slightly dolomitic, and some slightly argillaceous, brown.
735-55	Limestone, brown, lithographic.

(St. Peter)

755-65	Dolomite, medium to finely crystalline, enclosing sand grains and some green shale.
765-80	Dolomite, light-gray, enclosing some fine silt and rare rounded and frosted quartz grains.

CAMBRIAN

780-800	Dolomite, white, finely crystalline, some medium-crystalline; much translucent white chert; rare silt and sand.
800-50	Dolomite, very finely crystalline; little fine silt and rare sand grains enclosed; trace of chert.
850-900	Dolomite, white, finely crystalline, with occasional layers more coarsely crystalline; trace of chert; rare sand.
900-40	Dolomite, coarsely crystalline, with chalky-white and slightly dolomoidic chert.
940-60	Dolomite, as above, with occasional chert oolites.
960-90	Dolomite, white, coarsely crystalline; rare translucent chert.
990-1005	Dolomite, as above, with few rounded and frosted sand grains enclosed.

Well No. 82 (60). Walnut Hall Farm No. 1 Fee (drilled for water), section 4-T-61, elevation 876 feet, Fayette County. (Incomplete set of samples)

ORDOVICIAN

Chazy-Black River

475-540	Limestone, gray-tan, very fine grained; rare streaks of dolomite and slightly argillaceous limestone.
540-58	Limestone, tan, lithographic.
558-90	Limestone, very dolomitic, cream to light-tan.
590-600	Limestone, white, lithographic; trace of dolomite.
600-15	Limestone, slightly dolomitic, light-tan, fine-grained.
615-75	Limestone, lithographic, light-tan, with occasional streaks of slightly argillaceous, grayish-brown limestone.
675-92	Dolomite, very light gray and finely crystalline.
692-700	Limestone, smooth, lithographic, light-brown.
700-58	Dolomite, slightly calcareous, finely crystalline, brown to gray, and slightly argillaceous.

(St. Peter)

758-75	Dolomite, very finely silty, enclosing some sand, poorly sorted.
775-88	Sandstone, white to pale-pink, poorly sorted, mainly coarse-grained, friable.

CAMBRIAN

788-820	Dolomite, white, very finely crystalline, and some coarsely crystalline; trace of green shale; trace of chalky chert.
820-30	Dolomite, white, very coarsely crystalline; no chert.
830-78	Dolomite, white, coarsely crystalline, porous.
878-82	Sandstone, very coarse grained, rounded and frosted, with some secondary crystal growth.
882-900	Dolomite, cream, finer than above; rare sand grains and some white chert.
900-50	Dolomite, coarsely crystalline, white; no chert.
950-95	Dolomite, coarsely crystalline; much chert, chalky-white.
1000-20	Dolomite, as above; much chert, white to translucent, some of it oolitic.
1020-35	Dolomite, as above, enclosing some rounded and frosted quartz grains.
1035-45	Dolomite, coarsely crystalline, white; no chert.
1045-65	Dolomite, coarsely crystalline, white, with enclosed rounded and frosted quartz grains.
1065-1100	Dolomite, coarsely crystalline, white, with much chert, chalky, some translucent and drusy, some oolitic; occasional dolomolds.

Well No. 83 (1038). G. H. Froderman Petroleum Co. No. 1 Elza Cook, section 19-A-8, Fulton County.

CRETACEOUS

1650-60	Sand, unconsolidated, very poorly sorted, fine to very coarse, angular, subrounded.
1660-70	Limestone, slightly sandy, brown, mottled, with much white calcite.
1670-80	Sand, very fine grained, well-sorted, angular to subrounded, with much muscovite.

ORDOVICIAN

Trenton

1680-1710	Limestone, brown, fine-grained; much white, veined calcite.
1710-30	Limestone, gray, fossiliferous, phosphatic, finely crystalline; much veined calcite and pyrite.

Well No. 84 (124). Stoll Oil Refining Company No. 1 John Webster, section 8-AA-57, completed October 1937, Gallatin County.

ORDOVICIAN

Lexington

- 350-80 Limestone, gray, crystalline, fossiliferous and phosphatic, interbedded with slightly silty calcareous shale.
- 380-410 Limestone, as above, with less shale; some limestone yellow, crystalline.
- 410-25 Limestone, very light gray, coarsely crystalline, fossiliferous; trace of replacement chert.
- 425-43 Shale, calcareous, dark grayish-brown; trace of replacement chert.
- 443-67 Limestone, slightly argillaceous, fine-grained to fossiliferous, grayish-brown.
- 467-518 Limestone, brown, crystalline and fossiliferous, interbedded with a little calcareous shale.
- 518-29 Shale, calcareous, very dark; little fossiliferous limestone.
- 529-47 Shale, as above, with trace of replacement chert.
- 547-52 Limestone, crystalline, very fossiliferous and finely phosphatic; little shale, as above.
- 552-68 Limestone, very fine grained, as above; less shale.

Chazy-Black River

- 568-70 Limestone, slightly dolomitic, tan, very fine grained; much bentonite.
- 570-608 Limestone, very fine, lithographic, with some chert same color.
- 608-68 Limestone, cream to pale-gray, lithographic; rare dolomite.
- 668-85 Dolomite, slightly calcareous, gray-tan, finely crystalline.
- 685-712 Limestone, very fine grained, slightly grayish-tan; rare dolomite.
- 712-52 Dolomite, calcareous, grayish-tan; trace of chert.
- 752-98 Limestone, darker grayish-brown, some slightly argillaceous, very fine grained.
- 798-815 Limestone, very fine, lithographic, interbedded with some finely crystalline dolomite.
- 815-937 Limestone, lithographic, with some very slightly argillaceous and more grayish-brown.
- 937-68 Limestone, very dolomitic, finely crystalline, dark-brown.
- 968-1003 Limestone, very slightly dolomitic and argillaceous, dark grayish-brown.

CAMBRIAN

Knox

- 1003-10 Dolomite, grayish-brown, porous and sucrose, medium-crystalline.
- 1010-62 Dolomite, cream, coarsely crystalline, with much interbedded dark-green shale; rare sand grains.
- 1062-84 Dolomite, as above, with more coarse sand grains enclosed.
- 1084-96 Dolomite, pale-cream to gray, coarsely crystalline; some very fine sand and much dense, white chert.

Well No. 85 (1047). Carlstrom, Harding, et al No. 1 R. C. Anderson, EC SW SW section 8-N-60, elevation 937 feet, Garrard County. (Shallow well for structural control) Completed 1-31-47.

ORDOVICIAN

Richmond

- 0-10 Siltstone, green, dolomitic, slightly argillaceous.
- 10-15 Siltstone, as above, trace of fossiliferous gray limestone, many bryozoans.
- 15-20 Limestone, very finely broken, brown, fossiliferous, as above.
- 20-30 Limestone, brown to green, very fine grained; some green, very finely silty, dolomitic limestone.
- 30-35 Limestone, as above, with some argillaceous and gray.

Maysville

(Gilbert)

- 35-45 Limestone, very argillaceous, fossiliferous, dark-brown to gray; little translucent chert.
- 45-55 Limestone, brown, very fine grained, some slightly argillaceous; some translucent chert.

- 55-60 Limestone, as above, with some very finely silty, green; trace of glauconite.
- (Tate)
- 60-70 Limestone, tan to green, very finely silty.
- 70-75 Limestone, as above, with some dark argillaceous limestone.
- 75-80 Siltstone, calcareous, green, argillaceous.
- 80-120 Limestone, very silty and argillaceous, light greenish-gray; trace of brown dolomitic limestone.
- 120-25 Limestone, some green and very finely silty; some bright-brown, dolomitic, and slightly argillaceous; trace of glauconite.
- 125-30 Limestone, some green, silty, as above; some gray, argillaceous, fossiliferous and slightly phosphatic.
- 130-38 Limestone, brown to green, very finely silty and argillaceous.
- (Fairmount)
- 138-40 Limestone, gray, and very dark gray shale, calcareous and slightly fossiliferous.

Well No. 86 (1043). Carlstrom, Harding, et al No. 2 Anderson, SW NW 8-N-60, elevation 937 feet, Garrard County.

ORDOVICIAN

Richmond

- 0-15 Siltstone, dolomitic, argillaceous, grayish-green.
- 15-25 Limestone, very dark brown, slightly argillaceous; some mottled chert.
- 25-42 Siltstone, dolomitic, slightly calcareous and argillaceous, green.

Maysville

(Gilbert)

- 42-50 Limestone, dark-brown, phosphatic, very fine grained.
- 50-65 Limestone, clear, brown, very fine grained.

(Tate)

- 65-140 Limestone, dolomitic, very silty and argillaceous, grayish-green.

(Fairmount)

- 140-45 Limestone, dark brownish-gray, argillaceous, fossiliferous.
- 145-235 Limestone, crystalline, very fossiliferous and phosphatic, gray, with some interbedded dark-gray calcareous shale and very fine silt.

Garrard

- 235-95 Siltstone, calcareous, slightly argillaceous, gray, fine-grained.

Cynthiana-Million

- 295-330 Limestone, very fossiliferous, phosphatic, gray, with a little silt and shale.
- 330-400 Limestone, argillaceous, some very fossiliferous and phosphatic, interbedded with dark calcareous shale; shale is fine and flaky, with rare silt.
- 400-20 Limestone, very fossiliferous, phosphatic, interbedded with slightly calcareous shale.
- 420-90 Limestone, darker than above, more argillaceous.
- 490-500 Limestone, very argillaceous, fine-grained, brownish-gray, fossiliferous; shale residue is brown.
- 500-05 Limestone, more phosphatic than above; many phosphatic *Cyclora*.
- 505-25 Limestone, grayish-brown, some very argillaceous.
- 525-30 Limestone, light-brown, crystalline, fossiliferous, with some shale, as above.
- 530-40 Limestone, very argillaceous; residue almost silty.

Lexington (Trenton)

- 540-60 Limestone, light-brown, crystalline, very fossiliferous, slightly phosphatic; very small residue.
- 560-85 Limestone, very fine grained, brown, some fine-crystalline; many ostracods; occasional traces of translucent tan chert.

585-648	Limestone, fine-crystalline, light-tan, very clean, with rare fragments of chert. (Trace of dead oil in sample at 620-25.)
648-63	Limestone, light grayish-tan, fossiliferous, crystalline.
663-70	Limestone, very light tan, trace grayish phosphatic, clean crystalline.
670-75	Limestone, more gray, finely phosphatic, with trace of darker shaly limestone and mottled gray chert.
675-85	Limestone, darker, argillaceous, grayish-brown, trace fossiliferous and phosphatic.
685-700	Limestone, finely crystalline, grayish-tan, slightly phosphatic.
700-25	Limestone, brown, crystalline, with occasional streaks of argillaceous limestone, rich in phosphate.
725-35	Limestone, gray, very phosphatic, fossiliferous; some gray mottled chert.
735-40	Limestone, gray, very fossiliferous, phosphatic, crystalline.
740-50	As above, including trace of fine sand.

Chazy-Black River

750-60	Limestone, very fine, brown, lithographic.
760-70	Limestone, very fine, greenish-brown, slightly bentonitic.
770-75	Limestone, dense, light-tan, fine to fine-crystalline, with chalky-white chert and trace of green shale.
775-80	Limestone, cream, very fine to slightly crystalline, with occasional enclosed dolomite rhomb.
780-90	Limestone, very light tan, smooth, lithographic.
790-805	Limestone, slightly coarser, some darker and slightly argillaceous.
805-10	Limestone, brown, very fine, some trace slightly dolomitic.
810-15	Limestone, as above, with trace of fine tan chert.

Well No. 87 (1049). Carlstrom, Harding, et al No. 1 Rigsby, W corner SENE SE section 8-N-60, elevation 958 feet, Garrard County. (Shallow well, for structural control)

ORDOVICIAN

Richmond

0-10	Limestone, bright-brown, fine-grained, with some green, dolomitic and argillaceous siltstone.
10-20	Dolomite, silty and argillaceous, green.
20-25	Some dolomite, as above; some limestone, gray, argillaceous, fossiliferous, with gray chert.

Maysville

(Gilbert)

25-30	Limestone, gray to brown, fine-grained and fossiliferous; some gray chert.
30-35	Limestone, very fine grained, brown.

Well No. 88 (1045). Carlstrom, Harding, et al No. 2 Rigsby, C NE NE SE section 7-N-60, elevation 956 feet, Garrard County. (Shallow well for structural control)

ORDOVICIAN

Richmond

0-15	Dolomite, silty, argillaceous, green.
15-25	As above, with much crystalline pyrite.
25-55	Dolomite, more argillaceous than above, bright-green.
55-60	Dolomite, more gray than green; some crystalline, white calcite.
60-65	As above, with some limestone, very fossiliferous, phosphatic, gray.
65-70	Limestone, brownish-gray, fine-grained, dark.

NOTE: Projected top of Gilbert at 85 feet.

Well No. 89 (1044). Carlstrom, Harding, et al No. 3 Rigsby, SE NW SE section 8-N-60, elevation 970 feet, Garrard County. (Shallow well for structural control)

ORDOVICIAN

Richmond

- 0-55 Dolomite, silty, argillaceous, green.
- 55-60 As above, with some gray, fossiliferous limestone.
- 60-65 Shale, calcareous, dark-gray, with some gray limestone.
- 65-70 Limestone, brown, fine-grained, fossiliferous, slightly argillaceous; ostracods.
- 70-85 Limestone, dolomitic, very argillaceous and finely silty, grayish-green.

Maysville

(Gilbert)

- 85-90 Limestone, dark, argillaceous, fine-grained, fossiliferous; trace of replacement chert and pyrite.

Well No. 90 (1051). Carlstrom, Harding, et al No. 4 Rigsby, SW NE SE section 7-N-60, Garrard County.

ORDOVICIAN

Richmond

- 0-15 Limestone, brown, fine-grained, dense, with green, silty dolomite.
- 15-20 Dolomite, silty and argillaceous, green.
- 20-30 Dolomite, as above; some fine, argillaceous limestone.

Maysville

(Gilbert)

- 30-45 Limestone, very fine grained, brownish-gray, some fossiliferous.

(Tate)

- 45-80 Limestone, argillaceous, dolomitic, pale-green, some silty and glauconitic.
- 80-110 Limestone, argillaceous and dolomitic, more brown than green, some silty.
- 110-15 Limestone, some as above, some more green and dolomitic.
- 115-25 Limestone, dark-gray, argillaceous; some less argillaceous, with traces of phosphate; some green and silty limestone.

(Fairmount)

- 125-45 Limestone, very argillaceous, dark-gray; some less argillaceous, fossiliferous, with traces of phosphate.
- 145-80 Limestone, slightly argillaceous, fine-grained and fossiliferous; trace of phosphate.
- 180-95 Limestone, very fossiliferous, slightly phosphatic, interbedded with dark calcareous shale.
- 195-200 As above, with much pyrite.
- 200-25 Limestone, very fossiliferous, slightly phosphatic, interbedded with dark calcareous shale.

Garrard

- 225-50 Siltstone, calcareous, argillaceous, gray.
- 250-75 Siltstone, as above, interbedded with some fossiliferous limestone.

Cynthiana-Million

- 275-90 Limestone, slightly dolomitic, light-gray, crystalline, fossiliferous, slightly phosphatic.
- 290-95 Limestone, fossiliferous, gray, and dark-gray calcareous shale.
- 295-320 Limestone, finely crystalline and very finely phosphatic, interbedded with dark calcareous shale.
- 320-75 Limestone, as above, but more fossiliferous.
- 375-90 Shale, calcareous, dark-gray, with some interbedded fossiliferous limestone.
- 390-400 Limestone, very fossiliferous; numerous brachiopod remains with finely divided phosphate; much shale, as above.

- 400-65 Shale, calcareous, very dark gray, with a little dark-gray, dense limestone interbedded.
 465-75 Limestone, fossiliferous, finely phosphatic, with many phosphatic *Cyclora*; shale, as above.
 475-90 Limestone and calcareous shale, with many small bryozoans.

Lexington

- 490-500 Limestone, brown, densely crystalline, fossiliferous; little shale.
 500-10 Limestone, brown, as above, more fossiliferous, with traces of phosphate.
 510-15 Shale, gray, slightly calcareous, with some interbedded limestone.
 515-25 Limestone, brown, densely crystalline, fossiliferous, with some interbedded gray shale; samples oily at 515-20.
 525-37 Limestone, brown, bright, densely crystalline, fossiliferous; little interbedded gray shale.
 537-40 Limestone, light-tan, densely fossiliferous and crystalline.
 551 Calcite vein.
 551-70 Recovered samples mainly calcite from above; limestone is very weathered, porous, and chalky.
 570-73 Limestone, light-tan, densely crystalline to chalky, as above (slightly fresher), fossiliferous.
 573-605 Limestone, very light tan, slightly phosphatic, very fossiliferous and crystalline; all highly leached and porous.

Well No. 91 (1042). Carlstrom, Harding, et al No. 5 Rigsby, SE section 8-N-60, Garrard County.

ORDOVICIAN

Richmond

- 10-15 Limestone, very dark brown to dark-gray, with trace of greenish-gray siltstone.
 15-35 Siltstone, dolomitic, very shaly, greenish-gray.
 35-40 Some siltstone, as above; mainly limestone, gray, phosphatic, with trace of gray replacement chert.
 40-50 Limestone, very dark brown, fine-grained, fossiliferous (ostracods).
 50-55 Some limestone, as above; some siltstone, dolomitic, green, with glauconite.
 55-70 Limestone, dolomitic, silty, green, fine, with glauconite.

Maysville

(Gilbert)

- 70-90 Limestone, gray, argillaceous, phosphatic and very fossiliferous; residue is porous, dark-brown shale.
 90-95 Dolomite, calcareous, silty and argillaceous, grayish-green.
 95-102 Limestone, argillaceous, dark-gray, slightly fossiliferous.
 102-40 Dolomite, calcareous, very argillaceous and slightly silty, grayish-green.

(Fairmount)

- 140-45 Limestone, slightly argillaceous, dark-gray, many bryozoans.
 145-65 Limestone, as above, fossiliferous, phosphatic; trace of fine silt and replacement chert.
 165-75 Limestone, gray, very fossiliferous, phosphatic (bryozoans); trace of calcareous silt.
 175-200 Limestone, as above; trace of fine silt and chert in residue.
 200-10 Limestone, gray, dense, and slightly argillaceous; bryozoans.
 210-35 Limestone, very fossiliferous, interbedded with dark calcareous shale.

Garrard

- 235-50 Limestone, fossiliferous, gray, with siltstone, gray, calcareous, argillaceous (residue 50%).
 250-60 As above, some silt slightly coarser.
 260-80 Limestone, gray, very fossiliferous, slightly phosphatic; very small residue of fine silt and shale.

Cynthiana-Million

- 280-300 Limestone, dark-gray, dense to fossiliferous; very small residue of fine silty shale.

- 300-20 Limestone, as above; very small residue of very fissile gray shale; trace of replacement chert.
 320-90 Limestone, as above, interbedded with some very fossiliferous limestone.
 390-400 Limestone, very fossiliferous, gray; small residue.
 400-40 Limestone, more dense and fine-grained, gray; looks very shaly, actually small residue of clay.
 440-60 Limestone, as above, some more argillaceous.
 460-70 Limestone, some very fossiliferous and phosphatic.

Lexington

- 470-540 Limestone, more brown than gray, crystalline, very fossiliferous.
 540-82 Limestone, tan to brown, very fine grained and dense, clean; small residue, with traces of brown chert.
 582-96 Limestone, tan, crystalline, very densely fossiliferous; trace of phosphate in limestone; trace of dark shale.
 596-603 Limestone, light-tan to gray, very slightly phosphatic, very fossiliferous and crystalline; very small residue; trace of chert.
 603-19 Limestone, light-tan, very densely crystalline, clean.

Well No. 92 (1039). Carlstrom, et al No. 1 Holtzclaw, SW corner SE SE section 4-N-60, elevation 1,031 feet, Garrard County. (Shallow well, drilled for structural control)

ORDOVICIAN

Richmond

- 0-40 Dolomite, very finely silty and argillaceous, green, streaked with black.
 40-45 Dolomite, some green, as above; some bright-brown and clean.
 45-65 Dolomite, green and silty, with more shale than above.
 65-90 Dolomite, green, silty, as above, mottled with brown dolomite; trace of glauconite.
 90-100 As above, some very fossiliferous, more limestone; many bryozoans.
 100-05 Limestone, argillaceous, fine-grained, grayish-brown.
 105-15 Dolomite, silty and argillaceous, grayish-green.

Maysville

(Gilbert) (contact at 112 feet)

- 115-20 Limestone, argillaceous, gray, some very fossiliferous.

Well No. 93 (1040). Carlstrom, et al No. 1 Underwood, SC NW NW section 8-N-60, elevation 977 feet, Garrard County. (Shallow well, drilled for structural control)

ORDOVICIAN

Richmond

- 0-20 Dolomite, very silty, argillaceous, green.
 20-35 Dolomite, silty and green, argillaceous, with some brown and calcareous.
 35-40 Dolomite, more green than above, silty and argillaceous.
 40-45 Some as above; some limestone, very fossiliferous, with many bryozoans.
 45-55 Limestone, argillaceous, brown, some fossiliferous.
 55-65 Dolomite, very silty and argillaceous, green.
 65-70 Some dolomite, as above; some dark argillaceous limestone.

Maysville

(Gilbert)

- 70-75 (Contact at 68 feet) Limestone, argillaceous, dark-brown; some fossiliferous, with ostracods.

Well No. 94 (1046). Cox, Willis, Darst, et al No. 1 Jim Morgan, NE corner SE SW 5-M-62, elevation 890 feet, Garrard County.

ORDOVICIAN

Richmond

- 5-10 Limestone, slightly argillaceous and silty, gray, fine-grained.
 10-15 Limestone, dolomitic, very finely silty, brown to green.
 15-25 Dolomite, very finely silty, green.

Maysville

(Gilbert)

- 25-40 Limestone, some fine-grained, with ostracods; some dark-gray, very argillaceous.
40-45 Limestone, fine, grayish-tan, with ostracods; some dark, shaly.
45-50 Limestone, very clean, lighter green-tan, fine-grained.

(Tate)

- 50-85 Limestone, dolomitic, fine, silty, green.
85-130 Siltstone, dolomitic, green.

(Fairmount)

- 130-35 Limestone, fine, slightly shaly; trace of replacement chert from bryozoans.
135-40 Limestone, fossiliferous, very shaly, dark-gray.
140-50 Limestone, some dense, with ostracods, interbedded with very dark shaly limestone.
150-60 Limestone, fossiliferous, tan to gray, some phosphatic.
160-90 Limestone, fossiliferous and slightly phosphatic, interbedded with dark calcareous shale.
190-200 As above, with some very fine silt.
200-05 Limestone, some very fossiliferous, with many bryozoans.
205-10 Limestone, fossiliferous, interbedded with dark calcareous shale.
210-20 Limestone, very fossiliferous, with calcareous clayey shale.

Garrard

- 220-30 Much more thin, fissile shale; some silt.
230-35 Limestone, crystalline, fossiliferous, interbedded with dark shale.
235-40 Shale, thin-bedded and platy, some limestone.
240-55 Siltstone, shaly and calcareous, gray.
255-60 More crystalline limestone, fossiliferous, white, with trace of buff.
260-62 Siltstone, calcareous, gray.
262-67 Limestone, crystalline, fossiliferous, white, with yellow calcite.
267-80 Siltstone, calcareous.

Cynthiana-Million

- 280-85 Limestone, fossiliferous, gray, with some calcareous shale.
285-90 Limestone, clean, grayish-white, crystalline, fossiliferous.
290-305 As above, some slightly dolomitic.
305-15 Limestone, some white, crystalline, with buff mottling; dark shale breaks.
315-20 Limestone, gray, crystalline, with dark shale interbedded.
320-25 Limestone, very finely silty and shaly.
325-30 Limestone, slightly shaly, gray, dull.
330-70 Limestone, slightly silty, gray, with some crystalline, fossiliferous limestone.
370-440 Limestone, very fossiliferous, gray, interbedded with dark calcareous shale.
440-60 Shale, calcareous, looks like gray limestone.
460-65 Limestone, brownish-gray, crystalline, fossiliferous, with dark-gray calcareous shale interbedded.
465-80 Limestone, grayish-brown, crystalline, fossiliferous, with some shale.
480-500 Limestone, very shaly, gray, fossiliferous.
500-05 Limestone, brown, dense, fossiliferous, little dark shale.
505-25 Limestone, brown to gray, crystalline, fossiliferous, phosphatic; trace of dark shale.

Lexington

- 525-30 Limestone, creamy-gray, very fossiliferous, some phosphatic.
530-75 Limestone, brown, very dense to finely crystalline.
575-87 Limestone, more tan than above; trace of black shale.

Well No. 95 (1041). Cox, Willis, Darst, et al No. 1 Bud Starnes, NW SE section 6-M-62, elevation 896 feet, Garrard County.

ORDOVICIAN

Maysville

(Tate)

- 5-30 Dolomite, very silty and green.
- 30-65 Limestone, very silty and shaly, brownish-green.

(Fairmount)

- 65-85 Gradual transition from above into finer grained material, until limestone is argillaceous, brownish-green.
- 85-90 Limestone, more crystalline and fossiliferous, some phosphatic.
- 90-120 Limestone, shaly, very fossiliferous, gray, phosphatic, with interbedded shale.
- 120-75 Limestone, dark-gray, fossiliferous, interbedded with dark calcareous shale.

Garrard

- 175-85 Siltstone, and limestone with yellow calcite.
- 185-205 Limestone, white, coarsely crystalline, with yellow calcite and a trace of silt.
- 205-15 Limestone, gray, crystalline, slightly dolomitic; trace phosphatic.
- 215-25 Limestone, more gray and crystalline, some shale.

Cynthiana-Million

- 225-35 Limestone, gray, crystalline, very fossiliferous; some shale and cherty fossil fragments in residue.
- 235-65 Limestone, darker, shaly, with some interbedded very dark shale.
- 265-75 Limestone, crystalline, very fossiliferous, interbedded with dark shale.
- 275-315 As above, with a little silt.
- 315-30 Samples missing.
- 330-75 Limestone, very dense, shaly, dark-gray, some fossiliferous.
- 375-410 Mainly shale, very dark grayish-brown, calcareous.
- 410-15 As above, with some very phosphatic brown limestone.
- 415-30 Limestone, very shaly, some brown and phosphatic.
- 430-65 Limestone, brown, crystalline, phosphatic and fossiliferous, some slightly shaly.

Lexington

- 465-75 Limestone, light-tan, crystalline, porous.
- 475-500 Limestone, brown, densely crystalline.
- 500-30 Limestone, very clean, light-tan, fossiliferous, porous; trace of light-tan replacement chert.
- 530-40 Limestone, darker brown, more densely crystalline, very richly brown.
- 540-60 Limestone, light-tan, crystalline, fossiliferous, porous.
- 560-70 Limestone, more densely crystalline.
- 570-95 Limestone, tan, finely crystalline, clean; trace of black shale residue.
- 595-610 Limestone, brown, finely crystalline.
- 610-35 Limestone, darker, some shaly.
- 635-50 Limestone, more fossiliferous and phosphatic; trace of fine sand.
- 650-60 Limestone, tan, dense to crystalline; trace of translucent tan chert.

Chazy-Black River

- 660-66 Limestone, very clean, light-tan, lithographic, with much bentonite.
- 666-70 Limestone, very fine, brown, lithographic.
- 670-75 Limestone, fine, as above, mottled with green bentonite.
- 675-80 Limestone, brown, slightly bentonitic; oily samples.
- 680-735 Limestone, very fine, brown, with trace of translucent tan chert and rare dolomite rhombs.
- 735-40 Limestone, lighter than above, with trace of dark shale.
- 740-55 Limestone, very fine grained, brown.

Well No. 96 (1050). Darst, et al No. 1 Emory Clark, SE NE SW section 10-M-61, elevation 896 feet, completed April 1946, Garrard County. Gas show.

ORDOVICIAN

Cynthiana

- 285-325 Limestone, very argillaceous, gray; some fossiliferous and phosphatic, some *Cyclora*.
- 325-40 Limestone, brown, crystalline, finely phosphatic; trace of argillaceous limestone and replacement silica.
- 340-55 Limestone, as above; trace of chert.

Lexington

- 355-65 Limestone, more coarsely crystalline, phosphatic and fossiliferous; little interbedded dark calcareous shale.
- 365-85 Limestone, very fine grained, dense, pale grayish-brown, ostracodal.
- 385-410 Limestone, very cleanly crystalline, tan; trace of secondary quartz.
- 410-55 Limestone, tan, crystalline; trace of chert.
- 455-75 Limestone, more gray, crystalline, phosphatic, very slightly argillaceous.
- 475-505 Limestone, very fossiliferous, slightly argillaceous, grayish-brown; trace of replacement silica.
- 505-25 Limestone, crystalline, fossiliferous, white, phosphatic; little calcareous shale.
- 525-55 Limestone, coarsely crystalline, fossiliferous, phosphatic; some calcareous shale; trace of gray mottled chert; trace of silt.

Chazy-Black River

- 555-75 Limestone, finely bentonitic, dark-brown, lithographic to grayish-green.
- 575-90 Limestone, dense to finely crystalline, brown; trace of brown translucent chert.
- 590-615 Limestone, slightly dolomitic, brown; trace of brown, dense chert.
- 615-35 Limestone, very fine grained, slightly brownish-gray; trace of dull-tan replacement chert.
- 635-40 Limestone, very slightly dolomitic, very fine grained.

Well No. 97 (65). Gasaway, et al No. 1 Jones, West Point School, section 15-N-60, elevation 984 feet, (Paulin), completed December 1946, Garrard County.

ORDOVICIAN

Maysville

- 15-55 Limestone, silty, slightly argillaceous, very fossiliferous, phosphatic (matrix is silty); some fossils are siliceous.
- 55-60 Limestone, gray, very fossiliferous, crystalline, with occasional streaks of argillaceous silt.

Garrard

- 60-75 Limestone, gray, very fossiliferous, crystalline, very silty and argillaceous.
- 75-90 Siltstone, very shaly, slightly calcareous.
- 90-100 Siltstone, as above, streaked with clean, white limestone, very slightly silty.
- 100-15 Siltstone, argillaceous, calcareous, gray, some fossiliferous.
- 115-20 Siltstone, with some more fossiliferous limestone.

Cynthiana-Million

- 120-25 Limestone, more fossiliferous than above, some silty.
- 125-35 Limestone, as above; much pyrite, finely crystalline.
- 135-55 Limestone, slightly dolomitic, phosphatic, crystalline, white; trace of dark calcareous shale.
- 155-90 Limestone, gray, argillaceous, very fossiliferous, phosphatic, some calcareous shale.
- 190-200 Limestone, as above, but less argillaceous, very phosphatic.
- 200-25 Limestone, very fossiliferous, gray, crystalline, with much interbedded calcareous shale.
- 225-70 Limestone, more fine-grained, gray-brown, some ostracods and other fossil fragments.

- 270-300 Limestone, gray, dense, argillaceous, with interbedded dark shale.
 300-10 Limestone, brown-gray, finely crystalline, fossiliferous, phosphatic, with numerous phosphatic *Cyclora*.
 310-35 Limestone, more coarsely crystalline, brown, very fossiliferous.
 335-45 Limestone, brown, densely crystalline, some finely phosphatic.

Lexington

- 345-65 Limestone, brown, fine to densely crystalline.
 365-75 Limestone, cream, densely crystalline, fine and clean; very tiny phosphate fragments.
 375-80 Limestone, cream, coarsely crystalline, fossiliferous; porous, trace of oil stain.
 380-410 Limestone, more crystalline than above, finely phosphatic.
 410-20 Limestone, more dense, brown; trace of interbedded calcareous shale.
 420-25 Limestone, very dense, dark-brown, finely crystalline, slightly fossiliferous.
 425-35 Limestone, more gray-brown, argillaceous.
 435-80 Limestone, very dense, brown, less argillaceous than above, fossiliferous.
 480-90 Limestone, slightly more gray and argillaceous than above.
 490-505 Limestone, brown-gray, argillaceous, fine, and fossiliferous.
 505-20 As above, with trace of gray chert.
 520-40 Limestone, crystalline, light-gray, fossiliferous, finely phosphatic; trace of gray chert.
 540-57 Cleaner than above; less shale.

Chazy-Black River

- 557-65 Limestone, very fine, tan, lithographic, with some bentonite ("Pencil Cave" of driller).
 565-70 Limestone, very fine, tan, lithographic; little bentonite; trace of very fine dolomite.
 570-640 Limestone, gray-brown, very fine to subcrystalline, light-tan in places; rare traces of dolomite.
 640-50 Limestone, very light and fine; some finely dolomitic.
 650-70 Limestone, finely dolomitic, light-tan.
 670-80 Limestone, dolomitic, as above, with some very finely argillaceous and greenish-gray.
 680-95 Limestone, very finely argillaceous, greenish-gray.
 695-700 Limestone, very fine, tan, lithographic.
 700-50 Limestone, very fine, light-tan; trace of fine dolomite.
 750-85 Limestone, very dense, light-tan to subcrystalline, with isolated dolomite rhombs.
 785-815 Limestone, very fine, tan; occasional fossil fragments.
 815-45 Limestone, smooth, brown, with some gray-brown, slightly argillaceous limestone.
 845-905 Limestone, very dense, brown to gray-brown, slightly fossiliferous.
 905-10 Limestone, very smooth, brown, fine, interbedded with some shale, darker, still argillaceous.
 910-30 Limestone, very slightly argillaceous, with trace of dolomite.
 930-40 Limestone, dense, brown, fine, smooth.
 940-60 Limestone, as above, with trace of dolomite.
 960-1000 Limestone, tan to cream, very fine, lithographic.
 1000-20 Limestone, very fine, gray to brown.
 1020-40 Limestone, very fine grained, gray to brown, very slightly argillaceous.
 1040-55 Limestone, as above, with some green and shaly.
 1055-75 Limestone, slightly argillaceous, grayish-brown.
 1075 (Drilled two feet mineralized zone--probably vein material--very difficult drilling. Ten days for drilling two feet.)
 1075-80 Limestone, brown-gray, very fine, chalky.
 1080-90 Dolomite, dark-brown, fine, densely crystalline, with some dark shale.
 1090-1100 Limestone, very fine, bright-brown, lithographic.
 1100-55 Limestone, very fine, lithographic, interbedded with darker argillaceous limestone.
 1155-60 As above, with trace of dolomite.
 1160-70 Limestone, more dolomitic, with some greenish-gray shale.
 1170-80 Limestone, brown, very fine grained, interbedded with shale, very dark gray, calcareous, finely banded.

- 1180-85 Limestone, some as above; much of it finely dolomitic, dark-brown.
 1185-95 Limestone, very dolomitic, fine-grained, dark-brown, with a little dark calcareous shale, as above.
 1195-1200 Limestone, as above; some dolomite, tan, crystalline.
 1200-05 Limestone, very finely dolomitic, dark-brown; some shale residue, light-gray.
 1205-10 Limestone, very finely dolomitic, dark-brown and light-gray; residue, some dark shale; much light-gray, with trace of silt.
 1210-25 Limestone, slightly dolomitic, very argillaceous, dark-brown; large residue of porous dark shale.
 1225-35 Limestone, very dolomitic, dark-brown, very slightly argillaceous and silty.
 1235-40 Limestone, more dolomitic than above, dark-brown; residue mainly very fine silt.

(Wells Creek)

- 1240-45 Dolomite, light-gray, finely crystalline, very finely silty.
 1245-49 Dolomite, very argillaceous and silty, light to dark greenish-gray.
 1249-62 Sandstone, dolomitic, with streaks of shale; sand very poorly sorted, very fine to very coarse, rounded and frosted, with some secondary quartz growth; shale is dark.
 1262-65 Sandstone, very fine grained, with some larger grains broken.

CAMBRIAN

- 1265-69 Dolomite, light-brown, medium-crystalline; much chert, dense to weathered.
 1269-72 Dolomite, light-brown, coarsely crystalline; soft, green, bentonitic shale, dolomoldic; some chert, dense, white.
 1272-80 Dolomite, light-tan, more finely crystalline than above; chert, white, dense to crystalline, with trace of sand.
 1280-87 Dolomite, as above; chert, chalky-white, dense; occasional broken sand grains.

Well No. 98 (1048). Willis, et al No. 1 Susie Green, section 11-M-62, elevation 991 feet, Garrard County.

ORDOVICIAN

Richmond

- 0-8 Limestone, gray, very fossiliferous; many bryozoans and brachiopods.
 8-25 Siltstone, dolomitic, greenish-gray, shaly.

Maysville

(Gilbert)

- 25-40 Limestone, very shaly, dark grayish-brown, fossiliferous, with some densely crystalline limestone.
 40-60 Limestone, dark grayish-brown, densely crystalline, with a little slightly shaly.

(Tate)

- 60-70 Limestone, silty, shaly, green.
 70-100 Limestone, as above, but more dolomitic.
 100-30 Limestone, shaly, brown and green, some slightly silty.

(Fairmount)

- 130-90 Limestone, gray, fossiliferous, phosphatic, crystalline, interbedded with some dark calcareous shales.
 190-225 Limestone, as above, more fossiliferous.

Garrard

- 225-40 Limestone, fossiliferous, phosphatic, with interbedded silty, calcareous shales.
 240-45 More silty, with some interbedded yellow, crystalline, and very fossiliferous limestones.
 245-70 Limestone, slightly dolomitic, crystalline, fossiliferous, white, with interbedded silty shale.

- 270-80 Limestone, more gray, shaly and phosphatic.
 280-95 Limestone, very phosphatic, very dark gray, with occasional silty streak.

Cynthiana-Million

- 295-310 Limestone, fossiliferous, phosphatic, gray, crystalline, with interbedded dark calcareous shale.
 310-60 Limestone, more finely crystalline than above, grayish-brown; much dark shale.
 360-70 As above, with trace of silty shale.
 370-85 Limestone, very shaly, dark-gray.
 385-410 Limestone, very fossiliferous and phosphatic, with interbedded dark calcareous shale.
 410-40 Limestone, darker brownish-gray, finely crystalline, shaly.
 440-60 Limestone, very shaly, dark grayish-brown.
 460-500 Limestone, very shaly, dark-gray, with traces of brown, densely crystalline limestone.
 500-15 Limestone, brown, coarsely crystalline, fossiliferous, some interbedded shale.
 515-25 Limestone, as above, some finely phosphatic; trace of chert.
 525-35 Limestone, tighter and darker than above; chert, dark grayish-brown, mottled.
 535-40 Limestone, cream to light-tan, crystalline, bright, fossiliferous, some finely phosphatic.
 540-50 Limestone, brown, dense to crystalline; trace slightly shaly and darker.
 550-70 Limestone, very fine grained to densely crystalline, clean, brown, (gas).
 570-75 Limestone, creamy-gray, crystalline; trace of phosphate.
 575-600 Limestone, cream to brown, densely crystalline to very fine grained.

Well No. 99 (178). H. Riddle, et al No. 1 Adair, section 20-C-12, elevation 543 feet, Graves County. Samples not available through the Tertiary and Cretaceous.

DEVONIAN

Bailey

- 955-1005 Limestone, fine-grained, dense, gray, siliceous, with much gray chert. (Sand caving from Tertiary above)

SILURIAN

Brownsport

- 1005-40 Limestone, gray, dense, fine-grained, with much very finely disseminated chert.
 1040-60 Limestone, dense, brown; less free chert than above; much finely disseminated chert.
 1060-1160 Limestone, as above, with much brown, translucent chert.

Bainbridge

- 1160-1210 Limestone, maroon, with occasional green or cream fragments.
 1210-40 Limestone, some maroon, mainly creamy-gray to slightly green with red mottling.
 1240-1300 Limestone, fine-grained, red and green.

Brassfield

- 1300-10 Limestone, slightly pink, with much glauconite.

ORDOVICIAN

"Thebes-Maquoketa"

- 1310-45 Shale, very coarse grained to silty, black; occasional fragments of quartzitic siltstone.
 1345-1425 Siltstone, coarse-grained, to very fine sand, quartzitic, and some very dark, slightly argillaceous.

Lexington-Cynthiana

- 1425-35 Limestone, dark-gray, coarsely crystalline, mottled with phosphate.
 1435-55 Limestone, fine-grained, gray, slightly argillaceous; much phosphate.
 1455-1630 Limestone, argillaceous and silty, light-gray to very dark gray, almost black. (Hermitage lithology)

Chazy-Black River (Tyrone at top)

1630-60	Limestone, brown, lithographic, with trace of brown chert; trace of bentonite.
1660-1710	Limestone, lithographic, dark brown-gray; rare brown chert.
1710-25	Limestone, light-tan, with many small limestone pellets enclosed.
1740-60	Limestone, dark-brown, lithographic; much very dark chert, almost black.
1760-90	Limestone, as above; much dark-brown, microspecked chert.
1790-1880	Limestone, very fine grained, gray-brown, dense.
1880-1910	Limestone, brown, dense, sublithographic; rare chert.
1910-20	Limestone, as above, with some granular, crystalline.
1920-2050	Limestone, smooth, lithographic, dark-brown; rare brachiopods.
2050-75	Limestone, as above, with some microspecked brown chert.
2075-2300	Limestone, smooth, brown, lithographic, with some interbedded slightly argillaceous, gray-brown limestone.
2300-2500	Limestone, some very finely dolomitic, interbedded with some very slightly argillaceous, dark-brown to light gray-tan.

Everton

2500-10	Dolomite, light-gray to white, some enclosing large rounded and frosted sand grains.
2510-35	Limestone, light-gray, dense, lithographic.
2535-40	Dolomite, very dense and light-gray, lithographic.
2540-50	Limestone, dense, dark-brown, lithographic.
2550-90	Dolomite, very finely crystalline, gray, some very slightly argillaceous.
2590-2640	Dolomite, silty and fine-grained, gray.
2650-2710	Dolomite, pale-red and green, mottled, fine-grained; some studded with sand.
2710-60	Dolomite, light-cream, finely crystalline, with some enclosed sand; rare shale.
2760-85	Dolomite, medium- to dark-gray, very silty.
2785-2810	Dolomite, finely crystalline, brown, dense.

Well No. 100 (160). Sun Oil Company No. 1 George Woods, 2900' NSL, 490' EWL, 25-M-38, elevation 722 feet, Grayson County.

MISSISSIPPIAN

New Providence-Fort Payne

0-30	Surface material--sand and chert.
31-80	Siltstone, light-gray, mottled with dark, slightly calcareous.
80-85	Same, but darker; may be slightly argillaceous.
85-90	Siltstone, gray, and a little tan, crystalline limestone.
90-96	Siltstone, much more calcareous than above; occasional chert fragment.
96-167	Argillaceous limestone, almost black, less siliceous than above.
167-73	Same, plus much very coarse, rounded and polished sand and chert fragments.
173-250	Argillaceous, almost black limestone, as above, with some polished surface sands and chert fragments again at 240-50.
250-58	Limestone, as above, plus some that is light and dark mottled with some glauconite.
258-65	Limestone, gray, mottled with a little gray chert containing dark inclusions.
265-70	Some limestone, as above; some very argillaceous, dark-gray.
270-324	Limestone, very dark gray, argillaceous; some dark-gray chert.
324-30	Limestone, crystalline and gray; much chert.
330-56	Limestone, gray, argillaceous, as above.
356-61	Limestone, as above, plus some white, crystalline, and very cherty.
361-67	Limestone, pale-greenish and white; much translucent chert; little green shale.
367-75	Limestone, chert, white to pale-green, with glauconite included.

New Albany

375-83	Shale, green, glauconitic and calcareous, and black shale with spores.
383-490	Black shale.

DEVONIAN

Jeffersonville

- 490-95 Introduction of limestone, fine-grained, light-gray, and some brown crystalline, and crinoidal; occasional fragments of translucent blue-white chert.
- 495-500 Limestone, white to cream, crystalline; occasional chert fragments.
- 501-10 Limestone, white to light-tan, crystalline, crinoidal; little chalcedony.
- 510-15 Lime, white, coarsely crystalline, very crinoidal; rare phosphate.
- 515-20 Limestone, white, as above; no phosphate.
- 520-26 Same kind of limestone, with occasional large rounded and frosted sand grains; introduction of greenish-gray calcareous siltstone, fossiliferous.
- 526-54 Samples missing - Cut fault and 45 feet of section is missing.

SILURIAN

Brownsport

- 554-58 Limestone, white to light-tan, finely crystalline; few fragments of chert and some chalcedony; some very finely porous, mottled, tan chert.
- 558-64 Limestone, gray, shaly, leaving residue of very coarsely porous, soft, gray shale, showing numerous fossil impressions; limestone is almost a mat of very small crinoid stem plates.
- 566-74 Same, with even more shale residue.
- 577-83 Same, plus some coarsely crinoidal limestone.
- 583-93 Limestone, gray-tan, crystalline and crinoidal.
- 593-99 Same, plus much white and pink chalcedonic chert.
- 600-03 Limestone, gray, finely crystalline to slightly argillaceous.
- 603-15 Same, shale partings are thin and papery in residue.
- 615-22 Slightly silty.
- 622-30 Limestone, coarsely crystalline; little silty, argillaceous limestone, as above.
- 630-40 Dolomite, very finely crystalline, gray.
- 640-48 Some dolomite, as above; much coarse-grained white calcite (from corals?).
- 648-55 Almost entirely coarsely crystalline white limestone.
- 655-771 Same, clean, very white, coarsely crystalline limestone, more dolomitic near base.
- 771-76 Same, but more dolomitic, and with some porosity and oil staining.

Lego

- 776-813 Almost entirely white dolomite, some with porosity and oil stain.

Waldron

- 813-20 Dolomite, some white, medium-crystalline; some green and argillaceous leaving papery green shale in residue.

Laurel

- 820-85 Dolomite, white, dense; a little light-gray.

Osgood

- 885-93 Same, plus some green argillaceous dolomite and dark-gray, mottled chert.

Brassfield

- 893-98 Dolomite, darker gray, siliceous, leaving residue of dark-gray dolomitic chert.

ORDOVICIAN

Maysville

(Fairmount)

- 898-924 Very dark gray dolomite, cherty and silty.
- 924-38 Very dark gray, cherty and silty, argillaceous dolomite.
- 938-47 Limestone, very dark gray, very fossiliferous, very argillaceous.
- 947-55 Very dark gray, slightly calcareous shale.
- 955-1002 Calcareous shale, interbedded with crystalline, gray, fossiliferous limestone.
- 1002-23 Fossiliferous limestone and calcareous shale; much phosphate.

Cynthiana-Eden

- 1023-30 Introduction of silty, argillaceous limestone, siltstone, gray, calcareous; little replacement chert.
- 1030-40 Siltstone, as above; some argillaceous, gray limestone, and some crystalline, fossiliferous limestone.
- 1040-61 Limestone, some very dark gray, argillaceous, some streaks of crystalline; little replacement chert.
- 1061-69 Same, plus a little siltstone.
- 1069-77 Gray siltstone.
- 1077-1257 Gray siltstone, occasional streaks of gray, fissile shale and crystalline limestone.
- 1257-61 Limestone, some as above; some tan, crystalline, and fossiliferous, partially replaced by chert.
- 1261-81 Same, gray silty limestone, except that it is more argillaceous and darker.
- 1281-91 Some silty and argillaceous limestone, and some crystalline, tan to gray, partially chert-replaced.

Lexington

- 1291-1300 Limestone, some silty and argillaceous; some dense, fine-grained, dark-gray, fossiliferous.
- 1300-17 Still much argillaceous limestone, but some is crystalline, with partially replaced fossils.
- 1317-28 Limestone, more silty again; still some crystalline limestone; cut fault, 110 feet of section missing.
- 1328-35 More calcareous, but still some silty; limestone is cleaner--less shaly material.
- 1335-50 Limestone is progressively cleaner of shaly material, but still some silt.
- 1350-85 Limestone, some silty and dark argillaceous, some dolomitic, some dense. Cut fault; 55 feet of section missing.

Stones River

- 1385-1400 Limestone, introduction of lithographic limestone; much medium-crystalline dolomite, and some that leaves dolomoidic, siliceous shale residue.
- 1400-09 Dolomite, light-gray, medium crystals.
- 1409-17 Dolomite, brown, vitreous, medium to coarse crystals; much chert, some of it tan and mottled, suggestive of that in the Devonian, and some darker brown; some material (pale greenish-gray with tiny pyrite inclusions) suggestive of silicified bentonite; considerable pyrite.
- 1417-28 Dolomite, brown, vitreous; contains occasional inclusions of crystalline, white, coarse dolomite (dolomite equivalent to the "bird's-eye" limestone).
- 1428-34 Same, plus some cream to tan chert.
- 1434-73 Dolomite, brown, breaking into fine fragments like sand.
- 1473-90 Lithographic limestone, with some dolomite, as above.
- 1490-96 Dolomite crystals, enclosed in lithographic limestone.
- 1496-1506 Limestone, mainly more dolomitic than above; a little of it only slightly dolomitic.
- 1506-40 Tan, lithographic limestone, with some tan dolomite.
- 1540-54 Same, plus some dark-brown chert.
- 1554-1600 Lithographic, tan, limestone and dolomite.
- 1600-34 Tan to gray, lithographic limestone, very little dolomite. Cut fault, and 195 feet of section missing.
- 1634-73 Slightly argillaceous.
- 1673-98 Much more dolomitic, brown, medium crystals.
- 1698-1704 Some lithographic limestone and dolomite again.
- 1704-25 More dolomite than limestone.
- 1725-40 Dolomite, and some limestone; a little argillaceous material in residue.
- 1740-52 Limestone, brown, lithographic, with a little dark argillaceous dolomite.
- 1752-69 Dolomite, calcareous, very finely crystalline, light tannish-gray.
- 1769-86 Same; some of it argillaceous.

(Wells Creek)

- 1786-96 Dolomite, calcareous, very finely crystalline, light tannish-gray; much very fine silt.

1796-1802	Dolomitic limestone, very light tan to cream; no silt.
1802-12	Same, but silty.
CAMBRIAN	
<u>Knox</u>	
1812-19	Dolomite, white to light-gray, more coarsely crystalline than above; rare rounded and frosted sand grains and fine, lacy dolomolds.
1819-28	Much more finely crystalline, and a little silty.
1828-34	Some of the dolomite is coarser; rare green shale and dolomolds have faint greenish appearance.
1834-48	Dolomite, white, very finely crystalline; more green shale.
1848-55	50% residue of blue-white translucent chert, dolomoldic silt, and green shale.
1855-73	About 25% residue, much the same as above.
1873-81	Dolomite, light-tan, very finely crystalline to rather coarsely crystalline some very slick green shale with pyrite; some gray chert.
1881-85	Dolomite, very tightly crystalline, cream to tan, vitreous.
1885-90	Dolomite, some very finely crystalline; some coarser, with very distinct rhombs; little blue-white chert and rare shale fragments.
1890-95	Dolomite, some very fine, some coarse, vitreous; little gray-blue chert; few fragments of green shale.
1895-1901	Dolomite, same, plus some chalky-white dolomoldic chert.
1901-06	Same, plus some chalky-white dolomoldic chert.
1906-10	Dolomite, brown, coarse-crystalline; more chert than above, some of it quartzose; much shiny green shale, evidently cave.
1910-16	Dolomite, white, coarsely crystalline; considerable chert, some dull-white and dolomoldic, some translucent white.
1916-20	Dolomite, white, coarsely crystalline, more open than the dolomites above; still cherty, some chalky-white, some translucent.
1920-35	Dolomite, light-tan and gray, some fine and some coarse; still cherty.
1935-46	Dolomite, very finely crystalline, creamy-white; less chert.
1946-51	Same, with some of the dolomite much more coarsely crystalline; few fragments of shiny, green, bentonitic shale.
1951-56	Dolomite, tan, medium crystals, little porosity; no chert.
1956-61	Dolomite, very finely broken, porous; some translucent chert and occasional broken grains of quartz sand.
1961-66	Dolomite, finely crystalline, light-gray; gray-white translucent chert common; rare broken crystal of quartz.
1966-81	Same, very finely broken.
1981-95	Dolomite, light-brown, fine- to medium-crystalline; translucent chert and green bentonitic shale.
1995-97	Same, with less shale, and rare rounded and frosted sand grains.
1997-2002	Dolomite, very finely crystalline, with a little interstitial clay, gray, sharp contrast to that above.
2002-07	Same, plus some very finely crystalline, light-gray dolomite.
2007-15	Dolomite, fine to medium crystals, light-cream; little chert, occasional dull-white, dolomoldic; rare rounded and frosted sand grains enclosed in dolomite.
2015-18	Dolomite, with much chert, some dull-white with rare dolomolds and some sharp and translucent; rare rounded and frosted sand grains and bentonitic shale.
2018-27	Dolomite, very tight, gray-brown, with considerable chert.
2027-35	Dolomite, creamy-white, finely crystalline; little dolomoldic chert.
2035-46	Much less chert, but occasional floating sand grains.
2046-56	Occasional sand grains enclosed in chert.
2056-71	Dolomite, white to light-gray, finely crystalline; less chert than above.
2071-76	Dolomite, medium crystals, brown; little apparent porosity.
2076-82	Very tight and finely crystalline cream dolomite.
2082-95	Same, with translucent chert rare.
2095-2100	Dolomite, dark brownish-gray, medium crystals.
2100-08	Dolomite, white to light-gray.
2108-16	Same, plus considerable blue-white translucent chert.
2116-35	Dolomite, medium crystals, both white and brown; much rounded sand enclosed in chert.
2135-40	Less chert, and some porosity.

- 2140-57 Much light-gray translucent chert.
 2157-73 Dolomite, much lighter in color, and less cherty.
 2173-91 Dolomite, more coarsely crystalline, light-gray, with many floating sand grains, rounded and frosted.
 2191-95 Dolomite, light gray-tan, coarsely crystalline; little chert.
 2195-2201 Large rounded and frosted sand grains, more numerous than above.
 2201-11 Dolomite, brown, tightly crystalline; little chert or sand.
 2211-15 Dolomite, light-gray to white, with considerable gray-white translucent chert.
 2215-25 Less chert.
 2232-36 Dolomite, very badly iron-stained, with much tool metal in sample; residue shows very fine white sand or silt.

Cut reverse fault - + 1200 feet vertical displacement, resulting in repetition of section.

Lexington

- 2236-37 Limestone, iron-stained.
 2237-38 Dolomite and limestone, with a little shiny gray to black clay; residue shows a little chert, as in Knox, with rare dolomolds.
 2238-39 Limestone, light, crystalline to dense; still badly iron-stained.
 2239-47 Limestone, dolomite, light-colored, crystalline to dense; residue shows a little replacement chert and shiny black clay.
 2247-57 Limestone, darker gray, siliceous; leaves residue of only slightly porous, dark-gray, siliceous material; black clay.
 2257-58 $\frac{1}{2}$ More tool metal.
 2260-65 Limestone, dark-gray, slightly silty.
 2265-70 Limestone, very dark gray-brown, fine-grained and silty.
 2270-96 Silty limestone, dark brownish-gray; little crystalline or fossiliferous limestone.
 2296-2304 Limestone, less silt; some light, with dark mottling.
 2304-11 Limestone, some dark-gray, fine-grained and argillaceous; some coarsely crystalline and fossiliferous, with little phosphate; little replacement silica.
 2311-18 Limestone, gray, crystalline, fossiliferous and phosphatic.
 2318-24 Limestone, light-gray, coarsely crystalline, very fossiliferous and some phosphate.
 2324-33 Limestone, little darker and finer grained, some of it almost black and argillaceous.
 2333-48 Limestone, darker brownish-gray, crystalline, fossiliferous, occasional streaks slightly argillaceous.
 2348-82 Limestone, light-gray, with tiny flecks of black phosphate, occasional more or less silty streaks.
 2382-2415 Limestone, dark gray-brown, crystalline, and some argillaceous.
 2415-22 Limestone, lighter tan, crystalline, and fossiliferous, plus a little tan, lithographic; some bentonite. (Contact of Lexington and Tyrone)

Chazy-Black River (Tyrone at top)

- 2422-40 Limestone, dark-gray and tan, lithographic; a little dolomitic, argillaceous limestone, leaving residue of dolomoldic gray shale.
 2440-50 Limestone, cleaner, lithographic, light-cream, little dolomite; little bentonite and dolomoldic brown shale.
 2450-60 Limestone, tan, lithographic, and dolomitic.
 2460-77 Limestone, tan, dolomitic; little chert, dull-white, with tiny scattered dolomolds.
 2477-83 Limestone, tan, lithographic, much less dolomitic.
 2483-96 Limestone, a little more dolomitic; a little tannish, dolomoldic chert.
 2496-2556 Limestone, tan, lithographic; occasional streaks of dolomite.
 2556-63 Limestone, as above, plus some very coarsely crystalline dolomite and calcite.
 2563-2640 Limestone, lithographic, as above, with only occasional streaks of dolomite.
 2640-45 Same, plus a little dark-brown chert in thin fragments.
 2645-2735 Limestone, lithographic, with only occasional streaks of dolomite.
 2735-61 Limestone, lithographic, brown, with rare streaks of dolomite and occasional streaks of darker and slightly argillaceous limestone.

- 2761-76 Limestone, same texture, but some of it almost white.
 2776-82 Limestone, lithographic, tan, little more dolomite than above.
 2782-93 Almost entirely tan, crystalline dolomite, vitreous and tight.
 2793-2826 Much dolomite, as above, with some lithographic, tan limestone.
 2826-54 Dolomite, tan, crystalline, and a little lithographic, brown limestone.
 2854-2924 Limestone, lithographic, dark-gray; less dolomite than above. Some of it slightly argillaceous.
 2924-79 Dolomite, calcareous, very finely crystalline, brown.

(Wells Creek)

- 2979-81 Same, with introduction of some dolomite, finely crystalline, very light gray to white, and rare greenish fragments.
 2987-98 Dolomite, very light gray and finely crystalline.
 2998-3018 Limestone, lithographic, very light, dull-gray, with some dolomite streaks.
 3018-25 Same as above, plus some dolomite, white, crystalline, like Knox; very little fine silt in residue.
 3025-31 Dolomite, white, rather finely crystalline; rare fragments of greenish shale.
 3031-40 Dolomite, as above, with more definitely green shale.
 3040-49 Dolomite, medium crystals, white, little greenish shale.
 3049-60 Dolomite, as above, plus some that is dull-white, chalky, and looks like chert.
 3060-69 Dolomite, medium crystals, white, some slightly greenish; much very fine silt in residue; (Almost 100% in volume)
 3069-84 Dolomite, light-gray to tan, finely crystalline, enclosing some very fine sand.

CAMBRIAN

Knox

- 3084-93 Dolomite, medium crystals, light-cream to tan; rare translucent chert.
 3094-3125 Dolomite, more finely crystalline than above; still occasional fragments translucent chert.
 3125-44 Same, but lighter in color, and a little more chert.
 3144-60 Dolomite, tan, medium to coarsely crystalline; translucent chert, with occasional fragments chalky; at 3125 some chert is oolitic; rare rounded and frosted sand grains.
 3160-67 Dolomite, light tannish-gray, coarsely crystalline, with a little chalky chert showing dolomolds; much bright-green shale, with tiny flecks of pyrite. (This is a good characteristic zone, widespread and easily recognized near top of Knox dolomite in Kentucky.)
 3167-86 Dolomite, light-cream, much more finely crystalline than above, and very tight; no chert.
 3187-96 Dolomite, brown, vitreous and crystalline; no chert.
 3196-3204 Brown, vitreous, finely crystalline; very small chert residue.
 3204-12 Same kind of dolomite, plus occasional fragments very coarsely crystalline, which are imbedded in chalky-white chert; about 10% residue of chert, dense, with conchoidal fracture, and a little that is very dolomoldic rare rounded and frosted grains.
 3223-34 Dolomite, as above; little silty chert, and rare fragments of gray chert.
 3236-41 Dolomite, finely crystalline, light-tan to cream; about 10% white to translucent chert.
 3241-47 Dolomite, as above, but about 20% chert, some of it brown, translucent.
 3247-54 Dolomite, very fine grained, gray to tan; very little chert.
 3254-58 Dolomite, hard, brown, crystalline, splits through the grains; 5% chert, very porous, with some dolomolds.
 3258-62 Dolomite, brown, less glassy than above; 10% chert, most of which is white, with very fine lacy dolomolds.
 3262-69 Same kind of dolomite; less dolomoldic, but more chert.
 3269-75 Dolomite, as above; little translucent chert.
 3275-87 Dolomite, medium crystals, with some porosity; occasional pieces of finely dolomoldic chert, and rare pieces of translucent, blocky chert.
 3287-93 Dolomite, finely crystalline, dull, light gray-tan; very little chert, some pyrite.
 3293-3305 Dolomite, very tight, hard, and fine-grained, with very little interstitial brown and white chert.

- 3305-11 Dolomite, tan, fine to medium crystals; 15% chert, translucent, white to gray.
- 3311-15 Dolomite, brown, more or less sucrose, medium crystals; no chert.
- 3315-22 Dolomite, brown, finely crystalline (few fragments of black shale).
- 3322-32 Dolomite, as above; rare shale fragments, very dark green, and rare fragments of brown chert, suggestive of that beneath a bentonite.
- 3332-39 Dolomite, as above, plus some that is much lighter in color; rare greenish shale; occasional fragments of white translucent chert.
- 3339-45 Dolomite, gray, tightly crystalline; 10% chert, white to gray to almost black, and some pyrite.
- 3345-54 Dolomite, light-tan, fine to medium crystals; leaves very fine, thin-walled brown dolomolds.
- 3354-61 Dolomite, light, hard, fine-grained; no chert; little pyrite.
- 3361-76 Dolomite, tan, medium crystals; 10% translucent, white to cream chert.
- 3376-84 Dolomite, little more coarsely crystalline, tan; 5% chert, most of which is very dolomoidic, the dolomoids having very thin walls.
- 3384-90 Dolomite, coarsely crystalline, breaks through grains, cream; very little blue-white translucent chert.
- 3390-3403 Dolomite, finely crystalline, cream; 15% chert, large fragments very lacy with small, fine dolomolds; little translucent chert.
- 3403-19 Dolomite, some as above, with fine, lacy dolomolds, some very coarsely crystalline; some chert is translucent and splintery, some is dull gray-white, with occasional large, isolated dolomolds.
- 3419-29 Dolomite, coarsely crystalline, brown; 25% chert, some light-gray, splintery, with small black inclusions, some brown, translucent, and a little white, with large dolomolds.
- 3429-39 Dolomite, some as above; mainly much more finely crystalline, brown to gray dolomite; 25% chert, little of it brown, as above, little tan, silty material, and mainly blue-white, translucent.
- 3439-46 Dolomite, light-cream, very fine to medium crystals; some blue-white translucent chert.
- 3446-50 Dolomite, brown, finely to medium-crystalline; little blue-white translucent chert.
- 3450-57 Dolomite, cream, finely crystalline; chert rare.
- 3457-65 Dolomite, brown, sucrose, medium-crystalline; very little brown translucent chert.
- 3465-72 Dolomite, light-gray to tan, finely crystalline; much chert, some gray, some brown, some translucent, and some enclosing large rounded and frosted sand grains.
- 3472-75 More chert than above; some gray, some gray-blue, some blue-white, some brown and splintery.
- 3475-3502 Dolomite, finely crystalline to medium, cream; little blue-white chert.
- 3502-08 Dolomite, cream, fine- to medium-crystalline; much blue-white translucent chert.
- 3508-16 Same, but darker gray-brown, finely crystalline, with very little chert.
- 3516-23 Same kind of dolomite, enclosing occasional large rounded and frosted sand grains.
- 3523-28 Dolomite, coarsely crystalline, light-tan; little dull-white chert, and some dark-green shale.
- 3528-32 Dolomite, very coarsely crystalline, light-gray to white; no chert.
- 3532-48 Dolomite, as above, with a little gray-white chert.
- 3548-55 Dolomite, very finely crystalline, light- to dark-gray, some tan; occasional argillaceous fragments.
- 3555-61 Dolomite, fine- to medium-crystalline, brown.
- 3561-69 Dolomite, very finely crystalline, almost white, with rare enclosed rounded and frosted quartz grains.
- 3569-74 Dolomite, more coarsely crystalline; much chert, translucent, blue-white, with tiny dark inclusions and rare rounded and frosted sand grains.
- 3574-80 Dolomite, brown, medium crystals, vitreous; no chert.
- 3580-87 Dolomite, very finely crystalline, white to cream; occasional grains of rounded and frosted quartz, cemented often with crystalline quartz.
- 3587-95 Dolomite, finely crystalline, cream; 5% residue of quartz grains and translucent chert, enclosing brown oolites, giving polka dotted appearance; pyrite.
- 3595-3601 Dolomite, medium crystals, light-tan; about 2% rounded and frosted quartz.

- 3601-10 Dolomite, finely crystalline, cream; 5% residue of rounded and frosted sand and peculiar brown chert, dark-brown, translucent oolites (without apparent structure) so closely cemented that frequently the white cement is obliterated.
- 3610-16 Dolomite, white, finely crystalline, to tan, medium-crystalline; little rounded and frosted sand and chaledony in residue.
- 3616-24 Dolomite, finely crystalline, tan; 25% residue of brown oolitic chert (white cement) and very fine tan silt.
- 3624-30 Same, with less residue; a little of the white chert dolomoidic.
- 3630-33 Dolomite, medium grains, glassy (breaking across grains); little chaledonic chert.
- 3633-38 Dolomite, finely crystalline and slightly silty.
- 3638-44 Dolomite, medium crystals, cream; 30% vitreous, golden-brown chert.
- 3644-51 Dolomite, as above, plus some very coarsely crystalline, white, leaving large dolomoids in chalky-white chert residue.

Well No. 101 (1054). Sun Oil Company No. 2 George Woods, 830 feet south and 400 feet east of No. 1 well, section 25-M-38, elevation 707 feet, Grayson County.

MISSISSIPPIAN

- St. Louis
- 42-50 Limestone, very light gray, densely crystalline, pseudo-oolitic, with rare fragments of chert.
- 50-53 Limestone, very dolomitic, finely crystalline, pink, with calcite stringers.
- 53-60 Limestone, very dense, fine-grained, almost lithographic, brown to bright coral-pink, with chert either pink or deep blue-gray.
- 60-72 Limestone, as above; more gray than pink.
- 72-79 Limestone, dense, gray-brown; considerable gray chert and weathered fragments of chert and sand.
- 79-88 Limestone, dense, brown; much stained and weathered chert.
- 88-92 Limestone, dense, brown, and some distinctly gray; less chert than above; limestone is slightly dolomitic.
- 92-96 Limestone, dense to subgranular, brown.
- 96-106 Limestone, as above, slightly dolomitic; pink in color and containing pink-stained chert.
- 106-10 Limestone, same, very fine grained, brown to gray to pink, very slightly dolomitic.
- 110-14 Limestone, as above, but some is darker brown, almost black.
- 114-25 Limestone, very dense, hard, dark gray-brown.
- 125-31 Limestone, very light gray, fine-grained, dolomitic, with leached appearance; little chert.
- 131-33 Limestone, some light-gray, dolomitic, as above; some very dark gray-brown, dense; still some weathered chert.
- 133-42 Limestone, very dense, dark-brown.
- 142-50 As above, with much weathered limestone and chert.
- 150-60 Limestone, some weathered, some almost black, and some light-tan, crystalline.
- 160-74 Limestone, very dark, brownish-gray, fine-grained.
- 174-83 Limestone, gray, granular, with occasional brown fossiliferous fragments; trace of gray chert.
- 183-90 Dolomitic limestone, leached and porous.
- 190-221 As above, with calcite in rounded grains as clear as quartz.
- 221-25 Limestone, some dense; much porous calcite; little pink limestone.
- 225-32 Limestone, slightly dolomitic, gray; white, spongy calcite, as above.
- 232-40 Dolomite, brown, finely crystalline; slightly porous.
- 240-45 Limestone, dark-brown, dense, with enclosed rounded fragments of fossils, giving appearance of microconglomerate.
- 245-50 Limestone, very dark brown, fine-grained, very slightly dolomitic.
- 250-55 Limestone, almost black, with a little very dark chert.
- 255-58 Limestone, dark-gray, containing particles faintly suggestive of oolites (limestone pellets).
- 258-68 Limestone, dark-gray, dense, slightly dolomitic; rare dark chert.

Salem

- 268-73 Limestone, dark-gray, dense, with many inclusions of dark material, which may be phosphatic; fossiliferous.

- 273-91 Limestone, brown, mottled, very fossiliferous.
 291-325 Same kind of mottled limestone, with many ostracod fragments and one complete Paraparchites carbonaria.

New Providence-Fort Payne-Warsaw

- 325-45 Limestone, dark grayish-brown, argillaceous.
 345-51 Limestone, mottled, as above, crystalline to dense, very fossiliferous and slightly phosphatic.
 351-56 Limestone, little as above; some very argillaceous, dark-gray, with many fenestrated bryozoans.
 356-60 Limestone, mottled with phosphate, very fossiliferous, leaving large brown calcite fragments; some argillaceous; chert rare.
 360-75 Limestone, more argillaceous and darker gray.
 375-86 Limestone, mottled, fossiliferous and phosphatic.
 386-94 Limestone, as above, with a little dark-gray chert.
 394-98 Limestone, argillaceous, siliceous; some chert.
 398-470 Limestone, dark-gray, very siliceous, with fine chert and quartz disseminated through it.
 470-578 Limestone, black, very argillaceous; occasional fossil fragments.
 578-98 Limestone, gray, argillaceous, but less so than above.
 598-609 Limestone, gray, with considerable gray chert.
 609-53 Limestone, gray, less chert and more argillaceous than above; gradually darker with depth.
 653-60 Limestone, almost black, very argillaceous; dark-gray, mottled chert.
 660-706 Limestone, as above, with less chert; becomes black near base.
 706-11 Limestone, as above; some light-gray, crystalline, with much chert.
 711-22 Limestone, black, argillaceous, with occasional gray chert fragments.
 722-33 Limestone, very pale gray-green, with light blue-white, translucent, opalescent chert.

New Albany

- 733-40 Limestone, as above, in contact with black shale, dull, noncalcareous, but not petroliferous; little pyrite.
 740-48 Shale, black, carbonaceous, with a little gray-green shale.
 748-72 Shale, black. Cut fault here; loss of section.

DEVONIAN

Jeffersonville

- 772-76 Shale, as above, in contact with limestone, dense, hard, fine-grained, light gray-tan.
 776-85 Limestone, dense, white, with much white chert.
 785-803 Limestone, dense, white to very light tan, some fragments faintly crystalline; less chert than above.
 803-08 Limestone, white to light-tan, crystalline.

SILURIAN

Brownsport

- 808-20 Limestone, white, coarsely crystalline; considerable brown chert with dark inclusions; contact of Jeffersonville and Silurian.
 820-48 Limestone, very white and coarsely crystalline; no chert. (Reef rock)
 848-73 Limestone, coarsely crystalline, white, and distinctly pink-speckled.
 873-80 Limestone, pink-speckled, as above, with some distinctly green and enclosing very fine sand; pyrite.
 880-88 Limestone, some crystalline, as above; mainly gray, silty limestone, with a little gray, chalcedonic chert and pyrite.
 888-99 Limestone, same, white and yellowish, crystalline, with breaks of gray, silty limestone.
 899-908 Limestone, very dolomitic, light gray-tan, rare fragments argillaceous and cherty.
 908-25 Limestone, creamy-gray, finely crystalline and dolomitic.
 925-35 Limestone, gray, dull, dense, slightly argillaceous.
 935-41 Limestone, as above, slightly silty.
 941-54 Limestone, gray, subcrystalline to slightly argillaceous.
 954-62 Limestone, gray, as above, with some gray calcareous shale.
 962-70 Limestone, very argillaceous, dark-gray.

- 970-75 Limestone, little argillaceous, dark; mainly light-gray to white, very coarsely crystalline limestone.
 975-84 Limestone, coarsely crystalline, white to light-gray.
 984-91 Dolomite, finely crystalline, medium-gray. Fault, with loss of 160 feet of section, including most of the Lego.
 991-1005 Limestone, white, crystalline, slightly vugular, and oil-stained.

Waldron
 1005-10

Limestone, crystalline, with some soft gray shale.

Laurel
 1010-29
 1029-59

Dolomite, white to pale-gray, crystalline, dense.
 Dolomite, white to pale-gray, coarsely crystalline, vugular; slightly pyritic.

Osgood

1059-66
 1066-75

Some dolomite, more gray-green and slightly argillaceous.
 Dolomite, dense, white to pale-gray; trace of pyrite.

Brassfield
 1075-1105

Dolomite, medium-coarse crystalline, slightly argillaceous, with mottled chert. Fault, with loss of 50 feet of section, including part of upper Ordovician.

ORDOVICIAN

Maysville
 (Tate)

1105-22

Dolomite, argillaceous, dark-gray.

(Fairmount)

1122-30
 1130-90

Limestone, dark-gray, slightly argillaceous.
 Limestone, very argillaceous, dark-gray, dense, with some interbedded purer limestone.

Garrard

1190-1223
 1223-95

Limestone, argillaceous, dark-gray, some fossiliferous; trace of chert in top.
 Shale, slightly calcareous, silty, very dark gray.

Cynthiana-Million

1295-1411
 1411-19
 1419-40

Shale, slightly calcareous, less silty than above, very dark gray.
 Limestone, dark-brown, fine-grained.
 Shale, calcareous, very slightly silty, very dark brown, almost black.

Lexington

1440-73

Limestone, brown, dense to coarsely crystalline, pyritic, with little interbedded shale.

1473-89

Limestone, brown, densely crystalline to coarse and fossiliferous; trace of replacement silica.

1489-1508

Limestone, dark-brown, argillaceous and slightly silty. Fault, with loss of 110 feet of section.

1508-40

Limestone, argillaceous, dark gray-brown. Fault, with loss of 55 feet of section.

Chazy-Black River (Camp Nelson portion)

1540-92

Dolomite, very densely crystalline, tan; trace of chert, the same color.

Well No. 102 (1056). Texas Oil Company No. 1 M. E. Allen, section 9-M-36, elevation 730 feet, completed 2-7-45, Grayson County.

MISSISSIPPIAN

110-20
 120-50

Limestone, shaly, very fine grained, gray-tan.
 Shale, fine-grained, clayey, gray to gray-green.

Vienna

150-60 Limestone, brown, fossiliferous, crinoidal, with many small bryozoans.

Tar Springs

160-70 Clay, gray.
170-80 Shale, red and green, fine-grained.
180-90 Clay, gray.

Glen Dean

190-260 Little dark-gray shale; mainly limestone.

Hardinsburg

260-90 Green shale and quartzitic sandstone.

Golconda

290-310 Limestone, light-tan, fossiliferous.
310-30 Limestone, light-tan, fossiliferous, trace oolitic and dolomitic.
330-50 Gray fissile shale, some sandy shale.

Big Clifty

350-80 Sandstone, poorly sorted, medium- to coarse-grained, angular to sub-rounded, well-cemented to poorly cemented.
380-90 Shale, gray, fissile.

Paint Creek

390-400 Same, plus limestone, mottled, fossiliferous.
400-10 Limestone, some as above, some very fine grained, brown, slightly fossiliferous.
410-30 Some limestone, as above; some shale, green, and a little red.
430-50 Some shale, as above; limestone, brown, fine-grained and oolitic.

Bethel

450-70 Sandstone, medium-grained, not too well sorted; much pyrite.
470-90 Limestone, very fossiliferous and oolitic, chalky, with Salem dwarf fauna.
490-510 Limestone, as above, some slightly dolomitic.
510-30 Limestone, light gray-tan, fine-grained to fossiliferous; trace of shale and sandstone.

Ste. Genevieve

530-60 Limestone, tan, fine-grained; occasional streaks of greenish shale.
560-90 Limestone, finely dolomitic, creamy-gray.
590-600 Limestone, tan, fine-grained, few imperfect oolites.
600-20 Limestone, very finely dolomitic, pale-gray; traces of green shale and pyrite.
620-50 Limestone, oolitic, almost white.
650-70 Limestone, finely dolomitic, some pale-gray.
670-80 Limestone, white, oolitic, slightly dolomitic.
680-740 Limestone, tan, fine-grained, with some imperfect oolites.
740-50 Limestone, very dolomitic and porous, some oolites without cementing material.
750-90 Limestone, finely dolomitic, brown.
790-830 Limestone, finely crystalline, creamy-gray, with a little light-gray chert.

St. Louis

830-60 Dolomite, medium-crystalline, tan; occasional *Endothyra* and chert.
860-920 Dolomite, finely crystalline, with a little pale-gray chert.
920-40 Limestone, dolomitic and gypsiferous, brown.
950-1040 Limestone, brown, densely crystalline; dolomitic below 960.
1040-1110 Limestone, argillaceous, fine-grained, gray-brown, with considerable gypsum.
1110-40 Limestone, brown, densely crystalline; some mottled chert, same color as limestone.
1140-50 Limestone, argillaceous, very hard (much tool metal).
1150-1200 Limestone, slightly dolomitic, brown and mottled.

Salem

1200-20

Limestone, mottled, fossiliferous, dwarf fauna, ostracods and EndothyraWarsaw

1220-40

Dolomite, finely crystalline, dark gray-brown, considerable gypsum.

1240-1300

Limestone, crystalline, fossiliferous, mottled; trace of green shale; dark-gray argillaceous limestone at 1270-80.

Borden and New Providence

1300-30

Limestone, very siliceous, brown (looks like limestone, but actually almost entirely mottled silica).

1330-1700

Limestone, very siliceous and argillaceous, dark gray-brown.

1700-20

Shale, very dark gray, slightly calcareous and silty.

1720-30

Shale, as above, some very glauconitic; little limestone, crystalline, very fossiliferous, with some translucent chert.

1730-40

Shale, slightly calcareous, very glauconitic, dark-gray.

New Albany

1740-1830

Shale, black, pyritic.

DEVONIAN

Jeffersonville

1830-50

Limestone, cream, crystalline, with trace of replacement chert.

SILURIAN

Brownsport

1850-80

Limestone, cream, with some very finely dolomitic.

1880-1900

Limestone, finely dolomitic and slightly argillaceous, gray-brown.

1900-70

Limestone, some slightly argillaceous, gray; some tan, crinoidal, with trace of translucent, opalescent chert at 1940.

1970-2000

Limestone, as above; some shale, dark gray-brown, slightly calcareous.

2000-20

Limestone, crystalline and fossiliferous, interbedded with gray-brown, slightly calcareous shale.

2020-60

Limestone, crystalline to slightly dolomitic; some slightly argillaceous.

2060-2110

Siltstone, green-gray, slightly calcareous.

2110-30

Limestone, dolomitic, slightly silty, white to pale-green.

Lego-Laurel

2130-90

Dolomite, white to pale-gray, coarsely crystalline (texture of "Blue sand"); trace of green shale at 2150-60 (Waldron).

Brassfield

2190-2200

Dolomite, white to pale greenish-yellow, medium to coarsely crystalline; trace of chert.

ORDOVICIAN

Maysville

2210-30

Dolomite, argillaceous, gray; trace of gray chert.

2230-70

Dolomite and limestone, argillaceous, gray, phosphatic.

2270-2400

Limestone, very argillaceous, fossiliferous.

Cynthiana-Eden

2400-20

Limestone, as above; some siltstone, calcareous.

2420-2560

Shale, slightly calcareous, dark-gray, silty.

2560-70

Silt, calcareous and argillaceous, dark-gray.

2570-2630

Shale, slightly calcareous, dark-gray.

Lexington

2630-90

Shale, calcareous, more coarse-textured than above, and brown to black instead of gray.

2690-2730

Limestone, gray-brown, finely crystalline to fossiliferous.

2730-90

Limestone, slightly argillaceous, very dark brown, fine-grained.

2790-2810

Limestone, argillaceous, as above, gray-brown; little limestone with enclosed sand grains.

Chazy-Black River (top Tyrone)

- 2810-50 Limestone, very fine grained to sublithographic, brown to greenish-gray where enclosing bentonitic clay; bentonite at 2840.
- 2850-3000 Limestone, very fine grained, light-brown, with traces of brown crystalline dolomite.
- 3000-10 Limestone, fine-grained, brown to gray, slightly argillaceous.
- 3010-50 Limestone, fine-grained, brown.
- 3050-80 Limestone, as above; trace of dark-brown translucent chert.
- 3080-3150 Limestone, fine and brown.

Well No. 103 (146). Cumberland Petroleum Company No. 2 Alonzo Davis, SE corner 20-L-46, elevation 728 feet, Hart County.

DEVONIAN

Sellersburg

- 375-82 A few brownish dolomite rhombs enclosed in black shale; little very fine sand; white crystalline limestone. Residue shows a little argillaceous material, light-tan, and very fine sand.
- 382-89 Limestone, light-gray to white, with chert, some of which is intergrown with the limestone. Residue is chert, blue-white, translucent, breaking with conchoidal fracture.
- 389-96 Dolomite, white, evenly crystalline. Very little chert as above; occasional fragments of leached sand, the grains being medium in size and showing some rounding, the larger ones showing frosting and then fracture. (The larger rounded and frosted grains are about .6 mm., and the smaller enclosing grains .3 mm.)

SILURIAN

Dixon

- 396-403 Dolomite, white, evenly crystalline; very little chert, and no sand.
- 403-10 Dolomite, white, more coarsely crystalline than above, with very thin streak of green, fissile shale; shows occasional angular pores.

Lego

- 410-31 Dolomite, white, coarsely crystalline, almost 100% carbonate; shows some angular pore space; occasional grains are bluish in color.
- 431-38 Dolomite, as above, with thin flakes of green fissile shale in residue.
- 438-45 Dolomite, gray, less regularity of crystal size and less porosity; little finely divided silica left in residue.

Waldron

- 445-52 Dolomite, as above, with more porosity; mostly calcareous shale, dark-gray, with little finely disseminated silica and pyrite.

Laurel

- 452-59 Dolomite, white, coarsely crystalline, with high porosity; a little greenish dolomite, more finely crystalline, with a little finely disseminated silica; few fragments of green fissile shale; dolomitic oolitic structures, each coated with fine crystals of dolomite.
- 459-66 Dolomite, white, as above, and some blue-gray, with finely dispersed pyrite; same oolitic structures; no shale.
- 466-80 Dolomite, white, more finely and evenly crystalline than above; glauconite globules enclosed.
- 480-87 Dolomite, white to gray, coarsely crystalline, much angular porosity.
- 487-508 Even more porous than above, but with additional fragments of dolomite, which is hard and dense.

Osgood

- 508-15 Some dolomite, as above; some finely crystalline, greenish dolomite; few flakes of green shale.
- 515-22 Dolomite, finely crystalline and green; shale, dolomitic, green, leaving soft green shale residue.
- 522-29 Shale, gray-green, calcareous, leaving a large residue of soft, greenish shale.
- 529-36 Shale, green and red, some calcareous.
- 536-43 Shale, as above; some fine dolomite, green and red, argillaceous.

Brassfield

- 543-50 Dolomite, white to light-tan, tightly crystalline and cherty; chert dense and blocky, white to gray, some of it has thin-walled dolomolds.
550-64 Dolomite, tan, fragments have rubbly surfaces; cherty, as above.
564-71 Dolomite, as above, but less cherty, the chert being either replacements of crinoid fragments, enclosing glauconite, or dolomoldic.

ORDOVICIAN

Richmond

- 571-78 Dolomite, finely crystalline, some argillaceous from enclosed red and green shaly material; few fragments of dense, tan limestone.
578-85 Dolomite, white, rather finely crystalline; very little argillaceous dolomite; little very fine sand enclosed in the dolomite.

Maysville

(Gilbert)

- 585-99 Limestone, dense, dull-gray; little dolomite, which is slightly silty.
(Tate)
599-606 Dolomite, finely crystalline, with finely disseminated sand, greenish.
606-13 Dolomite, as above, and limestone, dense, dull, greenish-gray and pinkish-tan, enclosing glauconite and pyrite.
613-20 Limestone, as above, with a little chert which breaks into slender rectangles.
620-27 More dolomitic and green, with more silt.
627-35 Dolomite, finely crystalline, gray, with inclusions of black material (probably phosphate), silty; very little chert, as fossil replacements (fragments of bryozoans being most common); some very fine sand.
635-42 Dolomite, as above, and some greenish, finely crystalline dolomite; little very fine sand in residue.
642-49 Limestone, dark-gray, some coarsely crystalline and fossiliferous, with bryozoan and brachiopod fragments; some limestone, very argillaceous, leaving residue of porous gray clay and nodular chert.
(Fairmount)
649-56 Limestone, dark-gray, very argillaceous; some dense limestone, with green splotches.
656-63 Limestone, dark grayish-brown, argillaceous, and some crystalline, fossiliferous.
663-70 Limestone, introduction of lithographic, dense, dark brownish-gray, with ostracods.
670-77 Limestone, dense to crystalline, greenish-gray, with some phosphatic inclusions.
677-91 Limestone, as above, but more silty and argillaceous.
691-768 Same, with a little secondary chert; interbedded fossiliferous, crystalline, with argillaceous, granular limestone.
768-75 Nearly all coarsely crystalline gray limestone, with many bryozoans.

Garrard

- 775-810 Limestone, as above, with some very finely silty.
810-17 Mainly coarsely crystalline limestone, with many bryozoans and much phosphate; some silt.
817-80 Siltstone, calcareous, very argillaceous and dark, with occasional streaks of phosphatic limestone.

Cynthiana-Million

- 880-922 Shale, coarse-grained, silty, slightly calcareous, gray.
922-36 Shale, very slightly calcareous, with some interbedded limestone, brown to black.
936-65 Shale, slightly silty and very calcareous, streaked with fossiliferous limestone.
965-71 Limestone, densely crystalline, very fossiliferous, gray.
971-92 Shale, slightly calcareous and very slightly silty, interbedded with fossiliferous limestone.
992-1006 Shale, calcareous, interbedded with a little fossiliferous, phosphatic limestone.

Lexington

- 1006-80 Shale, slightly calcareous, with some brown, fossiliferous limestone and brown replacement chert.
- 1080-1110 Limestone, densely crystalline, brown, with some brown, argillaceous; some brown to gray replacement chert.
- 1110-62 Limestone, pale-gray, densely crystalline to coarsely fossiliferous; some phosphatic; occasional pink calcite inclusions in the upper part.
- 1162-90 Limestone, very fossiliferous, crystalline, brown; very little interbedded shale.
- 1190-1227 Shale, slightly calcareous, almost black, finely phosphatic.
- 1227-41 Limestone, finely crystalline, silty and slightly argillaceous, very finely phosphatic; trace of chert.

Chazy-Black River (Tyrone at top)

- 1241-55 Limestone, light tannish-gray, lithographic; little chert, same color and texture as limestone; trace of bentonite.
- 1255-1303 Limestone, duller, and with less chert; still occasional fragments of bentonite.
- 1303-11 Same, with a little darker, more argillaceous limestone, leaving porous dark shale residue.
- 1311-50 Limestone, brown, lithographic, with occasional streaks of crystalline dolomite; trace of tan-gray chert.
- 1350-1440 Limestone, as above; occasional streaks of argillaceous dolomite, leaving dark-brown, porous, sometimes dolomoldic, shale residue.
- 1440-69 Limestone, tan, lithographic; trace of tan chert.
- 1469-1605 Limestone, tan, lithographic, with occasional tiny streaks of dolomite or argillaceous limestone.
- 1605-63 Limestone, lithographic, with trace of dolomite.
- 1663-1737 Limestone, leaving porous gray shale residue.
- 1737-52 Dolomite, gray, finely crystalline, calcareous.
- 1752-60 Limestone, lithographic, and same kind of dolomite as above; trace of argillaceous dolomite.
- 1760-1838 Limestone, brown, lithographic.
- 1838-54 Limestone, very finely dolomitized and argillaceous, tan.

(Wells Creek)

- 1854-62 More dolomite than above, very finely silty.
- 1862-72 Dolomite, very silty and argillaceous, gray-green.
- 1872-76 Some sandstone; fine, rounded, and coarse grains, with little dolomite cement.

CAMBRIANKnox

- 1876-80 Dolomite, finely crystalline, cream, dense, with some smooth green shale.
- 1880-94 Dolomite, very finely crystalline, dense, cream.
- 1894-1902 Dolomite, brown, densely crystalline; trace of green shale.
- 1902-13 Dolomite, brown, finely crystalline, slightly silty.
- 1913-34 Dolomite, creamy-gray, densely crystalline.

Well No. 104 (42). Patterson, Dyer, and Roeder No. 1A Bond, Grid line 1700' N of SW corner section 25-L-66, elevation 1,458 feet, Jackson County.

DEVONIANSellersburg

- 1068-74 Shale, black, carbonaceous.
- 1074-80 Contact of shale with dolomite, fine-crystalline, brown, with much translucent, spicular chert.
- 1080-83 Dolomite, finely crystalline, light gray-tan; chert, as above.
- 1083-93 Some dolomite, as above; some dolomitic shale, very dark brown, with enclosed very fine sand.
- 1093-99 As above, but more argillaceous.

SILURIANClinton

- 1099-1145 Shale, gray-green and fissile; much pyrite in top few feet.

- 1145-50 Shale, as above; some dolomite, tan, dense, medium-crystalline.
 1150-62 Shale, green, and some dark-red, fissile.
 1162-79 Shale, gray-green, some slightly dolomitic, with trace of silt.
 1179-1201 Shale, fissile, gray-green, trace grayish-red.

Brassfield

- 1201-11 Dolomite, medium to coarsely crystalline, yellow, iron-rich.
 1211-25 Dolomite, medium-crystalline, light-gray, with gray mottled chert.

ORDOVICIAN

Richmond

- 1225-31 Shale, slightly dolomitic, very slightly silty, gray-green.
 1231-63 Siltstone, very fine, argillaceous, dolomitic, gray and maroon.
 1263-85 Dolomite, gray, slightly argillaceous; trace of argillaceous silt in residue; gray, mottled as though phosphatic.
 1285-93 As above, plus some limestone, dark-gray, crystalline to argillaceous, very phosphatic.
 1293-1300 Limestone, very fine grained, argillaceous, almost green; shale residue almost coarse enough to be silt.
 1300-39 Limestone, slightly dolomitic, very argillaceous, finely silty, gray-green.
 1339-53 Siltstone, pale-green to pink, dolomitic and calcareous.
 1358-73 Limestone, fossiliferous, to very dark gray, argillaceous.
 1373-87 Limestone, gray, very finely silty, argillaceous.

Maysville

(Gilbert)

- 1387-94 Limestone, fine, gray, argillaceous; trace of replacement chert.
 1394-1414 Limestone, argillaceous, very fine, dark brownish-gray.

(Tate)

- 1414-67 Limestone, very silty and argillaceous, fine, greenish-gray, with traces of dark-red below 1429.
 1467-82 Siltstone, slightly calcareous and very slightly argillaceous; residue much lighter.
 1482-1500 Limestone, dark gray-brown, fine-grained; some silty, as above.

(Fairmount)

- 1500-07 Limestone, dark brownish-gray; trace of replacement chert; residue (only about 10%) dark shale, almost silty.
 1507-23 Limestone, very dark, as above, argillaceous, slightly fossiliferous.
 1523-40 Limestone, fine-grained, gray-brown, more fossiliferous, less argillaceous.
 1540-65 Limestone, fine-grained, slightly phosphatic and fossiliferous.
 1565-1600 Limestone, lighter gray, crystalline; fossiliferous and phosphatic; shale residue small and fissile.

Garrard

- 1600-42 Siltstone, very slightly calcareous, gray; little gray, fissile shale.
 1642-65 Limestone, gray, very phosphatic, fossiliferous, with some interbedded silt and shale (less than 5%).
 1665-75 Limestone, finer, darker, more argillaceous.

Cynthiana-Million

- 1675-90 Limestone, fine, dark-gray, slightly argillaceous.
 1690-1700 Limestone, gray, very fossiliferous, phosphatic, crystalline; trace of shale.
 1700-50 Limestone, slightly argillaceous, fossiliferous and phosphatic.
 1750-62 Limestone, gray, phosphatic and fossiliferous; rare pockets of silt in limestone.
 1762-75 Limestone, as above, without silt.
 1775-1812 Samples missing.
 1812-52 Limestone, gray, some fossiliferous, slightly phosphatic; interbedded with gray, calcareous to fissile shale, some almost as coarse as silt.
 1852-60 As above, with some brown, densely crystalline limestone.
 1860-70 Limestone, brown to gray, densely crystalline, some slightly argillaceous.

- 1870-91 Limestone, gray to brown, densely crystalline, fine, phosphatic and fossiliferous; trace of replacement chert.
- 1891-1911 Limestone, tan to brown, crystalline, fossiliferous and slightly phosphatic, very clean.
- 1911-20 Limestone, more gray-brown, densely crystalline; trace of replacement silica.
- 1920-39 Limestone, very finely crystalline, dark-brown, clean; trace of replacement silica, brown, quartzose.
- 1939-46 As above, with a little dark calcareous shale.
- 1946-57 Limestone, lighter, more worn and crystalline, with some apparent porosity (logged gas); residue brown, quartzose, replacement silica.
- 1957-2003 Limestone, clear, tan, finely crystalline; residue chert, as above.
- 2003-22 Limestone, gray, finely crystalline, fossiliferous; rare shale fragment in residue; no chert.
- 2022-72 Limestone, brown-gray, crystalline, phosphatic and fossiliferous; trace of replacement chert.
- 2072-2115 Limestone, more gray, fossiliferous and phosphatic.

High Bridge (top Tyrone)

- 2115-25 Limestone, fine, tan, fine-crystalline; some translucent chert; shale, bentonitic.
- 2125-36 Limestone, fine, tan, with much bentonite, some calcareous shale; pyrite.
- 2136-56 Limestone, fine, brown, some bentonitic; some brown translucent chert.
- 2156-87 Limestone, brown, fine-grained, slightly dolomitic.
- 2187-2220 Limestone, brown, fine-grained, very slightly dolomitic; bentonite caving.
- 2220-38 Limestone, very fine grained, cream; occasional fragment finely siliceous.
- 2238-75 Limestone, very slightly dolomitic, brown, fine-grained.
- 2275-2317 Limestone, finely argillaceous, brown-green; residue finely porous shale.
- 2317-2473 Limestone, fine-grained, brown; rare fragments of calcareous shale.
- 2473-2502 Limestone, cream to brown, fine, slightly argillaceous; some green bentonite.
- 2502-86 Limestone, very fine grained, brown; rare fragments argillaceous.
- 2586-2627 Limestone, as above; trace of dolomitic limestone.
- 2627-2720 Limestone, fine-grained; rare fragments argillaceous.
- 2720-38 Limestone, very finely dolomitic, brown; rare trace of black shale.
- 2738-2800 Limestone, fine, dark gray-brown; rare argillaceous fragments.
- 2800-50 Limestone, slightly argillaceous; residue finely banded shale.
- 2850-58 Limestone, very finely dolomitic, light-brown; trace of shale.
- 2858-74 Limestone, very finely dolomitic and slightly argillaceous, gray-brown.
- 2874-91 As above, with trace of very fine silt.

(Wells Creek—St. Peter zone)

- 2891-2900 Dolomite, slightly calcareous, brown-gray, very finely sandy with streaks of fine sandstone and some shale.
- 2900-10 Dolomite, fine-grained; sandstone, well-sorted, interbedded with some gray-green shale.
- 2910-17 Dolomite, brown, medium-crystalline, sandy; occasional streaks of dolomitic sandstone, green shale.

CAMBRIAN

Knox

- 2917-23 Dolomite, cream, medium-crystalline, dense to slightly vugular; occasional sand grains, fine to coarse; rare translucent chert.
- 2923-29 Dolomite, cream, fine-medium crystalline; rare sand float, fine to coarse; trace of chert and green shale.
- 2929-37 Dolomite, creamy-gray, fine-medium crystalline, some sucrose, with interstices filled with dead oily residue; very small residue of sand, fine, angular to rounded, to quartzitic chert, some very finely disseminated; trace of green shale.
- 2937-43 Dolomite, finer and more dense; residue finely banded silty, slightly argillaceous.

- 2943-50 Dolomite, fine-crystalline, dense, gray to brown; residue chert, dense, light-gray, slightly quartzose; medium to coarse, rounded and frosted sand; trace of gray shale.
- 2950-55 Dolomite, fine-crystalline, dense; rare enclosed sand grains; chert, dense, translucent to quartzose, and very drusy, banded or streaked with crystalline quartz.
- 2955-62 Dolomite, fine-crystalline, dense, brown, some vugular; chert, still drusy, with some green shale and sand.
- 2962-72 Dolomite, cream, fine to medium, dense to vugular; chert, dense to quartzose to finely disseminated as fine silt.
- 2972-80 Dolomite, as above; trace of chert; mainly sandy, green shale and pyrite.
- 2980-89 Dolomite, very fine, cream-gray to tan; small residue, mainly medium to coarse, rounded and frosted sand; trace of dark-gray, quartzose chert.
- 2989-96 Dolomite, very fine, light-tan, some finely vugular; small residue, sand, as above, some showing secondary crystallization, trace of chert, quartzose to very finely disseminated.
- 2996-3003 Dolomite, medium-crystalline, sucrose (porous); chert, white, quartzose, dense, to finely disseminated and slightly dolomoldic; sand, as above; some green shale.
- 3003-10 Dolomite, fine, dense to finely sucrose; little chert, white to brown, obscurely oolitic; trace of sand and pyrite.
- 3010-17 Dolomite, fine-medium, sucrose, gray-tan; trace of chert, as above, with very quartzose, almost crystalline, chert; pyrite.
- 3017-25 Dolomite, fine-medium, sucrose, creamy-gray; residue trace of rounded and frosted sand, gray-green argillaceous siltstone.
- 3025-35 Dolomite, as above; crystalline quartz and very fine dolomitic silt.
- 3035-43 Dolomite, gray-tan, medium, sucrose; trace of oil stain; trace of dolomitic quartzose chert, very oolitic, with brown-centered oolites.
- 3043-46 Dolomite, very light, dense, very finely broken; trace of broken sand and translucent chert.
- 3046-54 Dolomite, fine-crystalline, gray; residue as above.
- 3054-60 Dolomite, very finely sucrose; residue as above, less of it.
- 3060-65 Very small residue, very finely broken; mainly pyrite.
- 3065-72 Dolomite, very finely broken, white, seems to have been finely sucrose; residue broken sand grains.
- 3072-82 Dolomite, as above; less residue, large broken sand grains and trace of chalky-white chert.
- 3082-95 Dolomite, cream, finely sucrose; 5% sand, large grains, some with secondary crystal growth; trace of chalky to dense white chert.
- 3095-3102 Dolomite, fine-medium, tan, sucrose; chert (less than 5%), dense, white to quartzose, sandy; some free sand grains.
- 3102-09 Dolomite, as above; chert, dense to translucent, white, some lacy dolomolds; trace of rounded and frosted sand.
- 3109-15 Dolomite, finely broken, light-tan, medium- to coarse-crystalline; very small residue; trace of dense white chert and rare rounded and frosted sand grains.
- 3115-24 Dolomite, cream, medium-crystalline; small residue of chert, dense, white, chalky to translucent.
- 3124-35 Dolomite, creamy-gray, coarse-crystalline, some vugular porosity; very small residue, white chert.
- 3135-41 Dolomite, very fine crystalline, cream; chert, little dense, white, mainly finely dolomoldic to quartzose to silt; some greenish-gray pyritic shale.
- 3141-60 Dolomite, fine-crystalline, cream; chert, dense to translucent, some porous to silty, with some sand, quartz-cemented; gray-green pyritic shale.
- 3160-66 Dolomite, very finely broken, fine-medium crystalline, cream; chert, dense, white to translucent, 15%; rare sand. (Bentonite caving).
- 3166-74 Dolomite, finely sucrose, cream; residue fine silt, little sand; dense to translucent white chert, 10%.
- 3174-80 Dolomite, brown, fine-crystalline; trace of sand and chert; much caving bentonite.
- 3180-85 Dolomite, very finely broken, fine-medium crystalline, cream; chert, chalky to translucent; rare rounded fragments of sand.

3185-90	Dolomite, cream, medium-coarse crystalline; chert, chalky to translucent; rare rounded fragments.
3190-95	Dolomite, as above; chert, dense to quartzose, some drusy, banded.
3195-3200	Dolomite, light-tan, fine-crystalline.
3200-03	Dolomite, cream, medium-crystalline; chert, dense, white to quartzose; occasional obscure oolites.
3203-06	Dolomite, cream, coarser than above; chert, dense to quartzose.
3206-10	As above; chert, chalky to quartzose, 30%.
3210-14	Dolomite, very finely broken; chert, chalky to quartzose, some sandy, trace of druse, 20%.
3214-17	Dolomite, fine to fine-medium crystalline, light-tan.
3217-21	Mainly bentonite caving.
3221-25	Dolomite, very fine crystalline, cream; trace of chert.
3225-29	Dolomite, very finely sucrose, cream; trace of quartzose chert and pyrite.
3229-45	Dolomite, as above; 5% chert, white, dense to slightly granular.
3245-65	Samples missing.

Well No. 105 (134). Stoll Oil Refining Company No. 1 Alene Schooling, section 1-T-48, Jefferson County. (Incomplete set of samples. Top of Chazy-Black River estimated at 625 feet.)

ORDOVICIAN

Chazy-Black River

800-20	Limestone, very slightly argillaceous and dolomitic, fine-grained, brown; trace of chert, same color.
820-50	Limestone, brown, dense to subcrystalline; rare fragments slightly argillaceous.
850-85	Limestone, very dense and fine-grained; trace of chert.
885-980	Limestone, very slightly argillaceous, dense, brown, with occasional fossils.
980-1030	Limestone, lithographic, light-brown, with rare fragments dolomitic.
1030-1105	Limestone, very slightly argillaceous and rarely dolomitic, fine-grained, grayish-brown.
1105-15	Limestone, as above, with trace of finely disseminated chert.

(Wells Creek)

1115-40	Limestone, very argillaceous and slightly dolomitic, dark-gray, with some interbedded lithographic limestone.
1140-45	Limestone, fine-grained, light-gray, slightly argillaceous.
1145-50	Dolomite, slightly calcareous, very fine grained, light-gray.
1150-85	Dolomite, light-gray, silty, with some green shale.
1185-95	Dolomite, very fine grained, gray; some detrital with shale.
1195-1205	Dolomite, light-gray, argillaceous and silty.

CAMBRIAN

Jefferson City

1205-15	Dolomite, cream, fine-grained; chert, 50%, white, translucent to quartzose, chalky, dolomoldic, and rare sandy chert.
1215-25	Dolomite, very dense, brown; rare sand.
1225-35	Dolomite, as above, with little silt and trace of quartzose chert.
1235-55	Dolomite, very fine grained, cream; rare chert.
1255-70	Dolomite, light-tan, finely crystalline; chert, 50%, dull to translucent, some sandy and some very finely microspecked.
1270-85	Dolomite, very fine grained, argillaceous and silty, with much chert, as above.
1285-1300	Mainly chert, dense to very finely porous.
1300-20	Dolomite, gray, very finely crystalline, very finely pyritic; much dense chert.
1320-70	Dolomite, medium- to fine-grained, gray, slightly argillaceous, with green shale.
1370-75	Mainly chert, white, dull to chalky, some gray, translucent; much pyrite and green shale.
1375-90	Dolomite, brown, finely sucrose, porous, pyritic.
1390-93	Mainly chert, white to translucent gray.

- 1393-98 Dolomite, coarsely crystalline, light-tan, vugular; rare chert.
 1398-1403 Mainly chert, white to translucent gray.
 1403-19 Dolomite, cream, crystalline; some chert, as above.

Roubidoux

- 1419-25 Mainly chert, white to translucent gray, occasionally sandy.
 1425-47 Dolomite, coarsely crystalline, porous; rare chert, some of it oolitic.
 1447-55 Dolomite, coarsely crystalline, with trace of sand grains.
 1455-87 Dolomite, cream, medium-crystalline; chert, very translucent and quartzose.
 1487-1530 Dolomite, cream, crystalline; 15% chert, translucent; trace of sand.
 1530-50 Mainly chert, dense to translucent.

Gasconade

- 1550-76 Dolomite, medium-crystalline, sucrose, tan; chert, blue-gray, translucent, with some chalky dolomoids.
 1576-86 Dolomite, porous, sucrose; little chert, as above, dolomoidic.
 1586-96 Mainly chert, white, dolomoidic.
 1596-1612 Dolomite, gray, medium-crystalline; chert, 5%, chalky-white to slightly oolitic.
 1612-26 Dolomite, as above, with much chert, dense to oolitic.

Well No. 106 (63). Stoll Oil Refining Company No. 1 Selby Coleman, section 13-Q-60, completed 8-23-39, Jessamine County.

ORDOVICIAN

Lexington

- 15-35 Limestone, coarsely crystalline, fossiliferous, phosphatic, with rare calcareous shale and trace of chert.

Chazy-Black River

- 35-45 Limestone, light-tan, very fine grained, some slightly dolomitic.
 45-70 Limestone, light-tan, very fine grained, with bentonite at top.
 70-115 Limestone, light gray-tan, with streaks of finely crystalline dolomite.
 115-48 Limestone, very dolomitic, cream to tan, sucrose. (Oregon)
 148-233 Limestone, very fine grained, brown, with trace of dolomitic limestone as fine, crystalline, fracture filling.
 233-303 Limestone, light-brown, very fine grained; rare fragments more gray and slightly argillaceous.
 303-15 Limestone, dolomitic, fine-grained, brown.
 315-84 Limestone, dense, brown, very fine grained; rare fragments of slightly argillaceous limestone.
 384-442 Limestone, dolomitic, light-brown, dense, stylolitic.
 442-510 Limestone, very fine, lithographic, brown; rare fragments of slightly argillaceous limestone.
 510-30 Limestone, very finely dolomitic, brown.
 530-54 Limestone, lithographic, brown.
 554-90 Limestone, very finely dolomitic, some darker and slightly argillaceous residual shale is finely banded.

(Wells Creek)

- 590-600 Dolomite, very fine grained, light-gray, enclosing slightly larger grains (detrital); some green shale.
 600-18 Dolomite, very coarsely crystalline, pale-gray, vugular, with much pyrite and green shale.

CAMBRIAN

Jefferson City-Cotter

- 618-27 Dolomite, very coarsely crystalline, brown; rare dolomoidic chert.
 627-37 Dolomite, very coarsely crystalline; chert, white, dolomoidic to translucent to dark-gray, quartzose, with some enclosed sand; trace of green shale.
 637-48 Dolomite, very fine grained; less chert than above.
 648-63 Dolomite, medium-crystalline, cream, dense; trace of very finely disseminated white silica.

- 663-73 Dolomite, white, fine-grained; much chert (80%), very finely disseminated, white to quartzose, and sandy.
- 673-85 Dolomite, light-tan, finely sucrose; chert, 10%, oolitic to sandy and quartzose, and a trace of banded druse.
- 685-708 Dolomite, finely crystalline, with some finely disseminated silica.
- 708-14 Dolomite, as above; 30% chert, finely porous, in residue, with some large sand grains and trace of green shale.
- 714-42 Dolomite, finely crystalline, light-gray; trace of sand; white, finely disseminated chert and brown shale.
- 742-55 As above, with more chert.
- 755-850 Dolomite, coarsely crystalline, white; chert, 5%, translucent to chalky.
- 850-82 Dolomite, cream, very fine grained and dense; chert, quartzose pellets in dull-white matrix.
- 882-910 Dolomite, very coarsely crystalline, white, with 50% chert, white to translucent.
- 910-38 Dolomite, very densely crystalline, some coarse, mainly fine; rare chalky to translucent chert, and trace of green shale.
- 938-45 Dolomite, very coarsely crystalline, vugular and porous.
- 945-66 Dolomite, densely crystalline, tan; chert, blue-white, translucent, with trace of irregularly shaped oolites and druse.
- 966-95 Dolomite, densely crystalline, cream; trace of translucent chert; rare sand.
- 995-1000 Dolomite, as above; 80% heavy white chert.
- 1000-06 Dolomite, very dense and hard; trace of chert.
- 1006-15 Mainly chert, white, translucent, and some dull to chalky.
- 1015-25 Dolomite, very hard and densely crystalline.

Roubidoux

- 1025-30 Dolomite, as above, with trace of medium quartz grains enclosed.
- 1030-70 Dolomite, white to cream, densely crystalline; chert is chalky to drusy, with rare sand grains enclosed.
- 1070-1112 Dolomite, densely crystalline, as above; 30% white chert, enclosing rounded quartz grains.
- 1112-23 Dolomite, pale-gray to green, with some enclosed sand.
- 1123-50 Dolomite, as above; chert, dense, white, with rare dolomolds and enclosed sand.

Van Buren-Gasconade

- 1150-75 Dolomite, fine-grained, white to brown, medium-grained and sucrose; trace of chert, with banded druse.
- 1175-90 Dolomite, finely crystalline, gray, some very slightly argillaceous.
- 1190-1220 Dolomite, finely crystalline to medium-crystalline, dense to sucrose; trace of chert, slightly dolomoldic.
- 1220-34 Mainly chert, dull-white, pyritic, with some secondary quartz crystals and druse.
- 1234-47 Dolomite, cream, finely crystalline; trace of chert, as above; 20% medium sand grains.
- 1247-73 Dolomite, finely crystalline, pale-gray to slightly darker, argillaceous.
- 1273-77 Mainly chert, dense, white to chalky; trace of dolomitic chert.
- 1277-1320 Dolomite, medium-crystalline, sucrose to dense, pale creamy-gray; rare pyrite.
- 1320-43 Dolomite, medium-crystalline, tan to gray; much chert, dense, white to pale-gray to dark-gray and black, mottled, some of it coated with fine quartz grains.
- 1343-70 Dolomite, finely crystalline, light gray-tan, pyritic; chert, 20%, dense, with occasional dolomolds.
- 1370-89 Mainly chert, interstitial, leaving lacy dolomolds, some quartzose; much secondary quartz.
- 1389-1442 Dolomite, very coarsely crystalline, some medium-grained, with little chalky chert and some vein quartz.
- 1442-66 Dolomite, gray, medium-crystalline, sucrose; trace of black shale (stylolitic).
- 1466-89 Dolomite, pale gray-tan, medium-crystalline; chert (to 50%), white, dense, with some crystalline quartz and some druse.
- 1489-1510 Dolomite, as above, with chert, chalky-white; to 50% medium to coarse, rounded and frosted quartz.

- 1510-26 Dolomite, cream, finely crystalline, sucrose; some pale-green and sandy; chert, brown, with good brown oolites.
 1526-30 Dolomite, fine-grained, with some finely disseminated pyrite; no chert.
 1530-40 Mainly chert, dull-white and dense.
 1540-61 Dolomite, pale-gray, crystalline, with some medium-coarse sand grains enclosed.
 1561-1632 Dolomite, white, very coarsely crystalline; chert rare.

NOTE: Between 1300 and 1400 feet the driller reported bailing much gravel which, when examined, was found to be well-rounded and composed of Mississippian-type chert, containing fragments of fenestrated bryozoans. The vein quartz noted at that depth suggests fracturing, and the nature of the chert pebbles suggests post-Mississippian time for the fracturing.

Well No. 107 (1446). Ashland Oil and Refining Company No. 8 Wallace Williams, section 19-R-79, Johnson County.

PENNSYLVANIAN

- 18-151 Sandstone, poorly sorted to coarse-grained, some quartz pebbles; oil-stained at 86-100.
 151-83 Sandstone, poorly sorted, to conglomerate, with occasional sideritic pebbles.
 183-218 Shale, silty, sideritic, black to gray; some hard, brown clay.
 218-57 Sandstone, poorly sorted to coarse-grained, chloritic.
 257-80 Sandstone, very clean, white, friable.

MISSISSIPPIAN

"Glen Dean"

- 280-86 Limestone, argillaceous, fine-grained, brown; rare crinoid fragments.
 286-90 Limestone, as above; some fine-grained gray clay.

"Maxton"

- 290-300 Sandstone, fine-grained, well-sorted for size, poorly sorted for minerals, tightly cemented.
 300-12 Sandstone, as above; much grayish-red to greenish-gray shale.

Greenbrier ("Big Lime")

- 312-34 Limestone, argillaceous, dark grayish-brown, occasional crinoid fragments; some limestone detrital.
 334-45 Limestone, brown, fine-grained, some gray mottled, some pellet.
 345-57 Limestone, light-brown, some finely dolomitic.
 357-82 Limestone, fine-grained, tan to brown, slightly fossiliferous.
 382-407 Limestone, brown, lithographic, ostracodal.
 407-33 Limestone, creamy-gray, finely detrital, pellets and imperfect oolites, fossil fragments and rounded fragments of darker limestone; numerous pellets having rounded sand centers.
 433-42 Limestone, slightly dolomitic, earthy; trace of coarse silt grains enclosed.
 442-50 Limestone, very dolomitic, slightly silty, light grayish-brown.

Lower Mississippian

- 450-70 Sandstone, to very coarse siltstone, well-sorted for size; many heavy minerals and yellow, oxidized spots from glauconite or siderite; tightly cemented.
 470-600 Siltstone, very coarse grained, as above, slightly argillaceous, more gray than above; increasingly argillaceous and micaceous with depth.
 600-54 Siltstone, more argillaceous than above, gray, with some brownish-red, micaceous.
 654-62 Shale, slightly silty, dark-gray, interbedded with siltstone, as above.
 662-75 Siltstone, light-gray, tightly cemented, coarse-grained; some shale, as above.
 675-95 Siltstone, very coarse grained, poor mineral sorting, light-gray.
 695-722 Shale, silty, dark-gray, some rusty-brown; some interbedded siltstone.
 722-60 Shale, slightly silty, very dark gray, some very slightly brownish-gray.
 760-64 Shale, nonsilty, dark-gray.

New Albany

(Sunbury)

764-85 Shale, black, carbonaceous, and fine-grained.

(Berea-Bedford)

785-97 Siltstone, coarse-grained, well-cemented, pyritic, light-gray.
797-805 Siltstone, medium-grained, light-gray, very tightly cemented, pyritic.
805-65 Siltstone, fine-grained, well-cemented, micaceous and pyritic, light-gray.
865-72 Shale, fine-grained, medium-gray.
872-95 Shale, as above, interbedded with fine-grained, tightly cemented siltstone.

(Ohio)

895-980 Shale, coarse-grained, black, carbonaceous.
980-1000 Shale, dark-gray, less carbonaceous than above, finer grained.
1000-61 Shale, dark-gray, fine-grained, with some reddish-brown shale.
1061-1139 Shale, carbonaceous, coarse-grained, black, with some spores.
1139-81 Shale, black, as above, without spores.
1181-1256 Shale, very dark gray, interbedded with black, carbonaceous.
1256-1307 Shale, black, carbonaceous, coarse-grained; many spores.
1307-95 Shale, very finely silty, slightly greenish-gray, pyritic; interbedded with some black shale.
1395-1412 Shale, very dark gray, pyritic.

DEVONIAN

Huntersville

1412-32 Dolomite, medium-crystalline, dense, brown; chert, 30%, brownish-gray; translucent, with tiny fossiliferous inclusions; some chalky, light-tan, dolomoldic, with rare spores.
1432-37 Dolomite, as above; more chert than above.
1437-48 Dolomite, as above; some limestone, fine-grained, brown; chert, gray, mottled, pyritic; some chalky, as above.
1448-60 Limestone, tan, densely crystalline; chert, microspecked, brown to tan, some pyritic.

Oriskany

1460-68 Limestone, cream, crystalline, enclosing poorly sorted sand grains.
1468-74 Sandstone, very poorly sorted to medium-grained, rounded and frosted, slightly calcite-cemented.

SILURIAN-DEVONIAN

Salina

1500-21 Limestone, very fine grained, sublithographic, brown.
1521-31 Limestone, very dolomitic, finely crystalline, dense.
1531-63 Dolomite, very fine grained, sublithographic; trace of gypsum.
1563-69 Dolomite, as above, with trace slightly gray, argillaceous.
1569-77 Dolomite, very fine grained, sublithographic, slightly anhydritic.
1577-85 Dolomite, finely crystalline to sucrose, brown.
1585-95 Dolomite, very fine grained, with finely disseminated anhydrite.
1605-17 Dolomite, very slightly argillaceous, light-gray; little selenite.
1617-53 Dolomite, finely crystalline to dense, slightly argillaceous; much anhydrite.
1653-1717 Dolomite, so fine-grained that it looks like lithographic limestone, brown; much anhydrite.
1750-57 Dolomite, fine, as above; much anhydrite.
1770-80 Dolomite, brown, medium-crystalline, vugular and porous.
1790-1820 Dolomite, some very fine grained, some fine- to medium-crystalline, brown.
1820-50 Dolomite, as above, with some anhydrite; trace of dark shale.

SILURIAN

Lockport

1850-65 Dolomite, gray and brown, crystalline, fine-grained; trace of black shale.
1865-80 Dolomite, more argillaceous and gray than above; some enclosing fine rounded sand; trace of green shale.

- 1880-85 Dolomite, brown, medium-crystalline, dense; trace of greenish-gray, finely crystalline dolomite.
- 1885-1900 Dolomite, finely crystalline, gray to slightly brown; much very dark gray argillaceous dolomite.
- 1900-04 Dolomite, very fine grained, gray, earthy, some mottled with dark-gray; rare fine sand grains enclosed.
- 1904-19 Dolomite, finely crystalline to medium-grained, grayish-brown, mottled.
- 1919-24 Dolomite, as above; some gray limestone enclosing dolomite rhombs.
- 1924-29 Dolomite, brown and gray, mottled, densely crystalline to slightly vugular.
- 1929-34 Dolomite, as above; some with very small oolites (tiny rounded vugs filled with dolomite crystals).
- 1934-44 Dolomite, pale-gray, medium-crystalline, dense to vugular; some finely crystalline, tan.
- 1944-55 Dolomite, more densely crystalline, gray, mottled, and fossiliferous.
- 1955-72 Dolomite, silty and argillaceous, dark-gray; crystals silt-size, so that silt is not apparent except in residue.
- 1972-84 Dolomite, gray and brown mottled, medium-crystalline; rare sand grains enclosed.
- 1984-89 Dolomite, pale-gray, with some dark mottling, medium to coarsely crystalline, enclosing a little poorly sorted sand, medium-grained.
- "Big Six"
- 1989-2017 Sandstone, well-sorted for size, poorly sorted for minerals, fine-grained with some dolomite cement.
- 2017-28 Sandstone; more dolomite than above, some gray and argillaceous.

Clinton

- 2028-38 Shale, very dark gray to red, coarse-grained, very slightly silty.
- 2038-82 Shale, very dark red, coarse-grained.
- 2082-90 Shale, as above, some greenish-gray; rare fragments of quartzite.
- 2090-2155 Shale, very dark red, coarse-grained.
- 2155-82 Shale, mainly grayish-green, fine-grained; some red, as above.
- 2182-87 Shale, as above; trace of glauconitic quartzite.
- 2187-2200 Shale, very dark gray to red; some green, with much glauconite.
- 2200-06 Dolomite, gray to brown, densely crystalline, pyritic.
- 2206-12 Shale, red, coarse-grained; trace of dolomite with glauconite.
- 2212-17 Green shale, fine-grained, fissile, with much glauconite; some red shale.
- 2217-22 Shale, red, coarse-grained.
- 2222-40 Shale, some red, as above; some green, fissile, and fine-grained.
- 2240-50 Shale, red and coarse, as above; some oolitic hematite.
- 2250-74 Shale, as above; trace of densely crystalline dolomite.
- 2274-98 Shale, as above; dolomite, yellow and gray, crystalline, dense, some slightly argillaceous; much oolitic hematite and some chamosite.
- 2298-2305 Mainly oolitic hematite; little shale as above.
- 2305-10 Shale, green, fissile.
- 2310-15 Mainly oolitic hematite.

Brassfield

- 2315-30 Dolomite, gray, densely crystalline, fossiliferous, some interbedded shale; much oolitic hematite.
- 2330-41 Dolomite, gray, densely crystalline to argillaceous, with some greenish-gray shale.
- 2341-60 Dolomite, as above; more shale; occasional fragments of very fine brown quartzite.

ORDOVICIAN

Richmond

- 2360-80 Dolomite, cream, densely crystalline, medium-grained, some pyritic; red and green shale.
- 2380-90 Shale, green, fissile; trace of dolomite.
- 2390-2400 Dolomite, coarsely crystalline, dense, gray, with much glauconite; trace of fine sand enclosed.
- 2400-24 Dolomite, gray, medium-crystalline, fossiliferous, slightly phosphatic; much glauconite.
- 2424-43 Shale, red, richly hematitic, very slightly calcareous.

Maysville

- 2443-91 Shale, calcareous, dark-gray; some very fossiliferous limestone interbedded, phosphatic, with trace of very fine silt.
- 2491-2508 Shale, as above, with trace red.
- 2508-83 Shale, slightly calcareous, coarse-grained, almost silty in residue; interbedded with rare, very fossiliferous and phosphatic limestone.
- 2583-98 Limestone, gray, very phosphatic and fossiliferous; little interbedded calcareous and fossiliferous shale.
- 2598-2607 Limestone, fine-grained, argillaceous, with some calcareous, fossiliferous shale.
- 2607-83 Limestone, very argillaceous, gray, very fossiliferous, with many bryozoans and ostracods.
- 2683-2770 Limestone, very dense, fine-grained, gray, fossiliferous, slightly argillaceous, some interbedded shale; leaves residue of very finely disseminated silt.
- 2770-88 Limestone, some as above, some more crystalline, fossiliferous and phosphatic, gray.
- 2788-96 Limestone, brownish-gray, crystalline, fossiliferous and phosphatic; some shale; much siltstone.
- 2796-2822 Limestone, crystalline, fossiliferous and phosphatic; little shale and siltstone.
- 2822-79 Limestone, fossiliferous, phosphatic, as above; more interbedded siltstone and shale.

Garrard

- 2879-2969 Siltstone, slightly calcareous and argillaceous; much gray shale; some interbedded fossiliferous limestone.

Cynthiana-Million

- 2969-90 Limestone, brown, crystalline, fossiliferous, with some interbedded siltstone, as above.
- 2990-3010 Shale, dark-gray, calcareous, coarse-grained, slightly silty.
- 3010-93 Limestone, brown, crystalline, fossiliferous, finer grained than above; residue still very finely silty shale.
- 3093-3109 Limestone, slightly brownish-gray, fossiliferous, slightly phosphatic, with some interbedded finely silty shale.
- 3109-48 Limestone, as above; much calcareous, very finely silty shale.
- 3148-90 Limestone, as above, less shale.
- 3190-3234 Limestone, argillaceous, grayish-brown, densely crystalline, fossiliferous, ostracodal.
- 3234-85 Limestone, gray, crystalline and phosphatic; much calcareous shale; trace of bentonite at 3265.

Lexington

- 3285-3351 Limestone, grayish-brown, fine-grained to fossiliferous; trace of phosphate and calcareous shale.
- 3351-3421 Limestone, fine-grained, sublithographic, fossiliferous, brown; little shale.
- 3421-58 Limestone, finely phosphatic, grayer than above.
- 3458-3530 Limestone, gray, finely argillaceous, fossiliferous, with some calcareous shale, finely phosphatic.
- 3530-44 Limestone, gray, fossiliferous and phosphatic; some interbedded gray calcareous shale.
- 3544-62 Limestone, gray, crystalline, very fossiliferous and phosphatic; some translucent gray chert; trace of bentonite.
- 3562-80 Limestone, as above; less shale; trace of biotitic bentonite in base.
- 3580-86 Limestone, grayish-brown, crystalline to dense, fossiliferous, slightly phosphatic.

Chazy-Black River

- 3586-94 Limestone, brown, lithographic; much dense chert and bentonite.
- 3594-99 Limestone, very fine, lithographic, light-tan, clean.
- 3599-3607 Limestone, fine, lithographic, some bentonitic and gray.
- 3607-18 Limestone, fine-grained, brown; much free bentonite.
- 3618-40 Limestone, lithographic to subcrystalline, brown, clean.

- 3640-43 Limestone, as above; much bentonite.
3643-85 Limestone, fine-grained, slightly bentonitic, grayish-brown.
3685-95 Limestone, light-tan, lithographic.
3695-3710 Limestone, as above; some grayish-green, argillaceous.
3710-21 Limestone, fine-grained, brown; rare dolomite.
3721-65 Limestone, brown, lithographic.
3765-90 Limestone, brown, as above; much brown granular dolomite.
3790-3806 Limestone, brown, lithographic; rare dolomite.
3806-27 Limestone, very dark brown, lithographic; trace of black argillaceous limestone.
3827-67 Limestone, argillaceous, dark-gray to greenish-gray.
3867-3910 Limestone, brown, lithographic; rare fragments slightly argillaceous.
3910-60 Limestone, very fine, lithographic, brown.
3960-4160 Limestone, brown, lithographic to subcrystalline, slightly fossiliferous; rare fragments of dark argillaceous limestone.
4160-88 Limestone, lithographic, cream.
4188-4235 Limestone, clear brown, lithographic; rare fragments slightly argillaceous and dolomitic.
4235-48 Limestone, brown, lithographic; some well-developed pellet limestone.
4248-96 Limestone, very dark brown, lithographic.
4296-4390 Limestone, darker brown than above, slightly argillaceous, very fine grained.
4390-4417 Limestone, very dark brown, slightly argillaceous, as above; interbedded with some slightly dolomitic limestone.
4417-23 Limestone, very dolomitic, fine-grained, light-brown.
4423-31 Limestone, dolomitic, as above; some darker and argillaceous.
4431-56 Limestone, argillaceous, very dark brown to black, fine-grained.
4456-73 Limestone, very dark, argillaceous, as above; some interbedded brown, detrital, dolomitic limestone.
4473-96 Limestone, very dark, argillaceous, fine-grained; much fine-grained detrital dolomite, enclosing fine quartz silt.
4496-4509 Limestone, argillaceous, black, fine-grained.
4509-23 Limestone, very dolomitic, slightly silty, detrital, greenish-gray.
4523-47 Limestone, argillaceous, black; little brown, lithographic.
4547-66 Limestone, very dolomitic, finely silty and argillaceous, dark-gray; residue is very fine silt to shale.
4566-75 Limestone, very dark brown to black, less dolomitic than above, more argillaceous.
4575-80 Limestone, as above; some light-brown, fine-grained.
4580-4600 Limestone, very argillaceous, lithographic, dark-brown to black.
4600-15 Limestone, as above, some grayish-brown dolomitic limestone.
4615-32 Dolomite, calcareous, detrital, including some fine silt, argillaceous.
4632-42 Little dolomite, as above; mainly brown, lithographic limestone.
4642-65 Limestone, argillaceous, dark-brown to black, fine-grained.
4665-73 Limestone, finely dolomitic, argillaceous, earthy texture, grayish-brown.
4673-85 Limestone, argillaceous, dark-brown to black, fine-grained.
4685-4710 Limestone, as above, interbedded with some limestone, finely dolomitic, grayish-brown.
4710-20 Dolomite, detrital, grayish-brown, fine-grained; some limestone.
4720-40 Dolomite, finely detrital, with enclosed silt and pyrite; trace of bentonitic shale.
4740-60 Dolomite, argillaceous, greenish-gray, trace red, silty.
4760-67 Dolomite, argillaceous and detrital, as above.
4767-74 Dolomite, as above, interbedded with dark-green dolomitic shale.
4774-87 Dolomite, detrital, as above, very argillaceous, greenish-gray, with traces of red.
4787-95 Shale, dolomitic, greenish-gray, detrital, trace red.
4795-4809 As above, but much more red.
4809-14 Shale, calcareous and dolomitic, fine-grained, dark-red.
4814-20 Shale, as above, interbedded with green shale and light-gray, medium-crystalline dolomite.
4820-46 Limestone, very argillaceous, dark-red, trace green, fine-grained.
- (St. Peter)
4846-52 Sandstone to siltstone, very fine grained, dolomite-cemented, white to light-gray; dolomite, silty.

- 4852-60 Limestone, very argillaceous, dark-red, fine-grained.
 4860-70 Shale, very finely silty, dolomitic, greasy-textured, greenish-gray; much pyrite.
 4870-73 Shale, as above; some sandstone, very fine grained, dolomite-cemented; gray dolomite, studded with fine sand grains; trace of gray translucent chert.
 4873-80 Dolomite, enclosing much poorly sorted, fine-grained sand, gray; trace of dense chert.
 4880-85 Dolomite, sandy and slightly argillaceous, fine-grained.

CAMBRIAN (Steel Line Measurement shows 4892=4876. Thus, top of Knox is at 4870 feet.)

Elvins

- 4885-92 (Should be 4869-76) Dolomite, medium-crystalline, grayish-tan, dense to vugular; trace of dolomoldic white chert.
 4876-83 Dolomite, some as above, some more finely crystalline, grayish-tan.
 4883-90 Dolomite, medium-crystalline, light-brown, sucrose; trace of fine silt enclosed.
 4890-96 Dolomite, slightly finer than above; much finely disseminated pyrite; some dark solution clay.
 4896-4903 Dolomite, medium-crystalline, sucrose, light-gray to tan; rare silt and rounded and frosted sand grains.
 4903-37 Dolomite, as above, with no sand; some coarse, white, vein dolomite at 4903-12.
 4937-45 Dolomite, some brown, medium-crystalline; much light greenish-gray, finely crystalline, argillaceous, with very finely disseminated silt and pyrite.
 4945-53 Dolomite, as above; some sandstone, poorly sorted to medium-grained, rounded and frosted, dolomite-cemented.
 4953-68 Dolomite, very finely crystalline, white to pale-gray, dense; trace of dolomite, enclosing very fine sand and broken with green shale.
 4968-73 Dolomite, fine- to medium-crystalline, grayish-brown; much rounded and frosted sand, some as centers for chert oolites, some in chert matrix, and some dolomite-cemented.
 4973-78 Dolomite, medium-crystalline, brown; little gray to brown mottled chert, slightly oolitic, rare large oolites.
 4978-87 Dolomite, finely crystalline, brown, dense; sandstone, poorly sorted to medium-grained, dolomite-cemented; chert, brown, oolitic.
 4987-93 Dolomite, finely crystalline, very finely silty, dense; rare chert, white, translucent, oolitic.
 4993-5001 Dolomite, finely crystalline, dense, enclosing poorly sorted sand grains to medium size; some dolomite, fine-medium crystalline, light-brown, dense.
 5001-10 Sandstone, very poorly sorted to medium size, rounded and frosted, with some secondary crystal growth, friable.
 5010-14 Sandstone, as above, some quartz- and chert-cemented.
 5014-24 Dolomite, finely crystalline, pale-gray to cream, dense.
 5024-33 Dolomite, medium-crystalline, brown, sucrose and vugular; rare fine sand in residue.
 5033-39 Dolomite, as above, with some sandstone, very poorly sorted to coarse-grained, with white dolomite cement.
 5039-47 Dolomite, sandy, white, as above, with very poorly sorted sand; some pale-gray, medium-crystalline dolomite; chert, white and very oolitic.
 5047-55 Dolomite, very finely crystalline, dense, pale-gray, very slightly argillaceous and silty, with trace of silt-size glauconite; pyrite.
 5055-58 Mainly chert, very oolitic, gray to white, matrix very translucent chert to crystalline quartz.
 5058-65 Some chert, as above; dolomite, brown, medium-crystalline, sucrose.
 5065-76 Dolomite, brown, as above; some more dense and lighter brown; rare sand grains enclosed.
 5076-87 Dolomite, tan, medium-crystalline, and some pale-gray, coarsely crystalline, vugular.
 5087-97 Dolomite, fine-grained, finely pyritic and glauconitic; some sandstone, poorly sorted, slightly dolomite-cemented.
 5097-5106 Sandstone, poorly sorted, fine to very coarse, subangular to rounded and frosted, friable.

- 5106-19 Sandstone, as above; some pale-gray, finely crystalline, dolomite cement. Increase in dolomite with depth.
- 5119-25 Dolomite, some slightly sandy, mainly medium-crystalline, pale-gray; much coarse, white, vein dolomite.
- 5125-30 Dolomite, brown, medium-crystalline, vugular; trace of enclosed sand.
- 5130-40 Sandstone, slightly dolomitic, white, poorly sorted, glauconitic.
- 5140-53 Sandstone, as above; dolomite, finely crystalline, pale-gray.
- 5153-81 Dolomite, fine-medium crystalline, grayish-tan, dense, with some finely disseminated silica.
- 5181-92 Sandstone, slightly dolomitic, white to cream, poorly sorted.
- 5192-5209 Dolomite, pale-gray, medium-crystalline, enclosing much poorly sorted sand.
- 5209-18 Sandstone, poorly sorted, fine-grained, friable.

Bonneterre

- 5218-29 Dolomite, slightly argillaceous, dark grayish-brown, fine-grained.
- 5229-39 Dolomite, light-gray, fine-medium crystalline, dense, streaked with darker gray, slightly argillaceous dolomite.
- 5239-49 Dolomite, brown, medium-crystalline, dense, some slightly argillaceous and darker, some with pellets of dolomite; trace of chert, dense, gray, with numerous small irregular oolites.
- 5249-70 Dolomite, finer than above, more gray; little argillaceous dolomite.
- 5270-5300 Dolomite, densely crystalline, dark-brown, some slightly argillaceous.
- 5300-04 Dolomite, medium-crystalline, pale-gray, dense.
- 5304-27 Dolomite, dark-brown, medium-crystalline to slightly argillaceous; trace of dense, pale-gray chert.
- 5327-33 Dolomite, brown, medium-crystalline, dense, some oolitic; trace of dark-brown, dense, pellet chert.
- 5333-38 Dolomite, more oolitic than above; some sand enclosed.
- 5338-44 Dolomite, pale-gray, finely crystalline, dense, enclosing some sand; trace of green shale.
- 5344-65 Dolomite, pale-gray to brown, finely crystalline, dense; rare streaks argillaceous.
- 5365-87 Dolomite, cream to brown, finely crystalline, dense; trace of very oolitic chert.
- 5387-94 Dolomite, dark-brown, finely crystalline, dense, some slightly argillaceous; trace of dark-brown chert.
- 5394-5424 Dolomite, dark-brown, very finely crystalline, dense; some stylolite clay.
- 5424-75 Dolomite, fine- to medium-crystalline, very dense; rare chert and stylolite clay.
- 5475-83 Dolomite, fine- to medium-crystalline, as above, cream; some finely disseminated pyrite.
- 5483-5500 Dolomite, medium-grained, brown, dense to slightly vugular, with some black stylolitic clay.
- 5500-08 Dolomite, as above; trace of chert, small brown oolites in white matrix.
- 5508-15 Dolomite, medium-crystalline, sucrose, medium-brown; trace of chert, as above.
- 5515-20 Dolomite, creamy-gray, very finely crystalline, with trace medium-grained; much pyrite.
- 5520-28 Dolomite, light-tan, densely crystalline, fine-grained; rare chalky-white chert, with dolomolds.
- 5528-37 Dolomite, cream, medium-crystalline, dense to sucrose.
- 5537-97 Dolomite, light-tan to brown, fine-medium crystalline, dense to vugular, with coarser dolomite in vugs; trace of stylolitic clay.
- 5610-13 Dolomite, as above.
- 5625-57 Dolomite, very slightly argillaceous, fine-grained, dark-brown.
- 5670-78 Dolomite, finely crystalline, very dense, brown, as above; trace of silt.

Well No. 108 (56). Sohio Oil Company Caustic Disposal Well No. 1, at Latonia Refinery, section 10-EE-60, Kenton County.

ORDOVICIAN

Cynthiana

- 52-63 Limestone, densely crystalline, brown, some medium-grained, some coarse and fossiliferous.
 63-77 Limestone, some as above, some more fossiliferous; much surface sand and weathered limestone.
 77-89 Limestone, densely crystalline, gray-brown, some fossiliferous.
 89-97 Limestone, densely crystalline, brown, slightly fossiliferous; rarely phosphatic; fragment of Cryptolithus.

Lexington

- 97-120 Limestone, gray-tan, slightly fossiliferous, with interbedded dark calcareous shale.
 120-35 Limestone, slightly argillaceous, dense and gray-brown; few fossils.
 135-36 Limestone, brown, finely crystalline, slightly fossiliferous; trace of chert.
 136-78 Limestone, finely crystalline, brown, with interbedded calcareous shale; trace of chert.
 178-220 Limestone, light-tan, crystalline, interbedded with a little very dark, calcareous shale; trace of chert.
 220-41 Shale, slightly calcareous, very dark brown-gray. (Utica lithology)
 241-46 Limestone, brown, dense, fine-grained to finely crystalline and fossiliferous.
 246-63 Limestone, finely phosphatic, tan, fossiliferous; trace of tan chert.

Chazy-Black River

- 263-69 Limestone, tan, lithographic; trace of bentonite and dense tan chert.
 269-305 Limestone, clean, lithographic, light-tan; trace of chert, same color, and little bentonite.
 305-10 Limestone, cream, lithographic.
 310-38 Limestone, very slightly argillaceous, gray-tan to brown, fine-grained.
 338-58 Limestone, very finely dolomitic, fine-grained.
 358-63 Limestone, light-tan, "bird's-eye."
 363-434 Limestone, very fine, brown, with some finely dolomitic limestone interbedded.
 434-511 Limestone, slightly dolomitic, light-tan, fine-grained; trace of fine, light-brown chert.
 511-56 Limestone, very finely dolomitic; trace of pale-gray shale and rare tan chert.
 556-71 Limestone, lithographic, cream to tan, slightly dolomitic, and some argillaceous, greenish-brown.
 571-84 Limestone, as above, with trace of waxy black shale.
 585-648 Limestone, fine-grained, brown; rarely dolomitic fragments; rare shale.
 648-61 Limestone, slightly dolomitic, light-tan; trace of waxy dark shale.
 661-85 Limestone, finely dolomitic, light-brown, with trace of greenish, argillaceous limestone.

CAMBRIAN

- 685-90 Dolomite, some fine and chalky, some light-tan, coarsely vugular; rich in pyrite.
 690-715 Dolomite, coarsely crystalline, cream; trace green; rare rounded and frosted quartz grains enclosed.
 715-25 Dolomite, cream, crystalline, enclosing some medium-grained sand with much secondary quartz growth.
 725-28 Dolomite, as above, with 50% sand, medium to coarse, rounded and frosted, with some secondary growth.
 728-72 Dolomite, fine- to medium-crystalline, cream; little sand enclosed.
 772-84 Dolomite, cream, coarsely crystalline; trace of fine to very coarse sand.
 784-843 Dolomite, cream to gray, very coarsely crystalline, pyritic.
 843-901 Dolomite, light-tan, medium-crystalline to sucrose; little chert, dolomitic, and with small oolites.
 901-22 Dolomite, finely crystalline, sucrose, enclosing sand, fine to coarse, some in clusters.

- 922-39 Dolomite, very finely crystalline, light-tan, with some very finely disseminated pyrite.
 939-81 Dolomite, cream to gray, finely crystalline; rare sand and pyrite.
 981-1011 Dolomite, finely crystalline, gray-tan; rare sand; rare slightly argillaceous dolomite fragments.

Well No. 109 (321). Francis Friestad No. 1 John Stafford, deepened from 2115 feet by Triangle Oil and Gas Corporation, CWL NW NW NE section 13-D-67, Knox County.

Drillers' log showed New Albany from 1840 to 2050 feet, no "Corniferous", and green and red shales to 2115 feet.

SILURIAN

Clinton

- 2115-45 Shale, slightly grayish-green, very fine grained; rare dolomite.
 2145-70 Shale, grayish-green, fine-grained.
 2170-85 Shale, as above, with a little red, and trace of yellowish-tan dolomite, medium-crystalline, dense.
 2185-95 Shale, green and red, fine-grained.
 2195-2250 Shale, dark gray-green, very fine grained.
 2250-80 Shale, coarser than above, with some hematite in top; rare argillaceous dolomite.

Brassfield

- 2280-2300 Dolomite, medium-crystalline, dense, gray, some slightly argillaceous; trace of gray chert; glauconite.

ORDOVICIAN

Richmond

- 2300-20 Shale, fine-grained, gray-green, slightly dolomitic.
 2320-50 Dolomite, finely silty and slightly argillaceous, slightly greenish-gray.
 2350-60 Limestone, gray, fossiliferous and slightly phosphatic.
 2360-2409 Limestone, dolomitic, very argillaceous, green, and some dark-red.
 2409-20 Dolomite, silty, argillaceous, tan to gray-green and red.
 2420-30 Limestone, slightly argillaceous, fine-grained, gray-green, with trace red.
 2430-54 Limestone, slightly argillaceous and silty, green-gray, with trace of red.

Maysville

(Gilbert)

- 2454-64 Limestone, darker than above, argillaceous.

(Tate)

- 2464-75 Shale, calcareous, dark-red, slightly silty.
 2475-2510 Limestone, very argillaceous, slightly silty, dark-red.

(Fairmount)

- 2510-27 Limestone, argillaceous, dark-gray.
 2527-57 Limestone, argillaceous, gray, some fine-grained, slightly fossiliferous.
 2557-91 Limestone, very argillaceous, fine-grained, gray, with some dark calcareous shale.
 2591-2622 Limestone, silty and slightly argillaceous, fossiliferous and slightly phosphatic, gray.
 2622-55 Limestone, slightly argillaceous, fossiliferous, gray, interbedded with slightly calcareous siltstone.

Garrard

- 2655-72 Limestone, gray, fossiliferous, with interbedded gray, calcareous, silty shale.

Cynthiana-Million

- 2672-2715 Limestone, gray, fossiliferous, with much gray calcareous shale, slightly silty.
 2715-45 Limestone, gray, fossiliferous, slightly phosphatic, less shale.

- 2745-90 Limestone, very argillaceous, slightly silty, very fine grained, gray.
 2790-2820 Shale, slightly calcareous, gray; trace of fossiliferous limestone.
 2820-69 Limestone, phosphatic and fossiliferous; little shale.
 2869-86 Limestone, as above, with some interbedded silty shale.
 2886-2950 Limestone, fine-grained, argillaceous, gray, with some interbedded calcareous shale.

Lexington

- 2950-75 Limestone, brown, dense, fine-grained to fossiliferous; trace of calcareous shale.
 2975-82 Limestone, light-brown, fossiliferous; trace of translucent chert.
 2982-3015 Limestone, brown, denser than above, more fine-grained.
 3015-60 Limestone, some more fossiliferous than above; trace of dense, tan chert, translucent.
 3060-3134 Limestone, brown, fossiliferous, dense and fine-grained.
 3134-83 Limestone, more fossiliferous than above, slightly phosphatic.
 3183-88 Limestone, more argillaceous, dark-gray.
 3188-3215 Limestone, fossiliferous, gray-brown, slightly argillaceous.
 3215-32 Limestone, very fossiliferous, phosphatic, gray, with trace of fossiliferous chert, mottled.

Chazy-Black River (Tyrone at top)

- 3232-40 Limestone, lithographic, light-tan.
 3240-42 Bentonite.
 3242-60 Limestone, light-tan, lithographic.
 3500-3762 Limestone, very fine grained, brown, slightly fossiliferous.
 3762-4045 Limestone, tan to brown, lithographic.
 4045-4170 Limestone, slightly argillaceous, very dark brown to gray. (Murfreeboro of Tennessee)
 4170-4210 Limestone, lighter brown, very fine grained, not argillaceous.

(Wells Creek)

- 4210-67 Dolomite, light-tan, very fine grained; trace of fine silt.

CAMBRIAN

Knox

- 4267-4333 Dolomite, light gray-tan, densely crystalline, very slightly silty, and rare translucent chert.
 4333-60 Dolomite, pale-gray, fine-grained, dense; rare silt; no chert.
 4360-4400 Dolomite, light gray-tan, medium-crystalline, dense; trace of translucent white chert.
 4400-18 Dolomite, finely crystalline, cream; trace of silt; no chert.
 4418-33 As above, with trace of quartzose chert.
 4433-83 Dolomite, very pale gray-white, medium-crystalline, slightly sucrose; rare rounded and frosted sand grains and rare white dolomitic chert.
 4483-4502 Dolomite, cream, medium-crystalline; trace of chert; 10% rounded and frosted sand enclosed.

Well No. 110 (37). Schmidt, et al No. 1 Hammonds, section 9-E-68, Knox County. (Incomplete sample set. Reported no "Corniferous.")

SILURIAN

Clinton

- 2250-70 (Base of New Albany at 2135?). Shale, red and green, very fine grained.
 2290-2310 Shale, green, with little red; some hematite oolites.
 2310-72 Shale, green, fine-grained, with much oolitic hematite at 2344-52.
 2372-90 Dolomite, densely crystalline, green, with much glauconite and trace of chert.
 2390-2400 Dolomite, darker than above, still glauconitic; more shale interbedded.

ORDOVICIAN

Richmond

- 2400-10 Shale, dark-green and red.
 2410-43 Dolomite, silty and argillaceous, greenish-gray.
 2443-95 Shale, calcareous, green and red.

Maysville

(Gilbert)

2495-2520

Limestone, very fine grained, slightly argillaceous, greenish-brown.

(Tate)

2520-50

Limestone, very fine grained, brown, with much green and red shale.

2550-2600

Shale, calcareous, more red than green.

(Fairmount)

2600-65

Limestone, gray, argillaceous and fossiliferous, interbedded with dark calcareous and silty shale.

2665-2700

Limestone, as above, phosphatic, with more shale.

Garrard

2700-95

Siltstone, slightly greenish-gray, interbedded with fossiliferous, crystalline limestone.

Cynthiana-Million

2795-2820

Limestone, very fossiliferous, interbedded with dark, coarsely calcareous shale.

2820-2911

Limestone, gray, very dense to very fossiliferous, phosphatic, with interbedded shale, numerous *Cyclora*.

2911-40

Limestone, light-gray, very fossiliferous, crystalline, phosphatic, with a little shale.

2940-67

Limestone, as above, with much more shale.

2967-3000

Limestone, brown, dense to fossiliferous, slightly phosphatic; little shale.

3000-25

Limestone, as above, with more shale.

3025-50

Limestone, brown, more fossiliferous, with little shale.

Lexington

3050-95

Limestone, brown, very finely crystalline, fossiliferous; trace of mottled gray chert; very little argillaceous material.

3095-3275

Limestone, very fine, brown to tan, sublithographic; rarely argillaceous traces of translucent white chert or mottled fossiliferous chert.

3275-3321

Limestone, dark brown-gray, very argillaceous, fossiliferous, some phosphatic; trace of chert. (Hermitage)

3321-50

Limestone, light gray-tan, coarsely crystalline, fossiliferous. (Curds-ville lithology)

Chazy-Black River (Tyrone at top)

3350-3416

Limestone, very fine grained, lithographic, with traces of bentonitic limestone.

3416-3527

Limestone, very finely dolomitic, fine-grained; traces of dark chert.

3527-4095

Limestone, very fine grained, brown; rare fragments slightly argillaceous; rare dolomite rhombs enclosed.

4095-4308

Limestone, finely dolomitic, gray-brown.

(Wells Creek)

4308-34

Limestone, very finely dolomitic, light-tan, enclosing trace of very fine silt.

4334-66

Dolomite, slightly calcareous, very fine, argillaceous, gray.

4366-4381

Dolomite, as above, finely silty and more green.

CAMBRIAN

Knox

4381-5000

Dolomite, slightly cherty, pale-green and argillaceous at the top. Bottom of hole in Eminence.

Well No. 111 (39). Globe Oil Company No. 1 Sewell, SE NE NW section 23-H-64, elevation 939 feet, Laurel County.

PENNSYLVANIAN

- 65-95 Sandstone, friable, white, medium grains.
- 95-170 Sandstone, conglomeratic.
- 170-85 Sandstone, conglomeratic, with fine-grained sandstone matrix; few siderite nodules.
- 185-210 Shale, very dark gray, fissile and micaceous; little interbedded sandstone.
- 210-30 Shale, very dark gray, micaceous, sideritic.
- 230-50 Sandstone, fine-grained, white to gray, some carbonaceous.

MISSISSIPPIAN

Pennington

- 250-70 Shale, silty, greenish-gray to red, some slightly calcareous.
- 315-20 Shale, very dark gray, fissile.

Greenbrier ("Big Lime")

- 320-30 Dolomite, dark-brown, very finely crystalline.
- 330-40 Limestone, light-cream to gray, some slightly dolomitic, some lithographic.
- 340-50 Limestone, arenaceous, crystalline, tan, vitreous, very fossiliferous.
- 350-65 Limestone, dark-gray, coarsely crystalline, very fossiliferous, with dark inclusions.
- 365-80 Limestone, tan, coarsely crystalline, with rare oolites, fossiliferous.
- 380-425 Limestone, tan, fine-grained, very oolitic.
- 425-65 Limestone, fine-grained, less oolitic than above.
- 465-90 Limestone, very oolitic, white.
- 565-75 Limestone, white, coarsely crystalline, and some greenish argillaceous limestone.
- 575-600 Limestone, dolomitic, fine-grained, white to light-gray; some gray-white chert.
- 600-15 Limestone, dolomitic, some clear-green.

Lower Mississippian

- 615-50 Sandstone, conglomeratic, with rounded quartz, clear, pink and green, some phosphatic, with little pink and green calcite cement.
- 650-700 Sandstone, very fine grained, to silt; some dolomitic cement; much glauconite.
- 700-45 Siltstone, coarse-grained, with some shale including brown crinoid remains.
- 745-950 Shale, silty, very dark gray, some almost fissile.

New Albany

- 950-1030 Shale, black, coarse-grained; many spores.
- 1030-52 Shale, as above, including some pyrite, rare sand grains, and argillaceous dolomite.

SILURIAN

Clinton

- 1052-90 Shale, gray-green, slightly calcareous, fine-grained; glauconite.
- 1090-95 Limestone, dolomitic, coarsely crystalline, yellow and white; much dead oil in cavities (Oldham).
- 1095-1128 Shale, greenish-gray, fissile, fine-grained.

Brassfield

- 1128-45 Dolomite, medium-crystalline, gray to greenish-gray, some silty.
- 1145-65 Dolomite, as above, pores filled with dead oil; little chert, light-gray, with spicular markings.

ORDOVICIAN

Richmond

- 1165-95 Siltstone, dolomitic, greenish-gray, slightly argillaceous.
- 1195-1220 Limestone, gray, crystalline, fossiliferous, with some gray argillaceous limestone.

- 1220-40 Limestone, gray, crystalline, dense, some slightly dolomitic; much argillaceous green dolomite.
 1240-1305 Limestone, slightly silty and argillaceous, green, and some pale-red.

Maysville
 (Gilbert)

- 1305-20 Limestone, gray-brown, crystalline, dense; slightly glauconitic.

(Tate)

- 1320-1400 Limestone, silty, gray-green, with trace red.

(Fairmount)

- 1400-95 Limestone, gray, crystalline, fossiliferous, with some interbedded dark-gray, calcareous shale.

Garrard

- 1495-1530 Siltstone, calcareous, argillaceous, coarse-grained, gray.
 1530-50 Limestone, coarsely crystalline, fossiliferous and phosphatic, with a little dark shale.
 1550-55 Limestone, as above; some silty and argillaceous.

Cynthiana-Million

- 1555-1685 Limestone, coarsely crystalline, fossiliferous and phosphatic; occasional argillaceous limestone breaks.
 1685-1745 Limestone, as above, with less shale.
 1745-1830 Limestone, fossiliferous, phosphatic, gray, with some calcareous shale; trace of oil stain at 1760.

Lexington

- 1830-85 Limestone, brown, darker and more dense than above, some almost lithographic; trace of blue-white translucent chert.
 1885-1925 Limestone, sublithographic, light-brown, ostracodal.
 1925-90 Limestone, lighter and more crystalline than above; trace of oily stain.
 1990-2060 Limestone, with interbedded calcareous gray shale and gray, crystalline fossiliferous and phosphatic limestone.

Chazy-Black River

- 2060-70 Limestone, lithographic, brown, with bentonite.
 2080-2100 Limestone, lithographic, brown-gray, with finely disseminated bentonite and trace of brown chert.
 2100-2205 Limestone, fine-grained, light-tan, with occasional streaks of finely crystalline dolomite.
 2205-45 Limestone, darker than above, and very slightly argillaceous.
 2245-2430 Limestone, very fine grained, brown, with occasional streaks of finely crystalline dolomite.
 2430-2780 Limestone, very fine grained; dolomite very rare; occasionally some slightly argillaceous gray limestone.
 2780-2900 Limestone, brown, fine-grained, slightly dolomitic and slightly argillaceous, cream to greenish-brown.

(Wells Creek)

- 2900-40 Dolomite, finely crystalline, light gray-tan, little enclosed silt and traces of green shale.

CAMBRIAN

Knox

- 2940-75 Dolomite, fine- to medium-grained, white, with rare rounded and frosted sand grains enclosed.
 2975-80 Sandstone, dolomitic, well-rounded and frosted grains.
 2980-3015 Dolomite, tan, medium-crystalline.
 3015-25 Dolomite, with 10% rounded and frosted sand grains, some of them chert-cemented.
 3025-55 Dolomite, coarsely crystalline, white, with as much as 10% sand enclosed.
 3055-3220 Dolomite, fine- to medium-crystalline, with much chert, some dolomitic and some oolitic.

Well No. 112 (38). Pure Oil and Stanolind No. 1A J. C. McKnight, 2000' south of north line, 2000' east of west line, 7-H-67, Laurel County.

PENNSYLVANIAN

0-20	Sandstone, very poorly sorted, angular to subround, fine to medium, very micaceous, gray.
25-31	Sandstone, coarser than above, more heavy minerals.
31-40	Some sandstone, as above; shale, micaceous, clayey, dark-gray.
40-57	Shale, very dark gray, micaceous, some silt.
57-77	Shale, as above; some sand, fine-grained, argillaceous, micaceous, dark-gray.
77-82	Sandstone, fine-grained, well-sorted, with much siderite.
82-99	Sandstone, very fine, micaceous, gray.
105-10	Shale, black, clayey.
110-21	Sandstone, fine-grained, quartzitic.
121-29	Sandstone, as above, becoming more shaly with depth.
129-50	Shale, very finely silty, dark-gray to black.
150-60	Siltstone, fine, sideritic.
190-95	Sandstone, white, very friable, fine-grained.
195-202	Sandstone, fine, as above, more coherent.
202-38	Sandstone, white, fine-medium grained, angular to subrounded, friable.
238-62	Shale, black, fissile.
262-70	Sandstone, with trace of limestone.
270-342	Sandstone, very poorly sorted, fine-grained to pebbles of quartz.
343-52	Sandstone, well-sorted, fine-grained, micaceous, with many heavy minerals, well-cemented.
352-99	Shale, finely sandy, very dark gray, with streak of sideritic sandstone, very tight and hard at 366-76.
407-20	Sandstone, white, fine to pebbly, quartz conglomerate.
446-95	Quartz conglomerate.
495-512	Sandstone, finer than above, very friable.
	Sample gap 512-70.

MISSISSIPPIAN

Pennington

570-84	Shale, dark-red and gray-green, slightly silty.
584-89	Shale, some slightly calcareous, gray-brown.
599-606	Sandstone, very fine, well-sorted; trace of brown limestone.
606-13	Sandstone, as above, with trace of red shale.
633-42	Sandstone, very fine grained, gray-brown, with trace of red to gray shale.
642-52	Sandstone, as above, some slightly calcareous.
667-78	Sandstone, dark-gray; shale, dark and fissile; trace of limestone.

Greenbrier ("Big Lime" of driller - Glen Dean through Warsaw)

678-98	Limestone, very finely argillaceous, dark gray-brown, with some more green below 692.
698-718	Limestone, brown, very fossiliferous, dense.
718-25	Limestone, as above, with much shale, gray, fissile.
725-60	Limestone, gray-brown, very fossiliferous, with interbedded dark fissile shale.
760-65	Limestone, slightly dolomitic, very slightly oolitic.
765-815	Limestone, cream to light-tan, dense, fossiliferous.
825-35	Limestone, cream, very oolitic, matrix dense to finely crystalline.
835-45	Limestone, tan, dense, occasional oolites.
845-88	Limestone, brown, oolitic, matrix dense.
888-916	Limestone, very finely dolomitic, light creamy-gray.
916-25	As above, with occasional enclosed large rounded and frosted sand grains.

Lower Mississippian (Waverly, New Providence, or Borden group)

925-35	Siltstone, some argillaceous, green, some almost a quartzite, still green; some chert, red.
935-46	More green and red chert than above; shale coarser, more dark-gray.
946-58	Siltstone, argillaceous, all green; much chert, as above.
958-75	Siltstone, less argillaceous, green; little chert.
975-94	Siltstone, green, some argillaceous; some very fine glauconite.

- 994-1018 Siltstone, more argillaceous than above, darker, gray-green.
 1030-1253 Siltstone, as above, very argillaceous, very dark gray to black.

New Albany

- 1253-1390 Shale, black, carbonaceous, interbedded with greenish-gray shale in lower 30 feet and with "Duffin" layer in base.

SILURIAN

Clinton

- 1390-96 Shale, green, fissile (trace of Duffin from above - dolomite, argillaceous, sandy, and with phosphatic fragments enclosed.)
 1396-1437 Shale, green, some coarse, some fissile to clayey.
 1437-48 Shale, as above, with trace of dolomite, argillaceous, brownish-gray to yellow.
 1448-76 Shale, green-gray, coarsely fissile.
 1476-90 Shale, very dark gray, interbedded with some dark, pyritic and argillaceous dolomite.

Brassfield

- 1490-97 Dolomite, argillaceous, very dark gray.
 1497-1519 Dolomite, dark, as above, with some interbedded shale; gray, fossiliferous chert, with trace of glauconite.

ORDOVICIAN

Richmond

- 1519-49 Dolomite, very argillaceous, slightly silty, very dark gray.
 1549-59 Limestone, argillaceous, fine-grained, gray, fossiliferous.
 1559-67 Limestone, dolomitic, very argillaceous; trace of silt, more greenish-gray than above.
 1567-1600 Siltstone, dolomitic, argillaceous, greenish-gray.
 1600-10 Siltstone, dolomitic, argillaceous, very dark gray to dark red-brown.
 1610-20 Siltstone, finer than above, dark-gray.
 1620-27 Limestone, very argillaceous, dark gray-brown, some fossiliferous, very fine grained.
 1627-43 Limestone, very finely silty, lighter greenish-gray than any above.

Maysville

- 1643-50 Limestone, slightly argillaceous, light-gray, finely crystalline. (Gilbert limestone)
 1650-70 Limestone, very finely silty and argillaceous, light gray-tan.
 1670-1701 Siltstone, calcareous, slightly argillaceous, dark-maroon and some greenish-gray. (Tate)
 1701-41 Limestone, very argillaceous, with some almost silty, gray, with traces of green.
 1741-63 Limestone, very dark gray to gray-brown, fossiliferous, some dark calcareous shale. (Fairmount)
 1763-95 Limestone, dark-gray, very fossiliferous, with interbedded dark calcareous shale.
 1795-1807 Limestone, gray, fossiliferous, as above; trace of replacement chert.
 1807-17 Limestone, as above, without chert.
 1817-42 Limestone, very fossiliferous, gray, and some interbedded dark-gray calcareous shale, with trace of very fine silt.

Garrard

- 1842-66 Limestone, very silty and argillaceous, dark-gray.
 1866-80 Limestone, gray, very fossiliferous, with little dark-gray calcareous and silty shale.
 1880-98 Limestone, very fossiliferous, some phosphatic; more interbedded calcareous and silty shale.
 1898-1942 Limestone, very fossiliferous, phosphatic, crystalline, gray, with some interbedded dark calcareous shale.
 1942-63 Limestone, some more dense, gray, than above, fossiliferous, with interbedded shale.
 1963-76 Limestone, as above, with some interbedded more crystalline and fossiliferous limestone.

- 1976-2009 Limestone, dense, gray, finely crystalline, fossiliferous, with finely disseminated phosphate and some interbedded shale; trace of replacement chert.
- 2009-58 Limestone, some as above; more fossiliferous and crystalline, some almost brown.
- 2058-2140 Limestone, gray, crystalline, fossiliferous and phosphatic, with interbedded, slightly calcareous shale.

Lexington

- 2140-50 Limestone, gray, crystalline, slightly argillaceous, with trace of replacement chert.
- 2150-67 Limestone, light-tan to gray, coarsely crystalline, very fossiliferous, with trace of replacement chert.
- 2167-2220 Limestone, more finely crystalline, gray-brown, with traces of brown replacement chert.
- 2220-52 Limestone, brown, crystalline, fossiliferous, with little replacement chert.
- 2252-86 As above, with stringers of slightly argillaceous limestone.
- 2286-97 Limestone, more fine-grained than above, gray-brown.
- 2297-2404 Limestone, gray, dense to crystalline, very fossiliferous, very slightly phosphatic; traces of slightly calcareous shale and fossiliferous chert.

Chazy-Black River

- 2404-16 (Contact about 2410.) Limestone, fine-grained, brown, slightly bentonitic, with a little free bentonite.
- 2416-30 Limestone, fine-grained, brown to greenish, bentonitic.
- 2430-40 Fractured. Limestone, some dolomitic, some crystalline, some argillaceous.
- 2440-50 Limestone, some chalky and worn; trace of petroliferous staining.
- 2450-83 Limestone, brown, fine-grained, with trace of dolomite.
- 2483-93 Limestone, argillaceous, fine-grained, brownish-gray.
- 2493-2510 Limestone, very slightly argillaceous and dolomitic, fine-grained, brown.
- 2510-45 Limestone, fine, slightly argillaceous, grayish-brown.
- 2545-74 Limestone, fine to fine-crystalline, brown; less argillaceous.
- 2574-84 Limestone, gray-brown, fine-grained, trace argillaceous, trace dolomitic.
- 2584-2860 Limestone, very fine, brown, with traces of brown dolomite and occasional streaks of slightly argillaceous dolomite.
- 2860-76 Limestone, as above, with some "bird's-eye," lithographic.
- 2876-2914 Limestone, darker and slightly argillaceous.
- 2914-39 Limestone, very smooth, brown, lithographic.
- 2939-49 Limestone, brown, fine-grained, with some finely crystalline dolomite.
- 2949-59 Dolomite, slightly calcareous, finely crystalline, brown.
- 2959-77 Limestone, slightly dolomitic, fine, brown.
- 2977-3111 Limestone, very fine grained, slightly argillaceous, brown.
- 3111-65 Limestone, slightly dolomitic, very fine, with trace of argillaceous limestone.
- 3165-3234 Limestone, very slightly argillaceous, very fine grained, dark gray-brown.

(Wells Creek)

- 3234-50 Limestone, light, as above, with some very dolomitic, fine-grained, enclosing fine silt; pale-gray.
- 3250-63 Dolomite, pale-gray, finely crystalline, with some fine, white silt.
- 3263-78 Dolomite; contact of fine, irregularly crystalline, with medium-crystalline; some coarse silt and rare rounded and frosted sand grains.
- 3278-99 Dolomite, fine and medium-coarse, brown, porous, with much sand and green, fissile shale enclosed.
- 3299-3304 Same, but more sand than above.

CAMBRIAN

Van Buren-Gasconade

- 3304-12 Dolomite, brown, medium- to coarse-crystalline; rare enclosed sand, as above.
- 3312-24 Dolomite, very fine crystalline, pale-gray; rare sand.

- 3324-75 Dolomite, brown, medium- to fine-crystalline; trace of gray quartzose chert; streak of poorly sorted sand at 3354-65.
- 3375-85 Dolomite, earthy and worn (fractured?); residue 50% chert, very chalky to dense, with rare dolomoids, some quartzose.
- 3385-98 Dolomite, more coarsely crystalline, brown, trace of oil stain; chert residue, 30%, white to pale-gray, occasionally sandy or oolitic.
- 3398-3407 Dolomite, medium to coarsely crystalline, dense to sucrose; very small residue of chert, as above.
- 3407-14 Very little dolomite; 80% chert, translucent to quartzose, some sandy, some darker gray; trace of shale.
- 3414-25 Dolomite, coarsely crystalline, dense, light-tan; very small residue of quartzose chert.
- 3425-36 Dolomite, more gray, coarsely crystalline, some very porous; 30% chert, dense to translucent to quartzose, occasional dolomoids.
- 3436-45 Dolomite, very finely crystalline, cream; 25% chert, white, very finely porous to dolomoidic, some dense to quartzose.
- 3445-55 Dolomite, very coarsely crystalline, tan-gray, porous; chert, 15%, chalky to dense, white, with occasional dolomoids.
- 3455-62 Dolomite, brown, crystalline, medium-coarse, porous, with some oily staining; very small residue of finely disseminated silt.
- 3462-68 Dolomite, fine to fine-medium crystalline, dense; rare sand grains and a little finely dolomoidic chert.
- 3468-73 Dolomite, fine-grained, brown; chert, 30%, rough, white to gray, quartzose, with pyrite and some mineralization along fractures.
- 3473-87 Dolomite, medium to coarsely crystalline, light-tan; small residue of chert, some drusy, with rare coarse sand grains; pyrite.
- 3487-92 Dolomite, fine-grained, tan; chert, translucent to opalescent, with rare oolites, 5%.
- 3492-3503 Dolomite, fine- to coarse-crystalline, light-tan; chert, translucent, occasionally sandy, some coarsely dolomoidic; trace of dolomoidic shale.
- 3503-22 Dolomite, fine-crystalline, cream; trace of translucent chert.
- 3522-35 Dolomite, vitreous, densely crystalline, tan-gray; chert, dense to quartzose, some microspecked.
- 3535-46 No samples.
- 3546-48 Dolomite, finely crystalline, very dense; trace of chert.
- 3548-52 No samples.
- 3552-97 Dolomite, very fine grained, dense, with very small residue.
- 3597-3606 Dolomite, medium-crystalline, white; chert, translucent to quartzose, with trace of dolomoidic chert.
- 3610-30 Dolomite, cream, fine-grained, finely broken; chert, dense, white; some coarse sand.
- 3630-35 Dolomite, coarsely crystalline, white.
- 3635-40 Dolomite, finely crystalline, white; trace of dense white chert.
- 3640-47 Dolomite, fine-medium crystalline, white; 25% chert, some dense, white, some with very fine lacy dolomoids.
- 3647-53 Dolomite, coarsely crystalline, tan; residue chert, 20%, dense, white, with a little finely dolomoidic chert from above, mainly quartzose.
- 3653-60 Dolomite, coarsely crystalline as above; chert, 30%, chalky to dense, white to tan, very dense, trace of druse.
- 3660-71 Dolomite, less coarse than above; chert, 30%, very dense to translucent white, fresh.

Eminence

- 3671-81 Very little dolomite; 80% chert, dense, fresh, translucent to quartzose, with structureless oolites and trace of druse.
- 3681-85 As above, chert 70%.
- 3685-3702 Dolomite, cream, coarsely crystalline; chert, 15%, translucent to quartzose.
- 3702-08 Dolomite, slightly finer, more than that above; chert, gray, quartzose, with trace of fracturing and recementation by crystalline quartz. Siliceous oolites rare.
- 3708-25 Dolomite, gray-tan, crystalline, medium-coarse; chert, 5%, quartzose to dense, rare dolomoids.
- 3725-57 Dolomite, medium-coarse crystalline, light-tan; small residue of chert, 5%, fresh, translucent to quartzose.

- 3757-61 Dolomite, cream, medium-coarse crystalline; chert, 20%, fresh, translucent to quartzose, with occasional quartz druse; rare rounded and frosted sand grains.
- 3761-68 Dolomite, tan, coarsely crystalline; chert, creamy-gray, translucent to quartzose; trace of chalky, coarsely dolomoldic chert.
- 3768-85 Dolomite, tan, medium coarsely crystalline; chert, quartzose, trace banded; very slight mineralization.
- 3785-95 Dolomite, densely crystalline, light-tan; chert, 50%, quartzose, with trace of obscure oolites and traces of fracturing and recementation.
- 3795-3800 Dolomite, cream, crystalline, as above; chert, dense, white, to quartzose, large irregular oolites and trace of banded druse.
- 3800-15 As above, with less chert, 60%.
- 3815-32 Dolomite, more finely crystalline, cream to tan; chert, white, dense to quartzose, 50%.
- 3832-37 Dolomite and chert, as above, but only about 10% chert.
- 3837-49 Dolomite, finely crystalline, tan; 60% chert, dense to quartzose, some very finely banded druse; trace of finely pyritic quartzose chert.
- 3849-75 Dolomite, as above; chert, 40%, very irregularly oolitic, and banded druse; some green mineralization and finely pyritic chert.

Potosi

- 3875-84 Dolomite, very finely crystalline, brown; chert, 40%, very dull white, and some tan; some sandy chert, occasional obscure oolites.
- 3884-90 Dolomite, finely crystalline, as above; chert, 75%, very oolitic, some hollow, some with sand centers, some radial, and some coated with brown quartz.
- 3890-98 Chert, 75%, light-gray, quartzose, very sandy, with some irregularly banded; little of it dull-white.
- 3898-3907 As above, but less chert, 50%.
- 3907-15 Dolomite, very finely crystalline, pale-gray; little chert, as above; trace of pale-green, finely pyritic shale.
- 3915-34 Dolomite, gray, fine-medium crystalline, dense to sucrose; trace of chert, finely dolomoldic; some pyrite.
- 3934-40 Dolomite, as above, more chert, very finely dolomoldic.
- 3940-45 = 3948 (S.L.M.) Dolomite, cream, medium-crystalline; chert, 50%, very dull white, some banded.
- 3948-75 Dolomite, light-gray, fine-medium crystalline, dense; very little drusy chert.
- 3975-90 As above, with some chert having fine lacy dolomolds.
- 3990-4000 Dolomite, fine, as above; chert, 75%, white, quartzose to translucent, with many lacy dolomolds.
- 4000-09 Dolomite, fine-crystalline, gray; little chert, as above (5%), with trace of fine sand.
- 4009-16 Dolomite, fine-medium crystalline, sucrose; chert, dense, white, and dull.
- 4016-31 Dolomite, fine-crystalline, dense, creamy-gray; little translucent chert.
- 4033-42 Dolomite, fine-crystalline; much chert residue, brown, oolitic and sandy.
- 4042-59 Dolomite, very finely sucrose (very finely broken), initially porous; small residue of fine chert and sand.
- 4059-90 Dolomite, very fine crystalline, creamy-gray, with very small residue of very fine sand (1% or less).

Elvins

- 4090-4102 Dolomite, gray-brown, medium-crystalline to slightly argillaceous.
- 4102-19 Dolomite, cream, medium-coarse crystalline; very small residue (2%) of fine, translucent chert.
- 4119-37 Dolomite, finely crystalline, brown, and cream, medium-crystalline; 25% chert, brown, earthy, dolomoldic, and fine, translucent.
- 4137-50 Dolomite, fine-crystalline, brown; 50% chert, very finely disseminated, porous but not dolomoldic.
- 4150-90 As above, with less chert, 10%.
- 4190-4205 Dolomite, finely crystalline, light creamy-gray; 20% chert, dense to quartzose.

- 4205 = 4212 (S.L.M.)
 4212-26 Dolomite, very fine, sucrose; 15% chert, finely dolomoldic to quartzose.
 4226-50 Dolomite, tan, fine-crystalline, to gray, medium-crystalline; chert, finely dolomoldic and lacy.
 4250-4300 Dolomite, gray, densely crystalline; 35% chert, chalky to translucent; trace of shale.
 4300-21 Dolomite, as above; chert, chalky-white to grayish, translucent, some almost green; finely pyritic.
 4321-43 Dolomite, light-tan, medium-crystalline; little chert, as above; trace of fine sand.
 4343-55 Dolomite, as above; 50% chert, dull-white, fractured, and pyritic, some translucent and sandy to dark-gray; trace of green shale.
 4355-66 Chert, 75%, dense, gray-white; trace sandy and with obscure oolites.
 4366-75 Dolomite, cream, medium-crystalline; trace of brown oolitic limestone; chert, 25%, dull-white, finely pyritic, and some quartzitic.
 4375-86 Dolomite, coarsely crystalline, light-gray; 25% chert, chalky-white, slightly pyritic, with trace translucent; trace of green shale.
 4386-97 As above, with only about 15% chert.
 4397-4410 Dolomite, finely crystalline, light-gray; chert, 50%, very dull, dense, white, some pyritic.
 4410-26 Dolomite, more coarsely crystalline, cream; chert, as above, but 15%.
 4426-35 Dolomite, finely crystalline, light-tan; 60% chert, fresh and quartzose.
 4435-44 Chert, 80%, some as above, some dull-white and chalky.
 4444-52 50% chert, as above.
 4452-58 Dolomite, coarsely crystalline, very porous.
 4458-69 Dolomite, light tan-gray, coarsely crystalline; chert, 5%, chalky-white, pyritic; rare dolomolds.
 4469-78 Dolomite, as above; 75% chert, dense, white, with occasional streaks of crystalline quartz.
 4478-84 Dolomite, as above; 75% chert, as above, rare fragments having very small radial oolites.

Well No. 113 (69). The California Company No. 1 A. R. Spears, NE SW NE section 13-L-57, elevation 1,123.2 feet, Lincoln County.

ORDOVICIAN

Maysville

(Tate)

- 5-30 Limestone, gray, crystalline, fossiliferous, with interbedded gray, calcareous and silty shale.

(Fairmount)

- 30-40 Limestone, as above, with thin calcareous shales and trace of replacement chert.
 40-150 Limestone, coarsely crystalline, very fossiliferous and phosphatic, with little interbedded very slightly silty calcareous gray shale.

Garrard

- 150-60 Limestone, as above; more silt.
 160-80 Samples missing.
 180-200 Limestone, gray, more densely crystalline than above, fossiliferous; little interbedded silty and calcareous shale.
 200-20 Limestone, gray, fossiliferous and phosphatic; much interbedded shale.

Cynthiana-Million

- 240-90 Limestone, gray, crystalline, fossiliferous and phosphatic; trace of fissile and slightly calcareous gray shale.
 290-300 As above, with trace of silt.
 300-40 Limestone, fossiliferous, crystalline and argillaceous, more fine-grained than above.
 340-80 Limestone, fine-grained, argillaceous, with much calcareous gray shale.
 380-410 Limestone, brown, densely crystalline, to light-gray, coarsely crystalline and fossiliferous; trace of shale.
 410-20 Limestone, brown to gray, crystalline, very phosphatic, finer than above.
 420-30 Limestone, finely crystalline, phosphatic and fossiliferous; trace of silt.

Lexington

- 430-40 Limestone, crystalline, some "bird's-eye"; rare replacement chert.
440-60 Limestone, brown, crystalline, dense; rare replacement chert and slightly argillaceous limestone.
460-80 Limestone, brown, densely crystalline, very clean.
480-510 Limestone, as above, with trace of replacement chert.
510-70 Limestone, gray-brown, crystalline, finely phosphatic; trace of translucent chert; rare argillaceous fragments.
570-610 Limestone, very finely phosphatic, gray, crystalline; trace of silty shale and mottled chert.

Chazy-Black River

- 610-50 Limestone, dense, brown, very fine grained to subcrystalline; some bentonite and trace of brown translucent chert.
650-720 Limestone, very fine grained, brown; rare fragments slightly dolomitic and argillaceous.
720-40 Limestone, fine-grained, brown, with some fragments streaked with dolomite crystals.
740-60 Limestone, very fine grained, brown.
760-850 Limestone, very slightly dolomitic, fine-grained, brown.
850-1160 Limestone, very fine grained, brown, dense; occasional streaks of slightly argillaceous limestone.
1160-1200 Limestone, very finely dolomitic, tan.
1200-60 Limestone, very slightly argillaceous, slightly grayish-brown, dense.

(Wells Creek)

- 1260-70 Limestone, very fine grained, with some dolomite, finely crystalline, cream.
1270-80 Limestone, with much dolomite, as above, and some green shale.
1280-1310 Dolomite, finely crystalline, with some silt and rare sand grains; green shale and pyrite.

CAMBRIAN

Jefferson City-Cotter

- 1310-30 Dolomite, finely crystalline, pale-gray, slightly silty, with some coarse sand grains enclosed.
1330-80 Dolomite, very finely crystalline, with some silt; rare translucent to drusy chert; pyrite.
1380-1410 Dolomite, very finely crystalline, cream; rare quartzose chert.
1410-80 Dolomite, finely crystalline, to tan, medium-crystalline, very vugular; little silt and chert, finely disseminated, with a little of it dolomoldic and rare oolites.
1480-1510 Dolomite, fine-grained, cream; trace of silt, as above, and chert, translucent, with rare oolites.
1510-60 Dolomite, coarsely crystalline, dense; much (40%) chert, dull, earthy, with rare dolomolds.
1560-70 Dolomite, pale creamy-gray, finely crystalline; trace of fine silt.
1570-1610 Dolomite, fine-grained; trace of rounded and frosted sand; much fine, white, interstitial chert.
1610-40 Dolomite, as above; chert, slightly dolomoldic and with a trace of quartz druse.
1640-60 Dolomite, finely crystalline, light-tan; trace of dolomoldic chert and some translucent blue-gray chert.
1670-1730 Dolomite, very finely crystalline, light-tan; trace of granular silica in insoluble residue.
1730-50 Dolomite, very fine grained, with very finely disseminated silica and pyrite.
1750-80 Dolomite, very fine grained, light-gray; silica, as above; rare chert, with sand enclosed.
1800-30 Dolomite, finely crystalline, light-tan; chert, chalky, dolomoldic or sandy; trace of green shale.
1830-60 Dolomite, as above; more chert (as much as 30%), mainly gray, translucent, some dolomoldic; rare gray shale.
1860-90 Dolomite, as above, with little banded druse in insoluble residue.

- 1890-1920 Dolomite, as above; more chert, translucent, light-gray.
 1920-90 Dolomite, coarsely crystalline, light-gray; chert, pale-gray, with some irregularly shaped oolites; some sandy and some dolomoldic chert.

Roubidoux

- 1990-2040 Dolomite, medium to coarsely crystalline, vugular; trace of chert, some sandy and some oolites.
 2040-2100 Dolomite, as above; little chert, sandy and slightly dolomoldic.

Van Buren-Gasconade

- 2100-30 Dolomite, medium-crystalline, slightly vugular, gray-tan; chert, gray, translucent, with little botryoidal druse.
 2130-60 Dolomite, as above; chert, in imperfect oolites, some free, or in quartz-coated clusters.
 2160-62 Chert, translucent, gray, with some free oolites and some quartz druse.
 2162-2200 Dolomite, more finely crystalline than above; chert, translucent, gray, and some very oolitic.
 2200-28 Dolomite, cream, medium-crystalline, dense; chert, translucent to quartzose, irregularly banded and drusy; trace of silt.
 2228-80 Dolomite, more finely crystalline than above, some dark and slightly argillaceous; rare chert, with dolomolds.
 2280-2310 Dolomite, brown, medium-crystalline, sucrose, some slightly argillaceous, some enclosing sand.
 2310-50 Dolomite, finely crystalline, light-tan to brown; chert, microspecked, dolomoldic or oolitic; some poorly sorted sand enclosed.
 2350-70 Dolomite, very finely crystalline to coarse, some very slightly argillaceous; pyrite.
 2370-90 Dolomite, as above, with some very fine silty shale.
 2390-2440 Dolomite, medium to coarsely crystalline, creamy-gray, some vugular; trace of dark gray-brown, translucent chert; finely dolomoldic silty shale.
 2440-80 Dolomite, some slightly argillaceous, as above, dark gray-brown, some sucrose; chert, earthy to quartzose, some small brown oolites and quartz druse; some dolomoldic brown chert.
 2480-2520 Dolomite, brown, medium to coarsely crystalline; little chert, very dolomoldic, and some brown quartz druse.
 2520-70 Dolomite, medium-crystalline, brown, sucrose; chert, tan to brown, very dolomoldic, drusy.

Eminence

- 2570-2640 Dolomite, very fine, and some very coarsely crystalline; trace of dolomoldic chert.
 2640-70 Dolomite, coarsely crystalline, light-tan; chert, more translucent, brown-gray.
 2670-2710 Dolomite, finely crystalline; very little chert, slightly dolomoldic.

Potosi

- 2710-20 Mainly chert, light-gray, quartzose and translucent to dense and dark-brown, some light-gray.
 2720-80 Dolomite, gray to brown, medium coarsely crystalline; chert, gray, oolitic and drusy, with rare sand grains.
 2780-2850 Dolomite, gray to brown, very coarsely crystalline; trace of chert.
 2850-2910 Dolomite, brown, densely crystalline, some vugular; rare chert, oolitic and drusy.
 2910-3010 Dolomite, gray to brown mottled, finely crystalline; rare oolitic chert and fine silt.

Elvins

- 3010-90 Dolomite, finely crystalline, brown, very finely silty; chert rare; finely banded shale in insoluble residue.
 3090-3130 Dolomite, densely crystalline, brownish-gray; very little insoluble material, mainly silty; trace of chert druse.
 3130-3230 Dolomite, densely crystalline, slightly silty and argillaceous.
 3230-3310 Dolomite, fine, densely crystalline, brown; trace of chert, some fine brown chert.

- 3310-30 Dolomite, brown, vugular and coarsely crystalline.
 3330-3410 Dolomite, brown, very vugular; rare interstitial chert and silt.

Bonneterre

- 3410-3550 Dolomite, brown to gray, densely crystalline; silt, as above; trace of dark shale.
 3550-70 Dolomite, fine-grained, densely crystalline; no chert; trace of fine sand.
 3570-3650 Dolomite, very coarsely crystalline, white, vugular; only trace of translucent chert.
 3650-3800 Dolomite, gray, coarsely crystalline, vugular, some porous.
 3800-3970 Dolomite, as above, with trace of solution clay.
 3970-4030 Dolomite, cream to brown, densely crystalline; rare oolitic chert.
 4030-4100 Dolomite, coarsely crystalline, slightly vugular, brown; some color mottling suggestive of oolites.
 4100-4250 Dolomite, as above, with some fine and dense, apparently interbedded.
 4250-92 Dolomite, brown, dense to vugular, medium-crystalline; trace of gray-green shale.
 4292-4320 Dolomite, coarsely crystalline, brown, with some oolitic dolomite; trace of glauconite.
 4320-75 Dolomite, brown, medium-crystalline; some calcareous, with large dolomite oolites; trace of green shale.
 4375-90 As above, with many large oolites and large nodular glauconite.
 4390-4400 Dolomite, medium-crystalline, oolitic; trace of limestone, fine-grained and dolomitic; trace of silt and glauconite; some red and green shale.
 4400-10 Dolomite, as above, with more silt, finely glauconitic, micaceous.
 4410-37 Siltstone, very finely glauconitic and micaceous; trace of green and red shale, slightly dolomitic.
 4437-70 Siltstone, as above, slightly calcareous; recovered fragments of very poorly preserved trilobites and brachiopods in cores.
 4470-4530 Shale, slightly dolomitic, slightly silty, dark gray-green and red.
 4530-4620 Shale, gray-green and red, with a little interbedded fine silt.
 4620-70 Siltstone, very fine grained, interbedded with dark gray-green to red shale.
 4670-4700 As above, with traces of glauconite.
 4700-5090 Siltstone, fine-grained, dark, interbedded with dark gray-green and red shale, slightly calcareous; richly glauconitic.
 5090-5110 Dominantly shale, gray-green, silty and micaceous.
- (Basal sand)
 5110-80 Sandstone, quartzitic, poorly sorted as to size, angular to rounded and frosted.
 5180-5200 Sandstone, coarser than above, with much secondary quartz growth.
 5200-70 Sandstone, very poorly sorted; some very coarse grains, rounded and frosted, mainly quartz-cemented.
 5270-5340 Sandstone, as above, with occasional fragments of dark, rounded shale particles in the sandstone.
 5340-5475 Sandstone, with very coarse rounded and frosted sand grains, fine sand in matrix, some friable.
 5475-90 As above, with some green shale and pink quartzite.
 5490-5575 Sandstone, very poorly sorted to very coarse, rounded and frosted grains, with fine sand in matrix.
 5575-5635 Sandstone, as above, with occasional small shale partings.
 5635-70 Sandstone, slightly finer than above, more quartz in cement.
 5670-5720 Sandstone, arkosic, pink, fine-grained.
 5720-50 Sandstone, arkosic, as above, with some dolomite, very finely crystalline, pale greenish-gray; pebbles of rhyolite porphyry in the sandstone.
 5750-60 Reworked porphyry, in sandstone.

PRE-CAMBRIAN (?)

- 5760-6117 Rhyolite porphyry, red.

Well No. 114 (1177). Carlstrom, et al No. 1 Miracle, section 11-L-58, Lincoln County.

ORDOVICIAN

Maysville

(Tate)

160-75

Siltstone, dolomitic, argillaceous, grayish-green, glauconitic.

175-215

Siltstone, more gray than above, no glauconite.

Fault

(Gilbert)

215-25

Limestone, fine-grained, dark-gray, argillaceous.

(Tate)

225-40

Dolomite, silty, argillaceous, grayish-green.

240-90

Siltstone, dolomitic, argillaceous, greenish-gray.

Fault

(Gilbert)

290-305

Limestone, fine-grained, argillaceous, brownish-gray.

(Tate)

315-30

Siltstone, dolomitic, argillaceous, grayish-green.

Fault

(Gilbert)

330-45

Limestone, brownish-gray, fine-grained, argillaceous.

(Tate)

345-65

Limestone, dolomitic, silty, argillaceous, greenish-gray.

365-90

Limestone, more silty and argillaceous, greenish-gray.

(Fairmount)

390-435

Limestone, fossiliferous, brownish-gray, slightly silty; trace of replacement chert and shale.

435-50

Limestone, brown, finely fossiliferous; much dark-gray argillaceous limestone, very finely silty.

450-70

Limestone, argillaceous, fine-grained, grayish-brown, fossiliferous.

470-90

Limestone, phosphatic, fossiliferous, gray; some interbedded dark shale.

490-515

Limestone, as above; some interbedded silty shale.

Garrard

515-35

Limestone, gray, very fossiliferous, phosphatic, interbedded with calcareous, finely silty shale.

535-70

Siltstone, argillaceous, very slightly calcareous, coarse-grained.

570-75

Shale, slightly silty, gray, with interbedded fossiliferous limestone.

Cynthiana-Million

575-600

Limestone, very fossiliferous, phosphatic, with some interbedded, dark-gray shale.

600-30

Limestone, argillaceous, gray, slightly silty, finely phosphatic.

630-95

Limestone, phosphatic, fossiliferous, with interbedded calcareous shale.

695-745

Limestone, more fine grained, argillaceous, slightly fossiliferous and phosphatic.

745-60

Shale, calcareous, dark-gray.

Lexington

760-805

Limestone, brown, fossiliferous, finely crystalline, slightly phosphatic; some interbedded brown, argillaceous limestone.

805-40

Limestone, densely crystalline, fossiliferous, finely phosphatic, rare shale.

Well No. 115 (1397). J. I. Darst, et al No. 1 Edwards Brothers, NE corner SE section 25-L-61, elevation 922 feet (Paulin altimeter), Lincoln County.

Well begun in Clinton.

Clinton

- 65-75 Shale, green, clayey, fine-grained, interbedded with yellow to gray, medium-crystalline dolomite; much pyrite. (Oldham)
75-80 Shale, green, clayey, fine-grained; trace red.
80-95 Dolomite, argillaceous, green, fine-grained and dense, with some interbedded green shale.

Brassfield

- 95-107 Dolomite, coarsely crystalline, dense, fossiliferous, yellow and gray; trace of dead oil stain.

ORDOVICIAN

Richmond

- 107-29 Dolomite, argillaceous, very slightly silty, gray-green.
129-44 Dolomite, as above, but more gray, interbedded with some fossiliferous gray dolomite.
144-62 Dolomite, silty and argillaceous, gray, medium-grained.

Maysville

- 162-88 Dolomite, very slightly silty, argillaceous, gray.
188-210 Dolomite, green, silty, argillaceous, interbedded with some more cleanly crystalline. (Tate.)
210-40 Dolomite, calcareous, green, argillaceous, slightly silty.
240-50 Limestone, dense, fossiliferous, some very dark gray-brown, argillaceous.
250-69 Limestone, very silty, green, argillaceous.
269-78 Limestone, very fossiliferous, slightly phosphatic; much interbedded dark calcareous shale. (Fairmount.)

Well No. 116 (1182). J. I. Darst, et al No. 1 Robert McCormick, NW SE NE section 7-L-58, Lincoln County.

ORDOVICIAN

Maysville

(Gilbert)

- 1-5 Limestone, slightly dolomitic, light-gray, with trace of glauconite.
(Tate)
5-10 Limestone, slightly dolomitic, some finely silty, light greenish-gray.
10-15 Dolomite, silty, fine-grained, pale grayish-green; considerable pyrite.
15-65 Same as above, with some glauconite.

(Fairmount)

- 65-70 Top at 67 feet.
Dolomite, silty, slightly more gray and calcareous than above; some replacement chert.
70-90 Limestone, slightly dolomitic, phosphatic, fossiliferous, gray; trace of replacement chert; trace of gray shale.
90-100 Limestone, fossiliferous and phosphatic, gray; some dark-gray, calcareous shale, coarse-grained; little gray replacement chert.
100-45 Limestone, gray, fossiliferous and phosphatic; less calcareous shale.
145-65 Limestone, fossiliferous and some phosphatic; little calcareous shale residue, different in texture from that above, more flaky, and very finely siliceous.
165-85 As above, but more of the argillaceous and siliceous residue.

Garrard

- 185-90 Some limestone, as above; mainly shale, silty, grayish-green.
190-95 As above, with less shale.
195-220 Siltstone, argillaceous and calcareous.

- 240-50 Siltstone, as above, and some fossiliferous limestone.
 250-80 Limestone, gray, crystalline, very fossiliferous, with some gray calcareous siltstone.

Cynthiana-Million

- 280-325 Limestone, gray, crystalline, fossiliferous and slightly phosphatic; some calcareous shale.
 325-90 Limestone, very fossiliferous, gray; acid leaves 50% fine, flaky shale residue, same type as that above, which is still Eden type.
 390-405 Shale, calcareous, gray; leaves finely flaky shale residue.
 405-30 Limestone, crystalline and very fossiliferous; some shale, as above.
 430-40 Limestone, coarsely crystalline, fossiliferous, porous.
 440-55 Limestone, rather fine grained, gray, very slightly argillaceous and silty, becoming more so in lower portion.
 455-60 Limestone, coarsely crystalline, cream to pinkish; mainly shale, red to gray, slightly calcareous.
 460-65 Limestone, crystalline, pinkish-tan to gray, some phosphate.

Lexington

- 465-67 $\frac{1}{2}$ Limestone, fine-grained, brown; ostracods.
 467 $\frac{1}{2}$ -70 Limestone, creamy-gray, very fine grained to sublithographic; trace of green argillaceous limestone.

Well No. 117 (1175). Darst and Moss No. 2 Marion Wells, section 25-M-59, Lincoln County.

ORDOVICIAN

Garrard

- 430-32 Limestone, brownish-gray, fossiliferous, crystalline, trace of phosphate.
 432-35 Limestone, some as above, some more granular and slightly argillaceous.
 435-37 Limestone, grayish-brown, very fossiliferous; trace of oil stain.
 437-40 Limestone, gray, fossiliferous, phosphatic, with little slightly silty and dolomitic limestone.
 440-45 Limestone, gray, very fossiliferous, with many of the bryozoans badly weathered; streaks of silty and slightly argillaceous limestone.
 445-55 Limestone, fossiliferous; traces of argillaceous gray silt.
 455-60 Limestone, as above, but more silty.
 460-65 Limestone, gray, fossiliferous and phosphatic; only trace of silt.
 465-90 More silt and slightly coarser than above.
 490-515 Calcareous siltstone, as above; some shale, gray, finely fissile.

Cynthiana-Million

- 515-25 Limestone, fossiliferous, phosphatic, gray.
 525-30 Limestone, almost white, crystalline, some fragments quite phosphatic; trace of silt; trace of pink color.
 530-35 Limestone, white, finely broken; traces of phosphate.
 535-50 Limestone, more gray than white; slightly less pure.
 550-55 Limestone, darker gray, finely crystalline.
 555-70 Same, with some limestone that is quite argillaceous.
 570-600 Limestone, dark-gray, finely crystalline, some argillaceous.
 600-50 Limestone, white to gray, fossiliferous, and some phosphatic.
 650-55 Limestone, light-gray, different lithologically from that above, more flaky, with tiny dark inclusions; some dark grayish-brown calcareous shale.
 655-60 Limestone, light-cream, crystalline and phosphatic, porous; much gray calcareous shale; many brachiopods and bryozoans.
 660-70 $\frac{1}{2}$ Limestone, gray, many brachiopod fragments; much argillaceous limestone.
 670 $\frac{1}{2}$ -72 Limestone, gray, more phosphatic, with some phosphatic Cyclora.
 672-85 Limestone, gray, much of it argillaceous and silty.
 685-705 Limestone, densely crystalline to argillaceous, dark brownish-gray.
 705-30 Limestone, crystalline, gray, fossiliferous and phosphatic; Cyclora.
 730-40 Limestone, crystalline, white to tan, fossiliferous, clean; slight oil stain.
 740-45 Limestone, very argillaceous, dark grayish-brown.

- 745-47 Limestone, light-gray, medium crystals.
 747-61 Limestone, gray, densely crystalline; some argillaceous, the clayey material being so coarse as to almost approach silt size.

Lexington

- 761-71 Limestone, light-tan, crystalline, fossiliferous; trace of replacement chert.
 771-75 Limestone, pale-brown, lithographic; trace of chert.
 775-77½ Limestone, cream, lithographic, with 25% chert, same color.
 777½-80 Limestone, same as above; some very much darker brown and slightly argillaceous; much less chert.
 780-83½ Limestone, tan, dense to subcrystalline; trace of chert and shale that may be altered bentonite.
 783½-800 Limestone, cream, fine-grained, enclosing occasional dolomite rhombs; trace of chert.

Well No. 118 (68). Olds Oil Company No. 1 Elliott, section 20-L-57, elevation 1,030 feet, completed 4-7-45, Lincoln County.

ORDOVICIAN

Maysville

(Tate)

- 14-30 Limestone, fossiliferous, and argillaceous dolomite.
 30-39 Dolomite, silty, pale grayish-green; little glauconite.
 39-45 Dolomite, little as above; mainly medium-grained, pale-greenish, with a little glauconite.
 45-90 Dolomite, silty, pale grayish-green.

(Fairmount)

- 90-170 Limestone, slightly dolomitic and argillaceous, fine-grained, gray, and fossiliferous.
 170-95 Limestone, more coarsely fossiliferous and more dolomitic than above.
 195-215 Limestone, as above, interbedded with some that is silty.

Garrard

- 215-20 Siltstone, calcareous, gray.
 220-65 Siltstone, as above, some more argillaceous.
 265-80 Siltstone, as above; some limestone, gray, very fossiliferous and phosphatic.

Cynthiana-Million

- 280-320 Limestone, finer grained than above, gray, argillaceous, fossiliferous.
 320-50 Limestone, very fossiliferous, phosphatic, with some interbedded dark-gray calcareous shale.
 350-440 Limestone, dark-gray, finely crystalline, with some dark-gray calcareous shale.
 440-80 Limestone, crystalline and fossiliferous, grayish-brown; some calcareous shale.

Lexington

- 480-500 Limestone, fine-grained to lithographic, brown and some green, with enclosed clay.
 500-10 Limestone, fine-grained, brown; little limestone, very slightly argillaceous, with dark-brown translucent chert.
 510-80 Limestone, fine-grained to finely crystalline, brown.
 580-600 Limestone, fine-grained, darker than above, slightly argillaceous.
 600-70 Limestone, crystalline, grayish-tan, texture neither typically Black River nor Trenton.

Chazy-Black River

- 670-700 Limestone, fine-grained to lithographic, brown, with some bentonite.
 700-70 Limestone, fine-grained, brown, slightly dolomitic.
 770-80 Dolomite, brown, medium-crystalline.
 780-800 Limestone, slightly dolomitic, brown; some green, with enclosed bentonite.

- 800-1200 Limestone, slightly dolomitic, brown.
 1200-10 Limestone, finely argillaceous, very dark brown.
 1210-40 Limestone, fine-grained, some very finely dolomitic, brown.
 1240-1320 Limestone, fine-grained, very slightly argillaceous.

(Wells Creek)

- 1320-26 Dolomite, very finely crystalline, pale-gray; trace of dark-gray shale.
 1326-31 Dolomite, as above; some limestone, fine-grained; some calcareous green shale.
 1331-60 Dolomite, very finely crystalline; little limestone.
 1360-68 Dolomite, finely crystalline, enclosing occasional fine- to medium-grained, rounded sand grains; trace of shale.

CAMBRIAN

Knox

- 1368-75 Dolomite, cream, medium-crystalline; trace of green shale, with pyrite and rare rounded and frosted sand grains.
 1375-80 Dolomite, white, finely crystalline, to cream, medium-crystalline; little rounded and frosted sand grains.
 1380-92 Dolomite, light-tan, finely crystalline; 10% white, translucent chert.
 1392-97 Dolomite, very finely crystalline, cream.
 1397-1408 As above, with some very finely dolomoldic chert.
 1408-12 Dolomite, medium-crystalline, light-tan (porous?).
 1412-18 Dolomite, tan, very fine grained, tight.

Well No. 119 (1170). Olds Oil Company No. 1 Estes, SW SW NE section 19-L-57, elevation 932 feet, Lincoln County.

- 1-3 Surface.

New Albany

- 3-50 Black shale, pyritic.

DEVONIAN

Beechwood

- 50-55 Dolomite, pale grayish-tan, fine-grained, with some pale, gray chert; trace of rounded and frosted sand grains.
 55-59 Dolomite, brown, fine-grained, with a little vugular porosity; about 10% pale, gray chert.

ORDOVICIAN

Richmond

- 59-63 Little dolomite, as above; mainly grayish-green dolomitic siltstone.
 63-74 Dolomite, very silty, greenish-gray.
 74-85 Dolomite, green to brown, silty.
 85-95 Dolomite, argillaceous, brownish-gray.
 95-100 Dolomite, very silty, grayish-green.
 100-13 Dolomite, grayish-brown, shaly.

Maysville

(Gilbert)

- 113-26 Limestone, fine-grained, dark grayish-brown, slightly shaly.

(Tate)

- 126-73 Limestone, as above; some dolomite, grayish-green, silty, glauconitic.

(Fairmount)

- 173-202 Limestone, slightly argillaceous, gray.
 202-07 Limestone, cleaner, greenish-gray.
 207-86 Limestone, phosphatic and fossiliferous, slightly shaly, gray.

Garrard

- 286-312 Limestone, as above; some silty and shaly.
 312-50 Siltstone, calcareous and shaly.

Cynthiana-Million

- 350-63 Little siltstone, as above; mainly fossiliferous, gray limestone.
363-447 Limestone, gray, fossiliferous, little of it shaly.
447-511 Limestone, gray, fossiliferous, with some shale; limestone is more dense.
511-24 Shale, calcareous, gray.
524-43 Some shale, as above; some dark, fossiliferous limestone.
543-67 Limestone, gray, fossiliferous; occasional shaly streak.
567-78 Limestone, very argillaceous, dark-gray.
578-84 Limestone, as above, some very fossiliferous and phosphatic.
584-89 Limestone, very fossiliferous and phosphatic.

Chazy-Black River

- 589-96 Limestone, very dense and fine-grained, grayish-brown.
596-98 Limestone, as above, with some gray, translucent chert.
598-645 Limestone, fine-grained to finely crystalline, dark-brown.
645-70 Limestone, more crystalline, slightly dolomitic (porous?).
670-732 Limestone, dense to crystalline; trace of argillaceous limestone. (More crystalline than Tyrone usually is, but not the same as Trenton.)
732-49 Limestone, with some brownish-gray bentonitic shale and a little chert.
749-67 Limestone, still crystalline, as above, but with much bentonite.
767-822 Limestone, fine-grained, lithographic, brown, with much bentonite cave.
822-38 Limestone, fine-grained, slightly dolomitic, with trace of tan chert.

Vell No. 120 (67). W. B. Phillips, et al No. 1 Jesse Martin, section 7-L-58, elevation 100 feet, Lincoln County.

IRDOVICIAN

(Tate)

- 9-15 Siltstone, green, dolomitic and slightly argillaceous.
15-41 Dolomite, silty and slightly argillaceous, greenish-gray.

(Fairmount)

- 41-49 Limestone, gray to greenish-gray, slightly argillaceous; trace of silt and replacement chert.
49-64 Limestone, slightly argillaceous, dark-gray, fossiliferous; trace of replacement chert.
64-69 Limestone, very dark gray, very fossiliferous, slightly argillaceous; trace of replacement chert.
69-79 Limestone, gray to greenish-gray, very fossiliferous, fine matrix very slightly argillaceous with chert as above.
79-102 Limestone, gray, fine-grained, phosphatic and fossiliferous; trace of calcareous shale and replacement chert.
102-25 Limestone, fine-grained, slightly argillaceous, fossiliferous, with trace of phosphate; residue shows a little very fine gray silt.
125-35 Limestone, argillaceous streaks, trace dolomite; fossiliferous and slightly phosphatic, gray.
135-53 Limestone, very fossiliferous, phosphatic; trace of calcareous shale.

Garrard

- 153-58 Limestone, as above, but interbedded shale is silty.
158-74 Limestone, fossiliferous, interbedded with calcareous and silty shale.
174-215 Siltstone, slightly calcareous and argillaceous, gray.
215-19 Siltstone, almost no calcareous cement.
219-25 Limestone, fossiliferous, with some siltstone, as above.

Cynthiana-Million

- 225-36 Limestone, gray, very fossiliferous; trace of silty shale.
236-42 Limestone, as above, without silt.
242-323 Limestone, gray, fossiliferous and phosphatic, with interbedded calcareous shale.
323-67 Limestone, more dense than above, less fossiliferous; residue same.
367-80 Limestone, very argillaceous, fine-grained, dark-gray.
380-95 Shale, slightly calcareous, very dark gray, with little limestone.
395-405 Limestone, brownish-gray, densely crystalline, fossiliferous, with some interbedded gray calcareous shale.

- 405-10 Limestone, some fossiliferous, dense, some argillaceous; some gray, fissile shale.
 410-30 Limestone, densely crystalline, fossiliferous, gray-brown, some slightly argillaceous; trace of dolomite.
 430-35 Limestone, some argillaceous, finely phosphatic, fossiliferous, with trace of silt.
 435-45 Limestone, argillaceous, fine-grained, gray.

Lexington

- 445-50 Limestone, gray-brown, densely crystalline, fossiliferous, with phosphatic *Cyclora*.
 450-60 Limestone, gray-brown, as above; trace of brown replacement chert.
 460-65 Limestone, very fine, cream to tan, with trace of chert, as above.
 465-70 Limestone, dark-brown, very dense, fine-grained; mat of ostracods; trace of dark-brown chert.
 470-82 Limestone, gray-brown, some argillaceous; some replacement chert.
 482-501 Limestone, densely crystalline, grayish-brown, with trace of chert, as above.
 501-11 Limestone, brown, finely crystalline, dense; trace argillaceous.
 511-16 Limestone, more grayish-brown, fossiliferous, very clean.
 516-33 Limestone, brown, fine-grained, some fossiliferous; rare fragments of dark shale.
 533-43 Limestone, gray-brown, fossiliferous, dense to crystalline.
 543-90 Limestone, gray-brown, densely crystalline, fossiliferous; small residue of shale and replacement chert.
 590-602 Limestone, more gray, fossiliferous and slightly phosphatic; some interbedded silty shale and gray fossiliferous chert.
 602-16 Limestone, brownish-gray, finely fossiliferous and very finely phosphatic; residue is silty shale and gray mottled chert.
 616-35 Limestone, tan, finely crystalline, finely phosphatic, some fossiliferous; trace of chert.

Chazy-Black River

- 635-42 Limestone, as above; in contact with fine-grained, brown limestone with a little brown translucent chert.
 642-52 Limestone, slightly bentonitic, some brown, some green.
 652-58 Limestone, as above, but cleaner.
 658-62 Limestone, cream to tan, very fine; some fragments show staining and slight mineralization with pyrite; occasional fragments look weathered.
 662-68 Limestone, brown, some cream, weathered-looking; signs of fracturing, with oily stains on light surface; trace of brown chert and finely banded silty shale.
 668-75 Limestone, dark-brown, fine-grained to subcrystalline to slightly dolomitic; trace of very dark brown chert in residue.
 675-80 Limestone, very dolomitic, brown; trace of dark-brown chert.
 680-95 Limestone, very slightly dolomitic, trace argillaceous; trace of chert, as above.
 695-700 Limestone, very fine to subcrystalline, trace argillaceous.
 700-15 Limestone, very slightly dolomitic, very fine, with trace of brown chert.
 715-30 Limestone, very fine, light-tan, some streaked with dark-gray.
 730-40 Limestone, slightly dolomitic, light-tan; trace of banded shale.
 740-50 Limestone, very dolomitic, tannish-gray.
 750-60 Limestone, very dolomitic, fine-grained; trace of oil staining.
 760-66 Limestone, very slightly dolomitic; some greenish-brown, argillaceous.
 766-83 Limestone, more dolomitic, fine, brown to gray-brown.
 783-832 Limestone, slightly dolomitic, brown.
 832-41 Limestone, fine to crystalline; trace of white crystalline quartz.
 841-54 Limestone, slightly dolomitic, very slightly argillaceous; trace of dark chert, dense to dolomitic.
 854-68 Limestone, very fine, dense to subcrystalline; trace of very dark chert.
 868-926 Limestone, very fine grained, tan.
 926-37 Limestone, very fine grained, tan, as above, with some very smooth, cream.
 937-42 Limestone, light-tan, very fine, smooth.

942-71 Limestone, some fine, tan, some more gray and argillaceous; residue light, porous shale.

971-1027 Limestone, very fine, only trace dolomitic.

1207-80 Limestone, very slightly argillaceous, gray-brown to very dark brown.

(Wells Creek)

1280-90 Limestone, very dark, as above; plus dolomite, very finely crystalline, enclosing slightly larger grains, light-gray.

1290-1300 Dolomite, very finely crystalline, light-tan; some green dolomitic shale.

1300-09 Dolomite, slightly calcitic, very fine, enclosing some larger grains, gray-tan; trace of dolomitic shale.

1309-15 Dolomite, very fine grained, gray-tan.

1315-30 Dolomite, finely crystalline, gray; trace of dark shale and fine-grained, tight sandstone.

CAMBRIAN

Jefferson City-Cotter

- 1330-34 Dolomite, pale-gray, finely crystalline, finely sandy; residue fine sand, some rounded and frosted grains, trace of gray pyritic chert.
- 1334-45 Dolomite, densely crystalline, light-tan; trace of coarse sand in residue.
- 1345-49 Dolomite, fine, gray-tan; rare sand grains and green shale.
- 1349-54 Dolomite, very fine grained, earthy, light-tan.
- 1354-59 Dolomite, as above; trace of sand and oolitic chert in very small residue.
- 1359-64 Dolomite, very fine, and some medium-crystalline, gray-tan; very small residue.
- 1364-69 As above, with rare fragment of white chert with brown-centered oolites.
- 1369-75 Dolomite, very fine, cream, with some brown, medium-crystalline; trace of rounded and frosted sand and drusy chert.
- 1375-86 Dolomite, pale-gray, fine-crystalline; very small residue of fine silt, rounded and frosted sand, trace of quartzose chert and pyritic shale.
- 1386-90 Dolomite, as above; some slightly coarser; residue same.
- 1390-1402 Dolomite, brown, fine-crystalline, dense, with rare fragments coarser; rare sand grains.
- 1402-07 Dolomite, brown, fine to fine-medium crystalline; trace of quartz chert and sand grains.
- 1407-17 Dolomite, some as above; some more gray, sucrose and porous, with more of the quartzose chert and occasional rounded and frosted sand grains.
- 1419-27 Dolomite, pale-gray, very finely crystalline, tight; trace of sand in residue; bentonite caving.
- 1427-33 Dolomite, as above; small residue of sand, fine to coarse, rounded and frosted, trace of gray quartzose chert.
- 1433-40 Dolomite, brown, fine-crystalline, some almost sucrose, with perhaps a little porosity; very small residue of sand, as above.
- 1440-47 Dolomite, tan, very fine crystalline; some slightly coarser, brown; some stylonitic and with green clay on solution faces; residue 5%, with brown quartzose chert, clayey dolomoldic chert, green shale, and poorly sorted sand.
- 1447-53 Dolomite, pale-gray, brown, and some cream, finely siliceous; all finely crystalline; residue finely porous white silica and trace of sand.
- 1453-60 Dolomite, tan, fine-crystalline, some fragments medium-coarse; residue as above.
- 1460-69 Dolomite, fragmental, light-gray, fine, medium, and coarse, with trace of calcite; 10% chert residue, chalky, to dense, to quartzose, to drusy, white and gray, fragmental, some pyritic; trace of sand, some in clusters.
- 1469-75 Dolomite, densely crystalline, light-gray, medium-coarse, some fragmental, earthy; chert, gray, translucent to quartzose, drusy, rare fragments dolomoldic; much pyrite. Residue 25%.
- 1475-82 Dolomite, densely crystalline, medium-gray; 15% chert, light-gray, translucent, much pyrite.
- 1482-86 Dolomite, gray, very fine to medium-crystalline; residue sand, medium-coarse, rounded and frosted, few grains free, mainly quartz-cemented, some to quartzite; trace of chert. Residue 30%.
- 1486-93 As above, with less sand.

- 1493-1505 Dolomite, light-gray, medium-crystalline; trace of rounded and frosted sand, translucent chert; much pyrite.
- 1505-11 Dolomite, very finely crystalline, cream; trace of sand, pyrite, and translucent chert; much very finely disseminated white chert.
- 1511-30 Dolomite, very fine, pale-gray, as above; 40% residue of very finely disseminated white quartzose chert.
- 1530-41 Dolomite, finely crystalline, pale-gray; small residue of dense white chert, trace of sand, and green pyritic shale.
- 1541-52 Dolomite, very fine grained, tan, rare coarsely crystalline fragments; chert, translucent, pale-gray, rare coarse dolomoids.
- 1552-59 Dolomite, fine, gray, earthy; chert, as above.
- 1559-66 Dolomite, as above; chert, translucent to dull-white, occasional rounded and frosted sand.
- 1566-72 Dolomite, darker grayish-brown, fine-grained; coarse rounded and frosted sand, some secondary crystallization, some chert-cemented.
- 1572-77 Dolomite, fine-crystalline, brown, dense; rare grains poorly sorted sand; trace of dense white chert; much pyrite.
- 1577-84 Dolomite, as above; some sand, with secondary crystal growth; some chert, dense, gray, pyritic, some with irregularly structureless oolites.
- 1584-90 Dolomite, very finely crystalline, tan; trace of sand, chert, some as above; some finely disseminated pyrite.
- 1590-1613 Dolomite, finely crystalline, tan, dense to sucrose; chert, 10%, dense, white to light-gray, some sandy, some pyritic, and a trace of fine thin-walled dolomoids. Some black asphaltic substance at 1602-13 feet.
- 1613-20 Dolomite, slightly more gray and sucrose, still fine-grained; sand, 5%, coarse, with secondary crystal growth, some grains intergrown; trace of green pyritic shale.
- 1620-35 Dolomite, finely crystalline, grayish-tan; trace of sand, as above, and dense white chert; pyrite.
- 1635-50 Dolomite, very fine grained, grayish-tan; trace of sand; chert, 10%, white, dense, in irregularly shaped masses.
- 1650-65 Dolomite, finely crystalline, grayish-tan; chert, 2%, dull-white and chalky; trace of pyrite.
- 1665-80 Dolomite, grayish-tan, fine-grained; very small residue of dense chert, with caving biotitic bentonite.
- 1680-86 Dolomite, gray, medium coarsely crystalline; chert, pale-gray, quartzose, with many varicolored structureless oolites and traces of drusy banding.
- 1686-1704 Dolomite, finely crystalline, very dense, pale-gray; very small residue, only few grains of rounded and frosted sand and quartzose chert.
- 1704-10 Dolomite, very finely crystalline, grayish-tan; residue of chert, 10%, dense, white, with trace of white silt in clusters.
- 1710-16 Dolomite, medium to coarsely crystalline; chert, as above, without silt; trace of pyrite.
- 1716-21 Dolomite, as above, but with surfacelike weathering and iron stain; residue chert, as above, with fragments of silicified brachiopods.
- 1721-26 Dolomite, finely crystalline, tan; chert, dense, some very finely interstitial.
- 1726-41 Dolomite, mixture of fine and very coarsely crystalline, much bentonite cave; little chert, dense, white.
- 1741-46 Dolomite, coarse, as above, porous; less bentonite and chert; occasional rounded and frosted sand grains.
- 1746-61 Dolomite, medium coarsely crystalline, gray; 15% residue, chert, very sandy, some very dolomoidic, some finely banded.
- 1761-67 Dolomite, brown, densely crystalline, fine to medium; 10% residue of very chalky and finely pyritic chert; sand grains rare.
- 1767-73 Dolomite, as above; very small residue of crystalline pyrite and large rounded and frosted sand grains.
- 1773-78 Dolomite, as above, and some coarsely fragmental; residue 20%, dense, white and chalky chert, some dolomoidic; some coarse sand, pyrite, and trace of dark shale.
- 1778-86 Dolomite, coarsely crystalline, pale grayish-tan; chert, dense, white; trace of green shale and sand.
- 1786-1825 Dolomite, coarsely crystalline, pale creamy-gray; very small residue of sand grains, chert, and pyrite.

ORDOVICIAN

Richmond

- 38-55 Siltstone, dolomitic, argillaceous, green.
- 55-62 Siltstone, as above; some limestone, gray-brown, slightly shaly, very fine grained, some finely phosphatic.
- 62-66 Siltstone, very shaly, slightly calcareous, very dark gray.

Maysville

- 66-70 Limestone, slightly argillaceous, gray, with some phosphate.
- 70-75 Limestone, light tannish-gray, fine-grained; trace of replacement chert.
- 75-80 Limestone, brownish-gray, very fine grained, shaly; some fossiliferous.
- 80-95 Limestone, as above, some silty; some fine replacement chert.
- 95-126 Limestone, silty and slightly shaly, greenish-gray.
- 126-70 Limestone, as above, more silty and shaly.
- 170-92 Shale and limestone, very fine, gray-green, silty.
- 192-245 Limestone, gray, very fossiliferous and phosphatic, interbedded with dark-gray calcareous shale.
- 245-60 Limestone, fine, gray, argillaceous and silty, some still green, some gray.
- 260-82 Limestone, fine-grained, argillaceous, fossiliferous, gray, with much silt and shale.

Garrard

- 282-88 Limestone, very silty, slightly argillaceous, gray, fine.
- 288-315 Limestone, crystalline, yellow and gray, very fossiliferous, enclosing very fine sand.
- 315-26 Limestone, gray to yellow, crystalline, phosphatic, fossiliferous, silty.
- 326-46 Limestone, more argillaceous and silty, gray.
- 346-60 As above, with some interbedded crystalline limestone.

Cynthiana-Million

- 360-70 Shale, dark-gray, very slightly calcareous.
- 370-410 Limestone, very argillaceous, some crystalline, fossiliferous and phosphatic; much calcareous shale.
- 410-28 Limestone, dense, brownish-gray, finely phosphatic, fossiliferous, with trace of silt.
- 428-80 Limestone, dark-gray, very finely phosphatic, argillaceous, fossiliferous; residue fine silt and chert.
- 480-520 Limestone, gray, phosphatic and fossiliferous, with interbedded gray calcareous shale.
- 520-50 Limestone, as above, with much more shale.
- 550-54 Limestone, densely crystalline, brownish-gray, fossiliferous.
- 554-71 Limestone, creamy-tan, coarsely crystalline, very fossiliferous, some phosphatic.
- 571-76 Limestone, as above; more gray.
- 576-94 Limestone, fine-grained, gray, slightly phosphatic and fossiliferous; more calcareous shale than above.
- 594-612 Limestone, tan, crystalline, very fossiliferous, interbedded with gray shale.

Lexington

- 612-26 Limestone, brown, finely crystalline, fossiliferous; trace of phosphate.
- 626-58 Limestone, very fine, brown to brownish-gray; occasional streaks of shale.
- 658-710 Limestone, very fine, dense, brown, slightly fossiliferous.
- 710-30 Limestone, as above; increase in shale.
- 730-50 Limestone, brownish-gray, fine to densely crystalline, slightly phosphatic; some very shaly limestone.
- 750-63 Limestone, very dense, brown, fossiliferous, interbedded with gray calcareous shale.
- 763-90 Limestone, light-gray, very fossiliferous, interbedded with dark shale; little phosphatic.
- 790-800 Limestone, light-gray, very fossiliferous, some finely phosphatic.

Chazy-Black River

- 800-04 Contact of limestone, as above, with Tyrone, light-tan, lithographic, with a trace of bentonite.
- 804-08 Limestone, fine, tan, lithographic; trace of greenish bentonitic lime.
- 808-16 Limestone, more gray-green, with some bentonitic limestone.
- 816-25 Limestone, fine, tan to gray-brown; some free bentonite.
- 825-30 As above, with considerable streaky, brown, crystalline dolomite and some translucent brown chert.
- 830-35 Limestone, very fine, brown; trace of dolomite and bentonite.
- 835-40 Limestone, as above, with occasional streaks gray-green.
- 840-45 Limestone, very fine, bright-brown.
- 845-73 Limestone, brown to gray, slightly argillaceous and finely dolomitic.
- 873-90 Limestone, fine-grained, brown, some finely dolomitic and some slightly argillaceous.
- 890-900 Limestone, very fine, lithographic, cream to light-tan.
- 900-16 Limestone, light-tan, fine; much dolomite, brown, fine-medium crystalline.
- 916-50 Limestone, fine-grained, brown, with trace of dolomite.
- 950-69 Limestone, dense, very fine, brown, slightly streaked with gray.
- 969-92 Limestone, fine, brown, lithographic, with streaks of finely crystalline brown dolomite.
- 992-1000 Limestone, as above, more dolomite.
- 1000-10 Dolomite, finely crystalline, brown, calcareous.
- 1010-40 Limestone, very fine, brown, with streaks of brown dolomite.
- 1040-45 Limestone, cream, lithographic.
- 1045-1100 Limestone, slightly dolomitic, brown.
- 1100-06 Limestone, cream, lithographic.
- 1130-65 Limestone, very fine, lithographic, cream to light-tan, "bird's-eye;" trace of oily stain at 1145-50.
- 1165-80 Limestone, very fine, brown, streaked with gray.
- 1180-89 Limestone, as above, with occasional dolomite streaks.
- 1189-1215 Limestone, with considerable medium-crystalline brown dolomite.
- 1215-1320 Limestone, fine-grained, brown, with traces of dolomite.
- 1341-48 Dolomite, slightly calcareous, earthy, fine-grained, brown, (logged oil show, which is not apparent in samples).
- 1348-53 Limestone, slightly dolomitic, as above, fine-grained, brown.
- 1353-80 Limestone, very fine grained; trace of dolomite, slightly shaly.
- 1380-95 More dolomite, slightly calcareous, very finely crystalline, tan to gray.
- 1395-1402 Limestone, very fine, brown to dark gray-brown, slightly shaly.
- 1402-22 Limestone, very finely dolomitic and shaly, brown to gray.
- 1422-38 Limestone, very finely dolomitic, light-gray, with interbedded dark-gray shale.
- 1438-42 Dolomite, very fine, crystalline, brown, with some darker shale, banded.
- 1442-57 Dolomite, as above; some limestone, finely dolomitic, brown; more shale.
- (St. Peter)
- 1457-69 Sandstone, fine, gray, with shale interbedded; occasional large grains of sand embedded.
- 1469-80 Sandstone, coarser, friable, white, some rounded and frosted, with secondary crystallization.

CAMBRIAN Eminence

- 1480-84 Dolomite, light-gray, medium-crystalline, dense to sucrose; chert, 10% quartzose, gray, with rarely enclosed rounded and frosted sand and earthy white chert; occasional rounded and frosted sand grains.
- 1484-97 Dolomite, pale creamy-gray, very finely crystalline, dense; chert, white, very finely disseminated, with rare sand grains enclosed.
- 1497-1501 Dolomite, fine, as above; chert, translucent, oolitic, with occasional sand grains enclosed.
- 1501-20 Dolomite, very finely crystalline, gray-tan; trace of chert, as above; sand.
- 1520-25 Dolomite, gray-tan, finely crystalline; more chert than above, very finely disseminated, some dense, with rare sand grains enclosed; trace of green pyritic shale.

- 1525-35 Dolomite, very finely crystalline, tan, as above; more chert (30%), very finely porous, in residue; little of it dense, white.
- 1535-51 Dolomite, very fine crystalline, cream; rare fragment coarser; very small residue, with rare sand and chert.
- 1551-55 Dolomite, very fine, as above; little dense, white, oolitic chert; trace of shale.
- 1555-77 Dolomite, creamy-gray to tan, very finely crystalline; chert, very finely porous to dolomoldic, some dense; some green pyritic shale.
- 1577-86 Dolomite, light-gray, very fine grained; chert, very finely disseminated to dense; 20% sand, very fine to very coarse, some in clusters.
- 1586-91 Dolomite, as above, with less sand; much finely disseminated pyrite.
- 1591-1603 Dolomite, fine, as above, with some coarser, cream; chert, dense, white.
- 1603-18 Dolomite, finely crystalline, cream, with very little chert; some finely disseminated pyrite.
- 1618-24 Dolomite, fine, medium, and coarsely crystalline, light-gray; chert, chalky-white, with some dolomoldic.
- 1624-36 Dolomite, coarsely crystalline, pale-gray; some dense white chert.
- 1636-58 Dolomite, coarse and porous (water?); bentonite caving.
- 1658-68 Dolomite, coarsely crystalline, light-gray; chert, dense, gray, to porous and worn.
- 1668-1703 Dolomite, as above; chert, fresh, gray, translucent to quartzose.

Potosi

- 1703-15 Dolomite, light grayish-tan, fine-grained, dense; chert, drusy.
- 1715-25 Dolomite, as above, less chert; some poorly sorted sand.
- 1725-44 Dolomite, finer than above; no sand.
- 1744-53 Dolomite, cream, medium-crystalline, very finely broken; trace of gray quartzose chert, and some large rounded and frosted sand.
- 1753-58 Dolomite, light-gray, medium-crystalline; chert, dull-white to gray, translucent to sandy.
- 1758-93 Dolomite, as above, very finely broken; little quartzose chert and sand.
- 1793-1807 Dolomite, very finely broken, as above; residue very fine sand and quartzose chert.
- 1807-15 Dolomite, pale-gray, medium-crystalline; chert, dull-white to gray, some tiny irregular oolites.
- 1815-25 Chert, 10%, dull-white to translucent; rare oolites, larger than above, coated with fine quartz crystals.
- 1825-40 Dolomite, cream, very finely broken; small residue of finely broken sand and a trace of gray quartzose chert.
- 1840-46 Dolomite, as above; chert, more chalky and slightly dolomoldic.
- 1846-55 Dolomite, cream, medium-crystalline; more chert than above, translucent to quartzose; some well-developed banded quartzose druse.
- 1855-1915 Dolomite, cream, medium-crystalline; little translucent chert and fine sand.
- 1915-22 Dolomite, light-tan, very finely crystalline; chert, white, slightly dolomoldic, some translucent to quartzose, as above; trace of brown-centered oolites.
- 1922-28 Dolomite, as above; more chert, poorly developed oolites; rare sand.
- 1928-42 Dolomite, cream, medium-crystalline; chert, some oolitic, some quartzose; occasional dolomolds in chalky chert.

Elvins

- 1942-91 Dolomite, as above; chert, very quartzose and oolitic.
- 1991-98 Dolomite, brown, medium-crystalline; chert, 10%, chalky-white, with lacy dolomolds.
- 1998-2004 Dolomite, cream, medium-crystalline; chert, as above, but much less of it; trace of very fine sand.
- 2004-07 Dolomite, medium-crystalline, cream; chert, dull earthy-white, with rare dolomolds; trace of finely broken sand.
- 2007-17 Dolomite, as above; less dolomoldic chert.
- 2017-70 Dolomite, very finely crystalline, tan to gray; small residue of chalky to dense chert, finely broken sand, pyrite, and porous, gray to tan shale.
- 2070-91 Dolomite, light-tan, finely crystalline; chert, dense to quartzose, numerous oolites, some hollow and some with brown centers.
- 2091-2112 Dolomite, light-tan, finely sucrose; chert, dense, white to translucent, dolomoldic, trace of oolites; finely broken sand.

- 2112-66 Dolomite, light-tan, finely crystalline; small residue of finely broken sand; traces of chert and porous, tannish-gray shale.
- 2166-76 Dolomite, finely sucrose, gray-tan; small residue of fine grayish silt and shale.
- 2176-88 Dolomite, gray-tan, fine-medium crystalline to sucrose; chert, same color, dull, very dolomoldic; trace of oolites.
- 2188-96 Dolomite, as above; less chert, brown, oolitic.
- 2205-15 Dolomite, as above; chert, same color as dolomite, dense, with dolomolds and oolites rare.
- 2215-48 Dolomite, finely crystalline, creamy-gray; small residue of dense chert same color.
- 2248-74 Dolomite, pale gray-tan, finely crystalline; chert residue dense, white, translucent to quartzose.
- 2274-88 Dolomite, finer and browner, to sucrose; chert, gray-tan, some dense, some with fine lacy dolomolds.
- 2288-2305 Dolomite, cream, medium-crystalline; very small chert residue.
- 2305-11 Dolomite, finely crystalline to sucrose; chert, dull gray-tan, some dark shale.
- 2311-33 Dolomite, fine-medium crystalline, brown; very small residue of porous shale, fine silt, and a trace of chert.
- 2333-40 Dolomite, brown, medium-crystalline; residue chert, 25%, brown-gray, some obscurely oolitic; rarely sandy.
- 2340-46 Dolomite, as above; chert, less fresh, some pyritic; more sand.

"Rose Run"

- 2346-55 Dolomite, very fine crystalline, pale-gray, very sandy; trace of dull chert; sand, 40%, rounded and frosted, with fair sorting as to size.
- 2355-61 Sandstone, dolomitic, fine to medium grains, angular to rounded and frosted.
- 2361-65 Sandstone, as above, with traces of interbedded shale.
- 2365-91 Sandstone, dolomitic, with some dense white chert interbedded.
- 2391-98 Sandstone, fine to medium, as above; only trace of cherty dolomite.
- 2398-2402 Dolomite, light gray-tan, finely crystalline; some fresh chert; 40% sand as above.
- 2402-10 Sandstone, fine to medium, angular to rounded and frosted, with some secondary crystallization.
- 2410-16 Sandstone, as above, interbedded with some cherty dolomite.
- 2416-24 Dolomite, finely crystalline, gray-brown; chert and sand, as above--residue 50%; trace of gray-green shale.
- 2424-39 Dolomite, fine-medium crystalline, cream; chert, very translucent, some slightly oolitic and sandy.

Well No. 122 (2). Cumberland Petroleum Company No. 44 L. C. Bailey, NW section 6-P-79, elevation 1,018 feet, Magoffin County. This was an old well deepened, and samples were not available above the Clinton shales.

SILURIAN

Clinton

- 2300-04 Dolomite, sandy, medium-grained, enclosing some mica; some dark-red shale (including base of "Big Six").
- 2304-14 Shale, maroon, fine-grained.
- 2314-28 Shale, green, coarse-grained, some slightly dolomitic; some red.
- 2328-2400 Shale, dark-red, very iron-rich, almost hematite.
- 2400-46 Shale, more fissile than above, green and red.
- 2460-2525 Shale, very fine grained, green and some red, fissile.
- 2525-35 Shale, as above, with some pyritic, medium-crystalline dolomite.
- 2535-65 Shale, gray-green, coarser grained; much hematite in base.

Albion

- 2600-18 Shale, green, fissile, and some silty dolomite; trace of sand, medium-grained and pyritic.
- 2618-78 Shale, green, fissile; trace of dolomitic sandstone.

ORDOVICIAN

Richmond

- 2678-94 Shale, green, silty, and some coarse, red; trace of sand.

- 2694-2708 Shale, green, fissile, with trace of sand and dolomite.
 2708-2805 Shale, gray-green, slightly calcareous, very fossiliferous.

Maysville

- (Tate)
 2805-67 Shale, calcareous, and some very fine grained, dark limestone; ostra-
 codal.
 2867-2903 Shale, slightly calcareous, greenish-gray, some fissile.

(Fairmount)

- 2903-70 Limestone, very argillaceous, fine-grained to finely granular, very dark
 gray.
 2970-3028 Limestone, fossiliferous, gray, with interbedded calcareous shale.
 3028-83 Limestone, more fossiliferous and phosphatic than above, still much
 shale.

Cynthiana-Million-Garrard

- 3083-3200 Limestone, argillaceous and silty, dark-gray, some fossiliferous, with
 yellow, crystalline limestone at 3150-60.
 3200-20 Limestone, argillaceous, very fossiliferous, with some calcareous shale;
 Escharopora and Zygospira.
 3220-3482 Limestone, slightly silty and argillaceous, dark-gray, fine-grained,
 rarely phosphatic and fossiliferous.
 3550-87 Shale, calcareous, with some dark crystalline limestone.

Lexington

- 3587-3620 Limestone, gray-brown, crystalline, phosphatic, fossiliferous; little
 shale.
 3620-25 Shale, black, calcareous; trace of chert.
 3625-3750 Limestone, brown, crystalline, densely fossiliferous; trace of shale.
 3750-85 Limestone and shale, more gray-brown, finely crystalline, fossiliferous.
 3785-3907 Limestone, crystalline, tan, fossiliferous and phosphatic, interbedded
 with dark calcareous shale; trace of translucent chert below 3866.

Chazy-Black River (Tyrone at top)

- 3907-16 Limestone, very dense, fine-grained, brown, with trace of translucent
 chert and bentonite.
 3916-4030 Limestone, very fine grained, lithographic, tan.
 4030-4120 Limestone, as above; rarely dolomitic, fine-grained.
 4120-4723 Limestone, very fine, lithographic, cream to brown, darker toward base;
 rarely dolomitic and argillaceous.
 4723-4813 Limestone, dolomitic and very slightly argillaceous, darker. (Murfree's
 boro of Tennessee.)
 4813-28 Dolomite, slightly calcareous, fine-grained; trace of silt.
 4828-48 Limestone, very dark and fine-grained, argillaceous.
 4848-68 Dolomite, finely silty, argillaceous, gray, very fine grained.
 4868-4934 Limestone, fine-grained, argillaceous, interbedded with slightly silty
 dolomite, as above.
 5008-60 Dolomite, very argillaceous, greenish-gray, fine-grained. (Glenwood
 of Ohio -- Joachim of Missouri.)

CAMBRIAN

- Knox
 5060-69 Dolomite, coarsely crystalline, pale-gray, vugular, with 10% pale-gray
 dolomitic chert.

Well No. 123 (142). South Central Petroleum Company No. 1 J. B. Noe, section 13-M-52,
 elevation 730 feet, Marion County.

ORDOVICIAN

Maysville (Fairmount)

- 15-50 Limestone, gray, fossiliferous, with some gray calcareous and argilla-
 ceous siltstone; trace of fossiliferous chert.

Garrard

- 50-110 Siltstone, calcareous, argillaceous, gray, some slightly coarser near base; some interbedded gray, phosphatic limestone.
- 110-31 As above, but finer grained.

Cynthiana-Million

- 131-36 Limestone, very fossiliferous, phosphatic, gray.
- 136-66 Limestone, coarsely crystalline, fossiliferous, phosphatic, gray; occasional fragment of silt, as above.
- 166-87 Limestone, gray, very fossiliferous, phosphatic; trace of siliceous shale.
- 187-213 Limestone, very fossiliferous, phosphatic, coarsely crystalline, gray; trace of silt and shale in residue.
- 213-27 Limestone, very fossiliferous, as above, porous; very small residue of silt and shale.
- 227-33 Limestone, as above, some weathering.
- 233-40 Fault, with 45 feet of section missing.
- 240-46 Limestone, more dense, fine-grained, gray; residue coarse shale and replacement chert.
- 246-47 Limestone, finer grained, gray, streaked with gray, calcareous shale.
- 247-60 Shale, finer grained, gray, streaked with gray, calcareous shale.
- 260-81 Limestone, gray, dense, fine, some fossiliferous; trace of shale.
- 281-89 Limestone, gray, argillaceous.
- 289-301 Limestone, more fossiliferous and phosphatic.
- 289-301 Limestone, very light cream, very fossiliferous, crystalline; trace of shale.

Lexington

- 301-24 Limestone, gray, fossiliferous, argillaceous; some very argillaceous and silty, with replacement chert.
- 324-42 Limestone, very fine grained, gray-tan to dark-gray; trace of silty shale, as above, and gray, fossiliferous, mottled chert.
- 342-47 Limestone, fine-grained, argillaceous, gray-tan; chert, gray, as above, and some tan, dense.
- 347-52 Limestone, brown, fine to finely crystalline; trace of replacement chert and dark shale.
- 352-70 Limestone, fine-grained, brown, ostracodal; tan replacement chert.
- 370-75 Limestone, fine-grained to finely crystalline, cream to dark-brown; yellow-tan replacement chert.
- 375-94 Limestone, cream, fine- to coarse-crystalline, fossiliferous; very small residue of black shale and chert, as above.
- 394-406 Limestone, more gray, crystalline, phosphatic, porous; trace of fossiliferous chert and gray, calcareous shale.
- 406-14 Limestone, gray, phosphatic, coarsely crystalline, fossiliferous, porous; trace of fossiliferous chert and gray, calcareous shale.
- 414-25 Limestone, more fine-grained and finely phosphatic; residue as above, with slightly more shale.
- 425-67 Limestone, more finely phosphatic; residue porous shale, rare silt, and replacement chert.
- 467-80 Limestone, more finely phosphatic; residue porous shale, rare silt, and replacement chert.
- 480-86 Limestone, yellow-gray, crystalline, fossiliferous, finely phosphatic; residue as above.
- 486-92 Limestone, crystalline, fossiliferous, with 10% replacement chert.
- 492-500 Contact with Tyrone, fine limestone and much bentonite.

Chazy-Black River (top of Tyrone at 498)

- 500-06 Limestone, cream, lithographic; chert, light-tan, translucent, micro-specked.
- 506-12 Limestone, as above, some light-gray and bentonitic; some chert, as above.
- 512-30 Limestone, cream, lithographic; chert, light-tan, translucent (trace), microspecked.
- 530-67 Limestone, slightly dolomitic, fine-grained, tan; trace of chalky chert.
- 567-602 Limestone, fine, lithographic, tan, earthy.

- 602-75 Limestone, slightly dolomitic, tan, earthy; trace of finely dolomoldic chert at 634-50.
- 675-95 Limestone, fine-grained, vaughanitic, trace slightly argillaceous.
- 695-733 Limestone, cream, fine-grained.
- 733-47 As above, with trace of microspecked tan chert having dark inclusions.
- 747-875 Limestone, fine-grained, gray-tan, with traces of slightly argillaceous limestone.
- 875-940 Limestone, finer grained, streaked with dolomite.
- 940-51 Limestone, very clean, lithographic.
- 951-1027 Limestone, some lithographic, interbedded with some slightly argillaceous, tan-gray.
- 1027-49 Limestone, dolomitic, fine-grained, brown; trace of dark shale.
- 1049-92 Limestone, very fine grained, tan, lithographic, with slight traces of shale.
- 1092-1111 Limestone, very dolomitic, brown, fine, with occasional coarser grains included; trace of dark shale.

(Wells Creek)

- 1111-17 Dolomite, light-gray, fine-crystalline, enclosing some very slightly coarser grains; very slightly argillaceous, with trace of crystalline dolomite.
- 1117-24 Dolomite, gray-tan, texture as above, slightly argillaceous.
- 1124-36 Dolomite, cream, fine-crystalline, some green shale.
- 1136-42 Dolomite, as above.

CAMBRIAN

Jefferson City

- 1142-48 Dolomite, cream, medium-crystalline; chert, white to dark-gray, translucent; trace of pyrite.
- 1148-68 Dolomite, cream, fine-crystalline, with some green shale; chert, dense to quartzose.
- 1168-74 Dolomite, cream, very finely crystalline; chert, dense, white, translucent to quartzose, to crystalline quartz, to rounded and frosted sand; some green, waxy shale.
- 1174-84 Dolomite, tan, fine-crystalline, sucrose; chert, white, translucent to obscurely oolitic and microspecked; some crystalline quartz.
- 1184-97 Dolomite, tan, fine to vugular; occasional large rounded and frosted sand; very quartzose chert.
- 1197-1203 Dolomite, cream, very fine; occasional rounded and frosted sand grains, quartzose chert, and crystalline quartz.
- 1203-15 Dolomite, cream, fine-crystalline; chert, dense, white, with occasional very coarse, rounded and frosted sand grains.
- 1215-23 Dolomite, cream, fine-crystalline; sand, medium to very coarse, rounded and frosted.
- 1223-40 Dolomite, cream, fine-medium; sand, as above; some recrystallized quartz and quartzose chert.

Roubidoux

- 1240-46 Dolomite, cream, fine-crystalline to coarse-crystalline; sand, very coarse, rounded and frosted; trace of translucent white chert.
- 1246-70 Dolomite, coarse-crystalline, cream, vugular; sand, medium- to coarse-crystalline.
- 1270-87 Dolomite, gray-tan, fine to coarse; very small residue of traces of sand and chert, pyrite.
- 1287-93 Dolomite, cream, finely crystalline, enclosing sand; sand, 50%, very fine rounded silt to fine-grained, with occasional very large rounded and frosted sand grains; trace of white, slightly dolomoldic chert.
- 1293-1307 Dolomite, cream, fine- to medium-crystalline, enclosing gray nodules of finely disseminated pyrite; rare dark shale, pyrite, and sand grains in residue.
- 1307-24 Dolomite, fine-crystalline, cream, rare fragments coarsely crystalline; rare pyrite, crystalline quartz, and large sand grains.
- 1324-50 Dolomite, cream, fine-medium crystalline; chert, dense, white, some with large structureless oolites, some sandy, occasional large sand grains showing secondary crystal growth.

- 1350-69 Dolomite, as above; occasional large concentric oolites, coarse sand, and pyrite.
 1369-75 Dolomite, pale-gray, finely sucrose; fine and large sand grains, 60%, some rounded and frosted, some showing secondary crystal growth.
 1375-82 Dolomite, very sandy, but less so than above (15% sand).

Van Buren-Gasconade

- 1382-95 Dolomite, cream, finely crystalline; little chert, with large concentric oolites.
 1395-1407 Dolomite, as above; trace of chert, as above; trace of gray to translucent pyritic chert, and some porous white silica.
 1407-13 As above, with less chert.
 1413-20 Dolomite, cream, finely sucrose; 20% chert, dense, white, with small obscure oolites; trace of sand, as above.
 1420-32 Dolomite, as above; chert, very dense, white, very oolitic and sandy.
 1432-56 Dolomite, cream, medium-crystalline; chert, as above, with some druse.
 1456-64 Dolomite, finer, with occasional fragments coarser; chert, chalky-white, very finely porous.
 1464-76 Dolomite, cream, medium-crystalline to vugular; chert, dense, white, very irregularly oolitic.
 1476-82 Dolomite, more finely sucrose.
 1482-1501 Dolomite, as above; very fine sand, with secondary crystallization, and finely porous white chert.
 1501-14 Dolomite, some coarsely crystalline, dense; sand, as above, chert, translucent; crystalline quartz.
 1514-20 Dolomite, cream, medium-crystalline, dense; sand, as above.
 1520-25 Dolomite, cream to tan; chert, very oolitic, cream centers in white matrix.
 1525-42 Dolomite, fine-crystalline, cream; chert, as above.
 1542-54 Dolomite, finely sucrose, porous; chert, dense, white, and sandy.
 1554-70 Dolomite, fine-medium crystalline, light-tan.
 1570-82 Dolomite, cream, medium-crystalline; chert, dense to translucent; trace of sand.
 1582-95 Dolomite, pale-gray, medium-crystalline; chert, 15%, chalky-white; trace of green pyritic shale.
 1595-1602 Dolomite, very fine, densely crystalline; chert, dense, white to quartz-ose.
 1602-10 Dolomite, cream, finely crystalline to sucrose; chert, 30%, dense to translucent, white; trace of banded druse.
 1610-15 Dolomite, as above, with less than 5% chert.
 1615-21 Dolomite, coarser crystalline, yellow-tan; chert, dense, white, to obscurely oolitic and drusy.
 1621-36 Dolomite, cream, very fine; some chert, with very irregular, structure-less oolites.
 1636-55 Dolomite, as above; chert, white, earthy, with trace of coarse rounded and frosted sand grains.
 1655-61 As above, including finely disseminated pyrite.
 1661-68 Dolomite, as above; very small residue, with large sand grains (less than 1%), finely disseminated pyrite, and black shale.
 1668-93 Dolomite, very finely crystalline, cream; very fine chert, white to translucent.
 1693-1700 Dolomite, sucrose, medium-crystalline; chert, 10%, cream, dense, some banded druse.
 1700-06 Dolomite, as above; chert, dense, translucent; trace (30%) of micro-mottled, sandy, drusy and chalky, dolomoldic chert.
 1706-19 Dolomite, more fine textured than above, and with less chert.
 1719-26 Some dolomite, finely argillaceous, gray; residue includes green shale. (Note: Zone of solution, leaving green shale accumulation above and concentration of chert below.)
 1726-32 Mainly chert, chalky to dense, white.
 1732-38 Dolomite, light-tan, coarsely crystalline; 10% chert, chalky-white.
 1738-44 Dolomite, as above, but slightly finer; trace of chert, as above.
 1744-50 Dolomite, light-tan, fine; trace of chert, as above, with rare large rounded and frosted sand grains; green shale.
 1750-1803 Dolomite, pale-gray, medium-coarse crystalline, very finely broken; trace of dense, white chert.

- 1803-22 Dolomite, pale creamy-gray, medium-crystalline; very little chert, calcitic and sandy.
- 1822-36 Dolomite, as above; chert, dense, white, with rare oolites.
- 1836-48 Dolomite, light-tan, medium-coarse crystalline.
- 1848-67 Dolomite, medium-coarse crystalline, light-tan; chert, with quartzose druse.
- 1867-73 Dolomite, cream, medium-crystalline; chert, cream, dense, some oolitic, occasionally sandy.
- 1873-1913 Dolomite, as above; residue sand, medium to very coarse (1%); chert, dense to drusy.
- 1913-26 Dolomite, as above; chert, very sandy.
- 1926-38 Dolomite, cream, medium-crystalline, very finely broken; trace of sand and dense white chert.
- 1938-75 Dolomite, cream, medium-crystalline; rare fragments of sand and chert, occasionally chert is sandy.
- 1975-86 Dolomite, cream, medium-crystalline, as above; slightly more sand, with rare large, structureless oolites.
- 1986-92 Dolomite, as above; chert, dense, white, and translucent, rare sand (residue less than 2%).

Eminence

- 1992-2005 Dolomite, pale-cream; 10% chert, dense, white to translucent, with rare sand grains.
- 2005-09 Dolomite, medium-grained, cream; chert, dense, white to gray-tan, very slightly drusy, 2%.
- 2009-34 Dolomite, as above; chert, dense to drusy, some botryoidal, rare sand (residue 2%).
- 2034-45 Dolomite, cream, medium-crystalline; chert, gray, dense to drusy; medium-grained sand.
- 2045-52 Dolomite, more gray; chert, very finely sandy.
- 2052-59 Dolomite, cream, medium-crystalline; sand, coarser, some free, 2%.
- 2059-64 Chert, cream to gray, dense to chalky, with large oolites and quartz druse; dolomite, as above.
- 2064-77 Dolomite, as above; chert, more chalky; trace of green pyritic shale.
- 2077-83 Dolomite, creamy-gray, very fine; trace of silt.
- 2083-89 Dolomite, cream, slightly coarser; chert, dense, white, with large oolites, 15%.
- 2089-2107 Dolomite, as above; chert, pale-gray, dense, some large oolites, rare druse, 10%.
- 2107-13 Dolomite, as above; trace of finely pyritic green shale.

Well No. 124 (177). Adams Oil and Gas Company No. 1 William Adlich, SE NE section 25-D-14, elevation 511 feet, completed 6-24-43, Marshall County.

TERTIARY

Wilcox

- 60-100 Sand, quartz, medium-grained, well-sorted, very slightly rounded.

Midway

- 100-245 Clay, dark-gray, highly micaceous.
- 245-300 Clay, as above, and some medium-grained sand, with much glauconite.
- 300-70 Clay, gray; little sand and glauconite; occasional plant remains.
- 370-470 Clay, brown, hard.
- 470-540 Clay, slightly sandy, gray.

CRETACEOUS

Tuscaloosa

- 540-90 Sand, medium- to fine-grained, with coarse pebbles of chert.
- 590-620 Gravel, rounded, white and gray, and some red dolomoidic chert.

DEVONIAN

Clear Creek-Bailey

- 620-890 Chert, dolomoidic and tripolitic; occasional fossil impressions.
- 910-90 Chert, white to pale-gray, some tripolitic.
- 990-1040 Chert, fresh, with some carbonaceous inclusions, some tripolitic.

- 1040-1120 Limestone, dense, brown-gray, very siliceous, with some free, translucent chert; much glauconite.
 1120-60 Limestone, and chert, as above, but darker.

SILURIAN

Brownsport

- 1160-1230 Limestone, very siliceous, finely disseminated, brown to slightly greenish.
 1230-50 As above, including some very fine quartz.
 1250-1305 Limestone, very siliceous, gray-brown.

Bainbridge

- 1305-1412 Limestone, slightly argillaceous, gray, and much dark-red.
 1412-40 Limestone, pale greenish-gray; trace red.
 1440-55 Limestone, as above, with more red, slightly argillaceous limestone.

Brassfield

- 1455-68 Limestone, densely crystalline, pale greenish-gray, rich in glauconite, with occasional red crystals of calcite enclosed.

ORDOVICIAN

"Thebes-Maquoketa"

- 1468-80 Sandstone, argillaceous, slightly calcareous, dark-gray.
 1480-98 Shale, almost black, coarse-grained.
 1498-1565 Sandstone, very fine grained, to silt, dark-gray, argillaceous.

Lexington-Cynthiana (Kimmswick)

- 1565-80 Shale, black, with much pyrite, some with limestone pellets enclosed.
 1580-1620 Limestone, slightly argillaceous, very fossiliferous, and rich in phosphate.
 1620-1752 Limestone, as above, with much dark calcareous shale.

Chazy-Black River (Tyrone or Decorah at top)

- 1752-95 Limestone, brown, lithographic to densely crystalline; trace of very dark brown chert.
 1795-1845 Limestone, slightly dolomitic, brown; trace of chert, as above.
 1845-1920 Limestone, very slightly dolomitic, smooth, lithographic, brown.
 1920-40 Limestone, tan, enclosing large rhombs of dolomite.
 1940-85 Limestone, lithographic, some very slightly dolomitic; trace of chert.
 1985-2045 Limestone, very slightly dolomitic, dense, fine-grained.
 2045-60 Limestone, dolomitic, medium-crystalline, tan; trace of chert.
 2060-2115 Limestone, slightly dolomitic, dense, fine-grained.
 2115-85 Limestone, very slightly argillaceous, dark-brown, fine-grained.
 2185-2235 Limestone, dolomitic, fine-grained, with trace of brown, mottled chert.
 2235-2410 Limestone, very slightly argillaceous, fine-grained, dark-brown.
 2410-50 Limestone, dolomitic, medium-crystalline, brown.

Joachim

- 2450-85 Limestone dolomitic, very coarse grained; much vein filling.
 2514-20 Limestone, very dolomitic.
 2520-30 Dolomite, cream to tan, densely crystalline, fine-grained.
 2530-60 Sharp change in character of dolomite to white, finely silty.
 2560-88 Dolomite, slightly argillaceous, with finely disseminated silt.
 2588-2610 Dolomite, as above, and some calcareous, white, finely crystalline, with finely disseminated white clay.
 2610-50 Dolomite, slightly calcareous, white, finely crystalline; rare silt.

Everton

- 2650-75 Dolomite, very sandy, well-rounded and frosted sand in dolomite.
 2675-90 As above, with some green argillaceous dolomite.
 2690-2710 Dolomitic sand, some enclosing dolomite in quartz cement.
 2710-2850 Dolomite, studded with sand, and some green and red, slightly argillaceous.
 2850-2970 Dolomite, finely crystalline, even textures, tan; rare sand; streaks of clastic dolomite.

- 2970-3080 Dolomite, cream, finely crystalline, enclosing occasional sand grains.
 3080-3125 Dolomite, slightly sandy, as above; some slightly argillaceous, gray to green.
 3125-82 Dolomite, slightly sandy, fine-grained, cream to tan.

Well No. 125 (46). W. S. T. Development Company No. 1 D. F. Weaver, at Minerva, section 18-AA-68, Mason County. (Incomplete set of samples.)

ORDOVICIAN

Chazy-Black River

- 695-700 Limestone, pale greenish-gray, lithographic.
 715 Bentonite.
 880-915 Limestone, very dolomitic, fine-grained, cream.
 915-1000 Limestone, very fine grained, tan, with rare fragments slightly dolomitic.
 1040-55 Limestone, very dense, fine-grained, brown.
 1055-1130 Limestone, fine-grained, brown, interbedded with some finely dolomitic.
 1130-50 Limestone, very slightly argillaceous, fine-grained, gray-brown.
 1150-55 Limestone, as above, with some sucrose, dolomitic limestone.
 1155-80 Limestone, fine-grained, gray-tan.

(Wells Creek - Glenwood)

- 1180-1200 Dolomite, some calcareous, fine-grained, enclosing larger grains (detrital), and with some interbedded slightly greenish-gray argillaceous dolomite.
 1200-20 Dolomite, fine-grained, gray, with much dark-green shale; rare sand grains.
 1220-35 Dolomite, very fine grained to medium-grained, light-gray, enclosing some detrital grains; rare sand grains; much green shale.

CAMBRIAN

Potosi?

- 1235-60 Dolomite, medium-crystalline, slightly vugular; rare sand enclosed; some pyrite.
 1260-90 Dolomite, finely crystalline, cream, with rare sand, green shale, and pyrite.
 1290-1305 Dolomite, darker and more fine-grained; trace of chert, dolomoldic and drusy.

Elvins

- 1305-30 Dolomite, very finely silty, and with silt-size glauconite, creamy-gray.
 1330-40 Dolomite, cream, medium-crystalline, sucrose; trace of chert.
 1340-1400 Dolomite, medium-crystalline to vugular, cream; rare chert; trace of silt, quartz, and glauconite.
 1400-35 Dolomite, cream, medium-crystalline to vugular; trace of glauconite and translucent white chert.
 1435-50 Dolomite, cream, medium-crystalline; rare silt and glauconite.
 1450-85 Dolomite, very fine grained, with very finely disseminated pyrite.
 1485-1510 Dolomite, white, medium-crystalline; rare rounded and frosted sand grains, and some green shale.
 1510-15 Dolomite, as above, with much pale-gray quartzose chert and a trace of sand.
 1515-30 Dolomite, very fine grained, enclosing some poorly sorted sand.
 1530-50 Dolomite, fine-grained and very clean.
 1550-55 Dolomite, pale-gray, crystalline; chert, 30%, white to quartzose, with occasional small white oolites in quartzose matrix.

Well No. 126 (1197). Fin-Will Oil Company No. 2 G. F. Ender, elevation 931 feet, on Beaver Creek, McCreary County.

15,550 cubic feet of gas in Warsaw.

MISSISSIPPIAN

- 845-50 Shale, black, with many spores; much chalcopyrite, and a little green shale.
 850-60 Shale, black and light gray-green.

SILURIAN

Clinton

860-64

Shale, as above; some green shale, slightly dolomitic and glauconitic; trace of sand, large rounded and frosted grains; trace of dolomite, very light gray to white, tightly crystalline, and enclosing glauconite grains.

864-69

Shale, light greenish-gray; little dolomite, as above.

869-74

Shale, light gray-green, glauconitic, some dolomitic; some dolomite slightly green, some pale gray-white, with pyrite; trace brown.

874-80

Dolomite, argillaceous, green; much pyrite.

880-85

Dolomite, as above, and green shale; much chalcopryrite, and a little glauconite.

885-90

Mixture; green shale and green dolomitic shale, dolomite, coarsely crystalline, white, and impregnated with chalcopryrite; some dolomite brown and coarse.

890-915

Shale, green; traces of contact bed from above.

Brassfield

915-22

Shale, as above, plus fragmental, conglomeratic dolomite. Dolomite is coarsely crystalline, broken, recemented with chalcopryrite and encloses small pebbles of shale; occasional cavities stained with dead oil. Some green shale and dolomitic shale; dolomite, coarsely crystalline, and stained with dead oil.

932-42

Dolomite, coarse to medium grains, crinoidal, darker in color than above; some argillaceous.

942-53

Dolomite, light-gray, coarsely crystalline; some chert, gray to very dark gray, with darker inclusions; slightly glauconitic.

953-60

Dolomite, light-gray, sucrose, porous.

ORDOVICIAN

Richmond

960-80

Same, but slightly argillaceous and greenish in color.

980-90

Limestone, gray, flaky, and slightly mottled; some very dark calcareous shale.

990-95

Much more dolomitic and pale-green, with much pyrite in crystals.

995-1000

Limestone, gray-green, densely flaky, argillaceous and fossiliferous, with ramose bryozoans.

1000-05

Limestone, dolomitic, cream to pale-green; chalcopryrite.

1005-55

Less calcareous, finer grained dolomite, pale-greenish and argillaceous.

1060-65

Shale, dolomitic, gray-green, with trace of red.

1065-80

Limestone, slightly dolomitic, brown, densely crystalline, with some green shale intermixed.

1080-1162

Limestone, dense and very fine grained, greenish-gray, and green shale with more red color from 1106-32.

Maysville

1162-68

Same as above, plus limestone, gray, fossiliferous, and calcareous dark gray shale; trace of chert.

1168-80

Limestone, gray, fossiliferous, and almost black, calcareous shale.

1180-1211

Limestone, very dense, dark-brown, with ostracods; some argillaceous.

1211-55

Limestone, gray, fossiliferous and phosphatic; trace of calcareous shale.

Garrard

1255-91

Same, plus some silty and argillaceous limestone.

1291-1300

Introduction of limestone, very fossiliferous, dolomitic; little silt.

1300-05

Same.

Catheys

1305-25

Limestone, very fossiliferous and phosphatic; little calcareous shale.

1325-35

Limestone, clean, white to gray, fossiliferous, phosphatic, and porous.

1335-40

Limestone, as above, with some dark-gray calcareous shale.

1340-45

Limestone, very fossiliferous and phosphatic, with almost no residue.

Well No. 127 (1385). Miller and Shiarella No. 5 Elizabeth Paris, section 17-N-28, elevation 433 feet, McLean County. (Cut a fault at 2,167 feet.)

MISSISSIPPIAN

Ste. Genevieve

- 2151-75 Limestone, light-tan, very fossiliferous.
- 2175-88 Limestone, finely dolomitic, dense, brown, clastic.
- 2188-95 Limestone, brown, fine-grained, fossiliferous, occasional elongate oolites; trace of shale.
- 2195-2205 Limestone, light-tan, very fine grained, occasional obscure oolites; trace of green and black clay and finely sandy limestone.
- 2205-19 Limestone, fine-grained, light-tan.
- 2219-48 Limestone, brown, finely dolomitic, dense.
- 2248-56 Limestone, fossiliferous, cream to tan, fine-grained.
- 2256-72 Limestone, grayish-brown, very fine grained; much bluish-gray, dense chert.
- 2272-81 Limestone, lighter tan, very oolitic; trace of chert.
- 2281-2350 Limestone, fragmental, oolitic, light-tan, fossiliferous.
- 2350-55 Limestone, cream, densely crystalline; much coarsely crystalline calcite (fault).
- 2355-63 Limestone, dense, light-brown, finely crystalline; trace of dense, light-gray chert.
- 2363-90 Limestone, fine-grained, tan, obscurely oolitic.
- 2390-2414 Limestone, very dolomitic, brown, finely crystalline; trace of white chert.
- 2414-31 Limestone, light-tan, clastic; trace of chert.

St. Louis

- 2431-70 Limestone, light-tan, crystalline, fossiliferous; trace of chert.
- 2470-85 Limestone, light-tan, densely crystalline.
- 2485-94 Limestone, very dolomitic, finely crystalline, dense, pale-gray.
- 2494-2508 Limestone, dolomitic, brown, fragmental.
- 2508-21 Limestone, brown, sublithographic; trace of dense, grayish-brown chert.
- 2521-42 Limestone, slightly dolomitic, fragmental, cream; streaked with stylolitic clay.
- 2542-2626 Limestone, brown, fine-grained to finely crystalline.
- 2626-92 Limestone, brown, fine-grained, dark, some slightly argillaceous; much coarsely crystalline calcite.
- 2692-2716 Limestone, brown, mottled with gray; trace of brown, mottled chert.

Salem

- 2716-48 Limestone, grayish-brown, mottled, very fossiliferous, fragmental.
- 2748-52 Limestone, very fossiliferous, grayish-brown; trace of gray chert.
- 2773-85 Limestone, light-tan, crystalline, very fossiliferous.
- 2785-2800 Limestone, argillaceous, grayish-brown, finer than above.
- 2800-30 Limestone, gray, crystalline, very fossiliferous, mottled.

Warsaw

- 2830-51 Limestone, very argillaceous, dark grayish-brown.
- 2851-2912 Limestone, light-gray, crystalline, fossiliferous; trace of gray chert.
- 2912-47 Limestone, dense, gray, mottled; chert, as above; trace of shale.

New Providence-Fort Payne

- 2947-87 Limestone, very siliceous, slightly argillaceous, dark grayish-brown; some free chert.
- 3000-43 Shale, calcareous, siliceous, very dark grayish-brown.
- 3043-93 Limestone, slightly argillaceous, siliceous, dark-brown, fine-grained.
- 3093-3352 Shale, slightly calcareous, very dark grayish-brown; decreasing limestone with depth.

Rockford

- 3352-62 Limestone, crystalline, brown, pyritic.

New Albany

- 3362-3420 Shale, black, carbonaceous, pyritic.

- 3420-83 Shale, coarse-grained, black, many spores.
 3483-3533 Shale, black, pyritic.
 3533-58 Shale, as above; rare fragments of pyritic dolomite.

DEVONIAN

Alto-Lingle

- 3558-63 Limestone, dark, fossiliferous, slightly argillaceous.
 3563-80 Limestone, brown, fine-grained; chert, same color as limestone.
 3580-89 Limestone, slightly argillaceous, dark-brown.
 3589-3615 Shale, calcareous, very dark grayish-brown.

Grand Tower

- 3615-60 Limestone, fossiliferous, cream, clastic; trace of translucent chert.
 3660-68 Limestone, cream, fossiliferous, crystalline.
 3668-75 Limestone, as above; trace of brown bentonite.
 3696-3715 Limestone, brown, fossiliferous, densely crystalline; trace of brown translucent chert.
 3715-30 Limestone, densely crystalline, brown, finer than above; chert, mottled, gray.
 3730-35 Limestone, cream to light-tan, fossiliferous.
 3735-54 Limestone, very fossiliferous, light-tan; trace of tan chert, with organic inclusions.

Dutch Creek

- 3754-73 Sandstone, medium-grained, well-sorted, much secondary crystal growth on rounded and frosted grains.
 3773-75 Sandstone, poorly sorted to coarse-grained, rounded and frosted, larger grains broken.
 3775-84 Limestone, slightly dolomitic, enclosing some sand grains and dark clay pellets.
 3784-91 Sandstone, poorly sorted to very coarse, rounded, with many broken grains.

Clear Creek

- 3791-97 Limestone, slightly dolomitic, very densely crystalline.
 3797-3800 Limestone, slightly dolomitic, grayish-tan, with much chert, quartzose to translucent, same color as limestone.
 3800-13 Limestone, slightly dolomitic, grayish-brown, fine-grained; some spiculose chert and glauconite.
 3813-36 Limestone, dolomitic, cream to tan, fine-crystalline; chert, same color slightly dolomitic; trace of spicules.
 3836-46 Limestone, slightly dolomitic, tan to gray, mottled; some trashy fractured limestone.
 3846-53 Limestone, slightly dolomitic, light-tan, fine-crystalline; chert, dolomoldic, same color as limestone.
 3853-66 Limestone, as above, lighter in color.
 3866-75 Limestone, grayish-tan, very fine grained, slightly dolomitic; chert, as above.
 3875-95 Chert, same color as limestone, quartzose to translucent.
 3895-3909 Limestone, slightly dolomitic, tannish-gray, fine-crystalline; trace of pale-green glauconite and pyrite.
 3909-15 Limestone, pale creamy-gray, more coarsely crystalline than above; pale-green glauconite.
 3915-26 Limestone, pale-gray, mottled, fossiliferous, finely specked.
 3926-57 Limestone, light grayish-tan, finely mottled with dark-gray.
 3957-86 Limestone, dolomitic, slightly grayish-tan, fine-crystalline; chert, translucent, spiculose.
 3986-4007 Limestone, brownish-gray, fine-crystalline; chert, spiculose, same color as limestone.
 4007-10 Chert, gray, mottled, fossiliferous; limestone, as above.
 4010-18 Limestone, coarsely crystalline, fossiliferous; trace of pale-green glauconite.
 4018-36 Limestone, as above, some slightly dolomitic; chert, gray, mottled.
 4036-42 Limestone, as above; chert, gray, translucent.

Grassy Knob-Bailey

- 4042-55 Limestone, slightly dolomitic, very slightly argillaceous, fossiliferous, grayish-brown, with chert, as above.
 4055-73 Limestone, grayish-brown, fine-grained, crystalline, some chalky; many spores; chert, micromottled.
 4073-78 Limestone, grayish-brown, fine-crystalline; chert, same color; some limestone, chalky (different texture than above).
 4078-84 Limestone, very dolomitic, grayish-tan; chert, spiculose and dense.
 4084-4101 As above, more chalky.
 4101-17 Limestone and chert, same color and texture.
 4117-68 Limestone, slightly dolomitic, light-tan, with chert, same color, spiculose.
 4168-72 Limestone, as above; chert, slightly darker, and translucent.

SILURIANLobelville (Upper Brownsport)

- 4172-85 Limestone, pale-gray, fine-crystalline; trace greenish-gray, argillaceous; chert, pale-gray, translucent.
 4185-4201 Limestone, gray, fine-crystalline, with interbedded calcareous gray shale; little chert, as above.
 4201-53 Limestone, fossiliferous, gray, fine-crystalline, slightly argillaceous; much glauconite.
 4253-90 Limestone, very argillaceous, dark-gray, slightly fossiliferous and slightly silty.
 4290-4495 Shale, calcareous, slightly silty, greenish-gray, greasy texture.

Bob

- 4495-4509 Dolomite, light grayish-tan, very densely crystalline, fine-grained.
 4509-14 Dolomite, as above, plus trace of white, pink-specked, coarsely crystalline limestone.
 4514-33 Limestone, finely dolomitic, pale-gray, with much pink-specked limestone.
 4533-38 Limestone, finely dolomitic, pale-gray to cream.

Dixon-Beech River

- 4538-68 Shale, calcareous, dark greenish-gray.

Lego

- 4568-82 Limestone, finely dolomitic, greasy, gray-brown.
 4582-90 Limestone, pink-specked, coarsely crystalline.
 4590-4600 Dolomite, calcareous, with much red crystalline calcite.
 4600-20 Limestone, fine-crystalline, dolomitic, to coarse-crystalline, white, with enclosed pink calcite.

Waldron

- 4620-26 Limestone, dolomitic, greasy, greenish-gray, with some shale.

Laurel

- 4626-36 Limestone, coarse, pink-specked.
 4636-51 Dolomite, fine- to medium-crystalline, tan, with some pink calcite.
 4651-60 More pink-specked limestone.

Osgood

- 4660-75 Limestone, dolomitic, fine-crystalline, argillaceous, maroon and green.

Brassfield

- 4675-96 Limestone, finely dolomitic, densely crystalline, brownish-gray; much chert, quartzose to translucent.
 4696-4704 Limestone, brown, densely crystalline; chert, as above.
 4704-37 Limestone, very densely crystalline, slightly dolomitic, grayish-brown; much chert, fresh, translucent, same color as limestone.

ORDOVICIAN

- 4737-50 Limestone, very coarsely crystalline, creamy-gray, fossiliferous.

- 4750-91 Shale, slightly calcareous, slightly greenish-gray; rare fragments of limestone or fossil fragments.
 4791-4820 Shale, brownish-gray, fine-grained, calcareous, slightly silty.
 4820-79 Shale, as above, interbedded with limestone, fossiliferous and phosphatic.
 4879-94 Limestone and shale, as above; chert, very finely disseminated through the limestone.
 4894-4914 Shale, slightly calcareous, very coarse grained, very dark gray to black.
 4914-30 Shale, calcareous, very dark, as above; some silty and phosphatic, with trace of chert.
 4930-5014 Shale, fine-grained, slightly calcareous, very dark gray to black.
 5014-26 Shale, as above; trace of very finely siliceous limestone.
 5026-5210 Shale, slightly calcareous, gray, lighter than above.
 5210-15 Limestone, coarse-crystalline, very fossiliferous, light-tan.

Tyrone

- 5215-58 Limestone, very fine grained, sublithographic; occasional fragments chalky and with healed fractures.
 5258-70 Limestone, brown, lithographic; trace of chert, same color.
 5270-5303 Limestone, very fine, lithographic, light-tan, to slightly crystalline.
 5303-17 Limestone, darker than above, with some black solution clay and chert that is almost black, dense.
 5317-50 Limestone, slightly dolomitic, lighter brown.
 5350-62 Limestone, lithographic, brown, very clean and fine.
 5362-87 Limestone, fine-crystalline, slightly fossiliferous; trace of black solution clay and translucent chert, brown.
 5387-93 As above.
 5393-5410 Limestone, darker, slightly argillaceous, gray.
 5410-15 Limestone, clean, dark-brown, lithographic, with trace of lime pellets enclosed.

Well No. 128 (162). Louisville Gas and Electric Company No. 3 Higbee, section 16-R-42 Gas storage well in Meade County. Well started in Warsaw limestone, encountered sulphur water at 1175 and 1300 feet.

MISSISSIPPIAN

Borden

- 205-10 Limestone, dolomitic, gray-brown, argillaceous, with much glauconite.
 210-40 Shale, slightly calcareous, gray, with much marcasite and some glauconite; trace of chert.

New Providence

- 240-310 Shale, dark-gray, coarse-grained to fissile; rare crinoid fragments included.
 310-20 Shale, red, with trace green.
 320-28 Shale, green, with limestone, coarsely crinoidal, white.

New Albany

- 328-60 Shale, black, carbonaceous; some pyrite.
 360-80 Shale, black, carbonaceous, with mats of reddish spores.
 380-412 Shale, less carbonaceous; rare fragments of pyritic dolomite.

SILURIAN

- 412-15 Contact of black shale with limestone, dolomitic, white, medium-coarsely crystalline.
 415-25 Dolomite, densely crystalline, pale greenish-gray.

ORDOVICIAN ? (Debris from fragmenting and recementation of Knox dolomite.)

- 425-35 Dolomite, very fine grained, gray, texture of lithographic limestone.
 435-55 Dolomite, cream, medium-crystalline, dense, with some quartzose chert enclosing rounded and frosted sand grains.
 455-60 Dolomite, very fine grained, texture of lithographic limestone.
 460-70 Dolomite, as above, with much sandy chert, rare siliceous oolites.
 470-90 Dolomite, cream to gray, very fine grained; trace of dense, pale-gray chert and pyrite.
 505-15 Dolomite, pale-cream to gray, slightly mottled with pyrite, very fine grained and dense.

- 515-65 Dolomite, very finely crystalline, white; chert, with texture of lithographic limestone.
- 565-75 Dolomite, chalky gray-white, some slightly calcareous.
- 575-620 Dolomite, cream, medium-crystalline, clastic, with some fragmental chert, dense to translucent.
- 620-40 Dolomite, cream, lithographic; 50% chert, fine and earthy.
- 640-700 Dolomite, cream, lithographic, to light-tan; chert, dense, translucent to quartzose, to fragmental, with occasional sand grains enclosed.
- 700-10 Dolomite, as above, with chert more sandy than above.
- 710-65 Dolomite, very fine-grained, cream, enclosing slightly coarser fragments; trace of chert, quartzose to dull, enclosing sand; trace of green shale.
- 765-800 Dolomite, slightly coarser, brecciated; gray, earthy dolomite, enclosing irregularly fragmental dolomite; rare oolites.
- 800-15 Dolomite, as above, with much sand, very fine to coarse.
- 815-50 Dolomite, cream, fine-grained matrix enclosing rhombs of all sizes; some fragmental chert.
- 850-70 Dolomite, brown, finely clastic; chert, very sandy, with some structureless oolites, some drusy.
- 870-90 Dolomite, cream to tan, clastic; trace of very fine silt enclosed.
- 896-930 Dolomite, cream to gray-tan, fine matrix, fragmental, as above; chert, fragmental, as above.
- 930-45 Dolomite, creamy-gray, fine-grained; some dolomite without enclosures, some enclosing shale fragments; chert, chalky.
- 945-1070 Dolomite, cream, finely argillaceous and silty; chert, mottled and fragmental.
- 1070-1105 Dolomite, brown-gray, fine- to medium-crystalline, some clastic.
- 1105-25 Dolomite, brown, clastic; chert, brown and white mottled.
- 1125-50 Dolomite, very finely crystalline, creamy-gray, enclosing poorly sorted rounded and frosted sand grains.
- 1150-74 Dolomite, almost chalky-white, finely crystalline; some vugular porosity.
- 1174-90 Sandstone, with much dolomite cement, very poorly sorted.
- 1190-1220 Dolomite, fine- to medium-crystalline, white to greenish, argillaceous; trace of fine sand.
- 1220-40 Dolomite, pale-gray, medium-crystalline, some clastic.
- 1240-70 Dolomite, gray-white, clastic; rare silt to sand enclosed.

Knox ?

- 1270-1310 Dolomite, gray, medium-crystalline, to cream, fine-crystalline; texture of fine-grained limestone.
- 1310-15 Dolomite, pale-gray to cream, fine-crystalline; 10% chert.

Well No. 129 (214). Groover, et al No. 1 Motley, SW SW NE section 21-R-72, elevation 1,115 feet, Menifee County.

SILURIAN

Clinton

- 1290-1350 Shale, maroon, coarse-grained.
- 1350-80 Shale, very dark grayish-maroon, coarse-grained.
- 1380-1435 Shale, some as above, some greenish-gray, fine-grained.
- 1435-45 Shale, green and red, as above; trace of dolomite.

Brassfield

- 1445-55 Dolomite, medium-gray, fossiliferous; gray, micromottled chert; trace of glauconite.
- 1455-65 Dolomite, medium-gray, fossiliferous; no chert.

ORDOVICIAN

Richmond

- 1465-1550 Composite samples: Limestone, dolomitic, gray, fossiliferous and phosphatic; some interbedded gray shale.
- 1550-70 Limestone, very argillaceous, dark-gray, finer grained than above.
- 1570-80 Dolomite, some green and silty, some cream, glauconitic.
- 1580-1620 Limestone, argillaceous, grayish-brown.
- 1620-30 Limestone, as above, with some green calcareous shale.

Maysville

(Mt. Auburn-Tate)

- 1630-1712 Composite samples: Limestone, argillaceous, grayish-brown; ostracod
 1712-30 Limestone, argillaceous, fine-grained, greenish-gray to red; trace of
 glauconite.

(Fairmount)

- 1730-60 Limestone, argillaceous, dark-gray, slightly fossiliferous and phosphatic
 1760-1807 Limestone, gray, very fossiliferous and phosphatic; less shale than above

Garrard

- 1807-52 Limestone, slightly dolomitic, gray, fossiliferous; some yellow, crystalline;
 line; trace of silt.
 1852-1900 Siltstone, calcareous, slightly argillaceous; trace of interbedded fossiliferous
 limestone.

Cynthiana-Million

- 1900-52 Limestone, slightly argillaceous, fine-grained, dark-brown; ostracods.
 1952-2000 Limestone, gray, fossiliferous and phosphatic, interbedded with calcareous
 shale.
 2000-36 Limestone, slightly argillaceous, gray, finer grained than above.
 2036-2205 Limestone, coarsely crystalline, gray, fossiliferous, phosphatic, with
 some interbedded gray shale.
 2205-21 Limestone, gray, fossiliferous, finely phosphatic; trace of gray, fossiliferous
 chert.
 2221-55 Limestone, as above; no chert.

Lexington

- 2255-75 Limestone, finely crystalline to fine-grained, slightly grayish-brown, argillaceous,
 dense.
 2275-2310 Limestone, very fine grained, sublithographic, brown.
 2310-2430 Limestone, brown, subcrystalline to very fine grained; little fissile shale
 2430-52 Limestone, as above; trace of translucent brown chert.

Chazy-Black River

- 2452-62 Limestone, brown, very fine grained, with trace of secondary dolomite;
 trace of green shale.
 2462-2506 Limestone, very fine grained, brown, slightly dolomitic; trace of translucent
 brown chert, with white inclusions.
 2506-40 Limestone, dolomitic, tan, fine-grained.
 2577-2730 Limestone, slightly dolomitic, fine-grained, brown; trace of green shale
 2730-2881 Limestone, very fine grained to subcrystalline, tan.
 2881-2933 Limestone, dolomitic, very fine grained, tan.
 2933-74 Limestone, very fine grained, brown; trace of slightly argillaceous limestone.
 2974-3015 Limestone, slightly argillaceous and dolomitic, fine-grained, grayish-brown.
 3015-40 Limestone, slightly argillaceous, fine-grained, dark-brown.
 3040-61 Limestone, very finely dolomitic and argillaceous, dark grayish-brown.
 3092-3132 Limestone, finely dolomitic, slightly argillaceous, very dark brown.

(St. Peter)

- 3132-40 Limestone, dolomitic, detrital; 30% poorly sorted sand.
 3140-58 Sandstone, poorly sorted, fine-grained, with occasional large rounded
 and frosted grains; some gray dolomite cement.

CAMBRIANKnox

- 3158-72 Dolomite, very coarsely crystalline, vugular, cream; trace of translucent
 chert.

Well No. 130 (1233). Batten No. 1 George T. Finn, NE section 13-H-48, $1\frac{1}{2}$ miles southwest of Mell, Metcalfe County.

MISSISSIPPIAN

Warsaw

75-98 Limestone, brown, crystalline, very fossiliferous; some smooth ostracods.

New Providence-Fort Payne

98-118 Siltstone, gray, argillaceous; some worn and weathered chert.
118-28 Siltstone, as above; no chert.
128-38 Limestone, slightly dolomitic, very fossiliferous, with many bryozoans.
138-48 Some as above, some gray siltstone.
148-88 Siltstone, and some crystalline limestone, very dark gray.
188-218 Limestone, very dolomitic, cream; some pale-green glauconite; trace of translucent chert.
218-322 Limestone, dolomitic and silty, dark-gray.
322-413 Shale, very dark grayish-brown, calcareous.
413-48 Shale, very slightly calcareous, very dark gray to black; some brown, translucent chert.
448-58 Shale, gray, crinoidal; little translucent chert.

New Albany

458-98 Shale, black, carbonaceous, coarse-grained.
498-500 Shale, black, as above; some green, siliceous dolomite, with few large sand grains at contact.

ORDOVICIAN

Richmond

500-06 Dolomite, pale-green, slightly silty.
506-12 Dolomite, as above, some more tan; trace of fine-grained limestone.
512-18 Dolomite, siliceous, green.
518-44 Dolomite, more brown than green, silty.

Maysville

(Tate-Gilbert)

544-54 Limestone, dolomitic, dark grayish-brown, slightly argillaceous.
554-65 Dolomite, pale-greenish, slightly silty.
565-74 Dolomite, more gray than green, slightly silty, fossiliferous.
574-600 Limestone, some dolomitic, gray, fossiliferous.

(Fairmount)

600-70 Limestone, gray, fine-grained, very fossiliferous; trace of replacement chert.
670-710 Limestone, as above; trace of interbedded silty shale.

Garrard

710-90 Siltstone, calcareous, argillaceous, dark-gray.

Cynthiana-Million

790-810 Limestone, gray, crystalline to argillaceous, fossiliferous.
810-50 Limestone, very dark gray, argillaceous and slightly silty; trace of fossils.
850-60 Limestone, as above, some almost lithographic, brown.
860-920 Limestone, crystalline, fossiliferous, and some very dark gray, argillaceous.
920-50 Limestone, fine-grained, argillaceous, very phosphatic.
950-60 Limestone, gray, fossiliferous, crystalline to argillaceous.
960-80 Limestone, dense, brown, fine-grained; some brown, translucent chert.
980-1000 Limestone, slightly more gray, finely crystalline, dense.

Well No. 131 (148). Stoll Oil Refining Company No. 1 H. F. Porter, at hotel at Sulphur Well, section 17-H-47, Metcalfe County. (Incomplete samples.)

ORDOVICIAN

Richmond

- 280-90 Dolomite, silty and slightly argillaceous, gray.
- 305-12 Limestone, dolomitic, slightly silty and argillaceous, gray.

Maysville

(Gilbert)

- 312-15 Limestone, dark-brown, very fine grained, slightly argillaceous.

(Tate)

- 315-35 Shale, dolomitic, silty, greenish-gray.
- 345-50 Shale, as above, with some interbedded silty dolomite.
- 365-70 Siltstone, interbedded with fossiliferous limestone.

(Fairmount)

- 370-430 Limestone, slightly argillaceous, phosphatic and fossiliferous.
- 430-35 Limestone, as above, with trace of silty shale.
- 435-70 Limestone, very fossiliferous, phosphatic, interbedded with dark-gray calcareous shale.

Garrard

- 470-500 Siltstone, argillaceous, calcareous, with some phosphatic and fossiliferous limestone.
- 500-20 Shale, calcareous, interbedded with fossiliferous limestone; trace of silt, as above.
- 520-90 Limestone, fossiliferous and phosphatic, gray, interbedded with silty and calcareous shale.

Cynthiana-Million

- 590-620 Limestone, very argillaceous, dark-brown; trace of silt.
- 620-50 Shale, calcareous, with interbedded fossiliferous and phosphatic limestone.
- 650-95 Limestone, as above; less shale.
- 695-700 Shale, calcareous, dark-gray, fossiliferous.

Lexington

- 700-15 Limestone, tan, very coarsely crystalline, fossiliferous and slightly phosphatic, with some interbedded shale.
- 715-30 Limestone, more densely crystalline, fossiliferous, brown, with interbedded shale.
- 730-50 Limestone, more finely crystalline, dark-brown, fossiliferous; little shale.
- 750-65 Limestone, finely crystalline, brown, fossiliferous; little dark shale; trace of brownish-gray mottled chert.
- 765-85 Limestone, slightly argillaceous, dark-brown, densely crystalline.
- 785-90 Limestone, sublithographic, dark-brown.
- 790-835 Limestone, very fine grained to finely crystalline, light-brown.
- 835-75 Limestone, grayish-brown, fossiliferous, intra-bedded with dark-gray calcareous shale.
- 875-95 Shale, calcareous, very dark gray to black; trace of silt.
- 895-905 Limestone, tan, very finely phosphatic; trace of silt.

Chazy-Black River

- 905-10 Limestone, light-brown, lithographic.
- 910-13 Bentonite.
- 913-55 Limestone, fine-grained to subcrystalline, brown; trace of brown chert.
- 955-65 Dolomite, slightly calcareous, light-brown, finely crystalline.
- 965-85 Limestone, slightly dolomitic; trace of brown chert.
- 985-1160 Limestone, very fine grained, light-brown, with occasional fragments of finely crystalline dolomite.
- 1160-1260 Limestone, very fine grained, dark-brown.

- 1260-1340 Limestone, brown, lithographic, with some intra-bedded finely crystalline dolomite.
 1340-1410 Limestone, lithographic, some slightly argillaceous.
 1410-25 Limestone, brown, lithographic.
 1425-35 Some limestone, as above, some very finely dolomitic, dark-brown.
 1435-50 Dolomite, very finely crystalline, dark-brown.
 1450-1505 Limestone, very fine grained, brown, rare dolomite.
 1520-28 Limestone, light grayish-tan, slightly dolomitic.

CAMBRIAN

Knox

- 1528-50 Dolomite, medium-coarsely crystalline, gray-white; chert, translucent, white.
 1550-55 Dolomite, tan, finely crystalline, dense; chert, translucent, gray-white, with occasional large sand grains enclosed.
 1555-70 Dolomite and chert, as above; no sand.
 1570-78 Dolomite, finely crystalline, brown; chert, enclosing rounded and frosted sand grains.
 1578-1605 Dolomite, very finely crystalline, cream; trace of blue-white chert and green shale.
 1605-15 Dolomite, as above; more chert and green shale; some oil stain.
 1615-20 Mainly chert, translucent, white, some quartz druse.
 1634-40 Dolomite, light-tan, finely crystalline to vugular; chert, dense to translucent, with quartz druse.
 1650-85 Dolomite, very finely crystalline, gray-brown; trace of pyrite.
 1685-90 Dolomite, very finely crystalline, cream; trace of translucent chert and dark-green shale.
 1690-1710 Dolomite, finely sucrose, dark-brown.
 1710-30 Dolomite, very densely crystalline, light-tan; 20% translucent chert, green shale, and pyrite.
 1740-45 Mainly chert, translucent to drusy.
 1745-65 Dolomite, medium-crystalline, brown; trace of interstitial chert.
 1765-75 Dolomite, fine- to medium-crystalline, cream; 40% translucent, blue-white chert.
 1775-85 Mainly chert, gray to white, some quartz druse; much pyrite.

Well No. 132 (257). Van Tein No. 1 Biggerstaff, SE NW NE section 11-C-47, Monroe County.

ORDOVICIAN

Maysville

- 35-40 Limestone, fine-grained, brown; little gray, granular, argillaceous limestone; some cream, translucent chert.
 40-45 Limestone, some as above, some partially dolomitic and argillaceous; more chert.
 45-72 Limestone, more coarsely crystalline and fossiliferous; little gray, coarse-grained, calcareous shale; still some chert; some limestone is phosphatic, some finer and brown.
 72-91 Limestone, fine-grained, brown, little argillaceous; fossiliferous, with many bryozoans.
 91-98 Limestone, gray, fossiliferous and phosphatic; much dark-gray calcareous shale.
 98-104 Limestone, more gray than above, granular and partially dolomitic.
 104-17 Limestone, gray, very fossiliferous, some phosphatic; some gray calcareous shale.

Garrard

- 117-29 Limestone, some crystalline and fossiliferous, some argillaceous and silty.
 129-35 Limestone, fossiliferous, some finely sandy.
 135-59 Same as above, with some dark-gray, slightly calcareous shale.
 159-65 Shale, dark-gray, granular, and calcareous.
 165-208 Shale, as above; some limestone, crystalline and phosphatic.
 208-14 Limestone, some fossiliferous, some finer and silty; calcareous shale.

Cynthiana-Million

- 214-48 Limestone, finer grained, fossiliferous and phosphatic; some argillaceous, grayish-brown limestone.
 248-55 Limestone, very argillaceous, dark-gray.
 255-69 Limestone, dense, brownish-gray, very fossiliferous; some argillaceous limestone, as above.
 269-302 Limestone, coarser, very fossiliferous; some calcareous shale.
 302-09 Limestone, cleaner and more crystalline than above, fossiliferous and phosphatic, slightly dolomitic.
 309-33 Limestone, brown, some dark and finely crystalline, some lighter and finer grained, mottled; some dark calcareous shale.
 333-48 Limestone, as above, some more crystalline and phosphatic.

Lexington

- 348-76 Limestone, grayish-brown, sublithographic; little cream to tan chert.
 376-97 Limestone, tan to grayish-tan, lithographic; occasional ostracods.
 397-404 Limestone, gray, some argillaceous, some slightly dolomitic.
 404-82 Limestone, brown, fine-grained; trace of bentonitic limestone at 475 feet.
 482-540 Limestone, argillaceous, and shale, calcareous, gray, some fossiliferous and phosphatic.
 540-47 Limestone, as above, with some cleaner and more coarsely crystalline; trace of brown chert.

Chazy-Black River

- 554-600 Limestone, lithographic, light-brown; bentonite.
 600-704 Limestone, brown, lithographic, occasional streaks dolomitic; trace of brown chert.
 704-12 Limestone, lithographic, and some sucrose, brown dolomite.
 712-85 Limestone, lithographic, brown to dull; less dolomite than above.

Well No. 133 (12). Carpenter, et al No. 1 Maloney, SE corner NE section 2-P-69, elevation 686 feet, Powell County.

PENNSYLVANIAN

- 20-35 & 50-55 Sand, poorly sorted, medium to very coarse grained, angular to rounded.

MISSISSIPPIAN

- 55-170 (Many sample gaps.) Shale, silty, red and gray.

New Albany

- 170-312 Shale, black, carbonaceous.

SILURIAN

Lockport ("Corniferous")

- 312-17 Dolomite, dark, tight, brown-gray, pyritic.
 317-30 Dolomite, light gray-tan, fine- to medium-crystalline; trace of dead oil.

Clinton

- 330-42 Shale, light-gray, dolomitic, to dark-gray, fissile.
 350-62 Shale, some maroon, slightly dolomitic.
 382-435 Shale, mainly maroon, some greenish-gray.
 435-45 Shale, green, fissile.
 445-65 Shale, green, with little red.
 465-95 Shale, as above, with stringers of crystalline dolomite.

Brassfield

- 495-505 Dolomite, medium- to coarse-crystalline; some glauconite.
 505-25 Shale, dark-green, very fissile, very slightly dolomitic.
 525-50 Dolomite, coarsely crystalline, crinoidal, light-gray. Some dolomite is finer and glauconitic near base.

ORDOVICIAN

Richmond

550-671

Shale, slightly dolomitic, with occasional stringers of coarsely crystalline dolomite, green, with traces of red.

Maysville

671-775

Limestone, argillaceous and fossiliferous, fine-grained, with little very fine phosphate, some lime faintly gray-green, mainly gray.

775-865

Limestone, some finely crystalline, some argillaceous, brown to greenish-gray, with some finely phosphatic and fossiliferous below 800.

865-920

Limestone, coarsely crystalline, fossiliferous and phosphatic, with some dark calcareous shale.

Garrard

920-25

Limestone, same as above; some crystalline, with yellow calcite.

925-67

Little limestone; mainly siltstone, calcareous and argillaceous.

Million

967-1030

Limestone, gray, densely crystalline, fossiliferous and phosphatic; some argillaceous.

Cynthiana

1030-85

Limestone, more fine and brown than above, still some argillaceous.

1085-1100

Limestone, medium-crystalline, gray, phosphatic.

1100-30

Limestone, very fossiliferous, crystalline, cleaner than above.

Lexington

1130-1255

Limestone, gray, slightly argillaceous, fossiliferous.

1255-94

Limestone, brown, crystalline, fossiliferous.

1294-1445

Limestone, fine-grained, brown, ostracodal; some dark shale streaks.

1445-79

Limestone, coarsely crystalline, cream to gray, very fossiliferous.

Chazy-Black River (Tyrone at top)

1479-86

Same limestone as above, some very fine, tan, lithographic; trace of bentonite.

1486-1502

Limestone, very fine grained, cream to tan to pale-greenish, bentonitic.

1502-08

Limestone, very fine, as above, pale, bentonitic; trace of cream chert.

1508-96

Limestone, tan, fine-grained, very slightly dolomitic.

1596-1610

Same, plus dolomite, tan, finely sucrose.

1610-34

Limestone, finely dolomitic, brown.

1634-68

Limestone, some dark greenish-brown, with finely disseminated clay.

1668-2024

Limestone, very fine grained, brown.

2024-48

Dolomite, slightly calcareous, very fine grained, grayish-tan.

2048-82

Some dolomite, as above; mainly limestone, fine and brown, slightly argillaceous.

2082-2157

Dolomite, very fine grained, interbedded with limestone, fine-grained, and some dark shale.

Knox

2157-79

Sandstone, very poorly sorted, very fine to very coarse, rounded and frosted (mainly very fine and very coarse), dolomite-cemented; some limestone, as above.

2179-93

Sandstone, very poorly sorted, mainly very finely grained, rounded and frosted, enclosing large rounded and frosted grains.

2193-2204

Sandstone, as above, but dolomite-cemented, some vugular; trace of conchoidal white chert at 2204.

CAMBRIAN

Eminence

2204-16

Dolomite, with scattered sand, poorly sorted, rounded and frosted; chert, white, translucent, and much white, very finely porous, quartzose, granular chert.

2216-22

Dolomite, with less sand than above; some dolomite medium-crystalline, with chalky-white dolomoids; some very fine grained and hard, light-gray, with translucent chert; pyrite.

- 2222-43 Dolomite, very fine grained, white, finely broken; small residue of white, translucent to chalky chert.
- 2243-50 Dolomite, very white, finely crystalline, with rare enclosed rounded and frosted sand; little finely porous white silica.
- 2250-55 Dolomite, pale-gray, medium-crystalline, some porosity; chert is pale-gray, translucent to dull-white, chalky.
- 2255-73 Dolomite, as above; much more chert, as much as 80%.
- 2273-75 Dolomite, pale-gray, medium-crystalline, as above; less chert.
- 2275-87 Dolomite, pale-gray, coarsely crystalline; chert is pale-gray, quartzose, with trace of chalky-white, porous chert.
- 2318-35 Dolomite, cream, densely crystalline; chert is translucent to quartzose, pale-gray.

Potosi

- 2370-92 Dolomite, cream, sucrose to densely crystalline; chert, as above, but less of it; some poorly sorted, rounded and frosted sand.
- 2392-98 Dolomite, light-tan, medium-crystalline; chert, changed to tan, dense to drusy, with some chalky-white.
- 2398-2402 Chert is creamy-gray, dense to translucent.
- 2402-08 Residue is sand, poorly sorted, rounded and frosted; little white, translucent chert.
- 2408-12 Chert is white, with quartz druse, rare dolomolds inside druse.
- 2412-23 Same, with very small residue.
- 2423-26 Chert, creamy-gray, dense to quartzose; poorly sorted sand and drusy chert.
- 2426-33 More sand.
- 2433-37 Dolomite, coarsely crystalline; chert, pale-gray, translucent to quartzose.
- 2437-41 About 80% chert, white to cream, dense to quartzose, slightly drusy.
- 2441-45 Chert, white, dense to chalky, some light-tan and gray, quartzose. Some porosity.
- 2445-48 Chert more fresh, less chalky.
- 2448-51 Dolomite, very light tan and very finely crystalline, hard and vitreous, enclosing a few rounded and frosted sand grains; more chert than above, dense and white.
- 2451-54 Dolomite, light, as above, some very fine silt; bentonite caving.
- 2454-61 Dolomite, clear brown, densely crystalline; residual material is clear quartz and tan to gray chert.
- 2461-65 Dolomite, slightly coarser than above, gray-tan (looks like limestone); angular quartz, gray-white chert.
- 2465-69 Dolomite, as above; chert, pale-gray, translucent, with rare rounded and frosted sand grains.
- 2469-73 Dolomite, light tan-gray, medium-crystalline; chert, white, translucent to chalky; some porosity.
- 2473-79 Dolomite, very dense and light-gray; chert, dull-white.
- 2479-91 Dolomite, coarser, but densely crystalline, light-tan, enclosing rare sand grains; chert, dull-white to translucent, microspecked.
- 2491-93 Dolomite, cream, medium-crystalline; very little chert residue.
- 2493-2515 Dolomite, as above, with very little chert, some of which is drusy, with colored banding.
- 2515-25 Dolomite, pale-gray, coarsely crystalline, with some porosity.
- 2525-41 Dolomite, as above, with 50% dull-white to translucent chert; trace of sand.
- 2541-45 Dolomite, very finely crystalline; very little chert.
- 2545-52 Dolomite, as above, with chert, dull to quartzose; some dead oil in samples forming clusters of grains -- probably refined oil.
- 2552-57 Dolomite, as above.
- 2565-66 Dolomite, very finely broken, pale-gray, with gray, quartzose chert.
- 2566-70 Dolomite, cream, finely crystalline; residue translucent to quartzose, pale-gray chert, and white, chalky, dolomoldic chert.
- 2570-73 Dolomite, very finely broken, creamy-gray, finely crystalline; chert, white, dull to slightly translucent.

Elvins

- 2573-79 Dolomite, pale-gray, finely sucrose; trace of sand and gray-white chert. Glauconite, which may be caving from Silurian (none observed actually in dolomite, although dolomite is very finely broken).

- 2579-84 As above, with less chert.
 2584-88 Dolomite, pale-gray, more coarsely crystalline than above; little pale-gray chert; more glauconite -- none actually in the dolomite, but there seems to be no caving shales.
- 2588-90 Dolomite, finely crystalline, white; trace of glauconite; much finely crystalline pyrite; some green shale.
- 2590-94 Dolomite, tan, medium-crystalline, porous; much interstitial, chalky-white chert.
- 2594-2606 Dolomite, tan, as above, very finely broken; less chert; more fine crystalline pyrite.
- 2606-08 Dolomite, brown, finely crystalline, very finely broken; residue very fine silt; trace of chert.
- 2608-12 Dolomite, brown, finely crystalline, as above; chert, pale gray-white, dense; some pyrite.
- 2612-22 Dolomite, fine, brown, as above; less chert; some very fine silt.
- 2622-25 Dolomite, pale-gray, medium-crystalline; residue fine sand, angular to rounded, slightly argillaceous.
- 2625-27 Dolomite, pale-gray, finely broken; residue fine quartz silt and trace of gray quartzose chert.
- 2627-35 Dolomite, cream, medium-crystalline to sucrose; residue translucent to chalky, very finely dolomoldic chert.
- 2635-38 Dolomite, as above; less chert.
- 2638-49 Dolomite, cream, finely crystalline; chert, dull chalky-white; glauconite nodules (free) and crystalline pyrite.
- 2649-51 Dolomite, brown, finely crystalline, very finely broken; small residue of quartz silt, glauconite, and pyrite.
- 2651-54 Dolomite, as above; residue quartz silt to fine, rounded sand, very small amount; chert, with very small pseudo-oolites and pyrite.
- 2654-59 Dolomite, cream, very finely crystalline; small residue of quartz silt and glauconite. (Some caving Silurian shales)
- 2659-61 Dolomite, tan, very finely sucrose; residue, as above.
- 2661-65 Dolomite, tan, finely sucrose; some argillaceous.
- 2665-76 Dolomite, pale-gray, medium-coarse crystalline; residue fine pyritic silt.
- 2719-23 Dolomite, tan, crystalline, finely sucrose; very small residue, trace of light-tan chert, much tool metal; trace of green shale.
- 2723-26 Dolomite, tan, finer and harder; residue larger, trace of dark shale, mainly dark gray-brown, very finely disseminated silica. (Note: Looks like porous shale in residue, but high magnification shows it is finely dolomoldic silica.)
- 2726-30 Dolomite, light-tan, as above; more chert (20%), same color, dense, translucent.
- 2730-32½ Dolomite, as above; slightly more chert; trace of dark shale.
- 2732½-35 (Marked 30½-37½) Dolomite, very dense, hard, very finely broken, light-cream; chert, 10%, mainly white, dense, translucent to quartzose.
- 2735-37½ (Marked 32½-37½) Dolomite, as above; chert, translucent to quartzose, white and tan, probably very hard drilling.
- 2737½-41½ Dolomite, fine, and densely crystalline; chert residue is white, dense, translucent to slightly granular, 10%.
- 2741½-44 Dolomite, creamy-tan, more sucrose than above; chert, 15%, as above, plus very dark shale in small fragments.
- 2744-51 Dolomite, creamy-tan, finely sucrose; chert, tan, with traces of dark shale.
- 2751-54 Chert, white, dense and dull, to quartzose, translucent; trace dolomoldic and drusy.
- 2754-76 Dolomite, finely crystalline, with chert, as above.
- 2776-2807 Dolomite, cream, very finely broken, finely crystalline; trace of white chert and black shale; some pyrite.
- 2807-11 Dolomite, cream, finely crystalline; some very fine silt and silty gray shale.
- 2811-24 Dolomite, as above, with very small residue; traces of dark shale.
- 2824-30 As above, with little white chert and black shale.
- 2830-48 Dolomite, fine, white; trace of fine sand.
- 2848-52 Dolomite, cream, with much sand; some chert, slightly oolitic, light-gray.

"Rose Run"

- 2852-60 Sand, medium- to fine-grained, rounded and frosted to angular; some dolomite cement.
- 2860-2910 Sand, as above, with no dolomite cement. (All samples except 2866-75 fluoresce, but all contain dark, waxy substance present in all samples below casing.)
- 2910-15 Dolomite, gray, sandy, fine-grained, with some green shale.
- (At 2944 measured hole showed 2964. Assumed 20 feet difference, mainly in sandy section, and adjusted 2915 to 2935.)
- 2935-38 Sand, very fine grained, rounded to angular; trace of green shale and very fine dolomite.
- 2938-41 Sand, as above, some slightly coarser.
- 2941-44 Dolomite, finely crystalline, very finely broken, white; trace of very fine glauconite; much sand, as above.
- 2944-48 Dolomite, as above; trace of pyrite.
- 2948-53 Dolomite, more finely crystalline, gray-tan, with some black shale; trace of sand and pyrite.
- 2953-64 Dolomite, very fine grained, gray-tan, with trace of translucent, tan to white chert.
- 2964-66 (Set packer - samples badly stained) Dolomite, very fine crystalline, with some coarser sand than that above.
- 2966-74 Dolomite, very fine crystalline, light-tan, with very fine inclusions (only discernible under high power) which may be glauconite; trace of white chert and pyrite.
- 2974-78 Dolomite, as above, with some dark shale, pyrite, fine sand, but no chert.
- 2978-82 Dolomite, very finely crystalline, white; trace of white, translucent to chalky chert.
- 2982-85 Dolomite, slightly coarser than above; more chert, pyrite, and trace of very fine sand.
- 2985-88 Dolomite, very finely broken, finely crystalline, light-tan.
- 2988-94 Dolomite, very finely broken, finely crystalline, with trace of very fine sand and pyrite.
- 2994-3001 As above, with some translucent white chert.
- 3001-08 Dolomite, finely crystalline, cream, very finely broken; traces of enclosed very fine quartz silt and pyrite.
- 3008-23 Dolomite, as above, but more densely crystalline -- fractures across rhombs.
- 3023-26 Dolomite, as above, plus some dark-brown, fine-crystalline; some dolomitic, very dark shale.
- 3026-30 Lighter, finer, with much pale-gray chert.
- 3030-34 Dolomite, white, finely crystalline; residue gray, translucent chert, some quartzose, trace of sand; much pyrite.
- 3034-39 Dolomite, as above, with some soft, white chert; pyrite still common.
- 3039-44 Dolomite, white, crystalline, very finely broken; residue sand, very fine to fine, angular to rounded and frosted; chert, white, translucent; much pyrite.
- 3044-49 Sand, fine, angular to rounded, broken grains; trace of chert.
- 3049-51 As above, but less sand, more dolomitic.
- 3051-56 Dolomite, finer crystals, gray; some gray, translucent chert, pyrite, sand, as above; trace of gray silty shale.
- 3056-61 Dolomite, very sandy, poorly sorted; some chert, as above; trace of gray shale.
- 3061-68 More sandy than above; sand, more coarse and rounded.
- 3068-70 Dolomite, gray-tan, finely crystalline; trace of sand, as above.
- 3070-75 Dolomite, white, more coarsely crystalline (still fine); trace of translucent, white chert; sand; much pyrite; trace of green shale.
- 3075-79 As above, but very small residue.
- 3079-82 Dolomite, as above, but finer, gray-tan; very small residue.
- 3082-97 Dolomite, as above; small residue of very fine sand, pyrite, and gray shale.
- 3097-3102 Dolomite, very hard, fine and dense, with sand, as above, and some asphalt (?).
- 3102-03 Dolomite, white, crystalline; very small residue of sand, as above; little shale, almost black.

- 3103-05 Dolomite, very finely crystalline, with traces of very dark gray-green shale.
- 3105-08 Dolomite, very fine, as above, with small residue of tan, mottled to drusy chert. (Cuttings so finely broken as to destroy details of chert structure.)
- 3108-09 Dolomite, very finely crystalline, as above; very small residue of fine quartz, chert, as above, and crystalline pyrite.
- 3109-12 Dolomite, as above; very small residue of brownish-gray, mottled chert, coarse, dark shale, and pyrite.
- 3112-14 Dolomite, as above; 50% chert, tan to white, quartzose to chalky, mottled and drusy (very finely broken, so details of chert structure destroyed).
- 3114-18 As above, but much less chert -- less than 5%.
- 3118-22 Dolomite, very finely crystalline; very small residue of chert, as above, and crystalline pyrite.
- 3122-26 Dolomite, may be more coarsely crystalline than above, and more porous; very small residue of pyrite and very fine silt.
- 3126-27 Dolomite, very fine; residue entirely fine pyrite.
- 3127-31 Dolomite, fine- to medium-crystalline, cream to gray; 5% residue of chalky-white to gray chert.
- 3131-37 Dolomite, cream, finely crystalline; residue fine rounded sand and pyrite (less than 5%).
- 3137-40 As above, with less residue; sand, dark shale, and pyrite.
- 3140-42 Dolomite, cream, finely crystalline; small residue of light-tan chert.
- 3142-57 Dolomite, brown, finely crystalline; only trace of fine silt and dark shale.
- 3157-60 Dolomite, brown, finely crystalline; residue 25% chert, pale-gray, quartzose, with small oolites.
- 3160-62 Dolomite, as above; small residue of chert, as above, silt, and greenish shale.
- 3162-65 Dolomite, as above; residue gray-green silty shale.
- 3165-72 Dolomite, as above; residue very fine sand and dark shale, 1%.
- 3172-74 Dolomite, as above; contains some very fine rounded sand - no shale.
- 3174-77 As above; very small residue (less than 1%) of fine sand and crystalline pyrite.
- 3177-83 Dolomite, cream, finely crystalline; 20% pale-gray, quartzose to chalky chert.
- 3183-86 As above, with only traces of chert, some pyrite, and very fine sand.
- 3186-93 Dolomite, cream, very finely broken, so crystallinity cannot be determined; very small residue (less than 1%) of fine sand, pyrite, and dark shale.
- 3193-98 Dolomite, darker brown; 15% residue of chert and dark shale; chert is gray, with dark-gray oolites.
- 3198-3211 Dolomite, as above; very small residue of quartzose, gray chert and pyrite.
- 3211-15 Dolomite, very fine, light-tan; trace of very fine sand and pyrite.
- 3215-16 Dolomite, very finely broken (porous); trace of very chalky, gray chert.
- 3216-22 Dolomite, finely sucrose, brown; very small residue of pale-gray quartzose chert, black shale, and pyrite.

Well No. 134 (16). Carpenter, et al No. 2 Prewitt, Miller, and Goff, NE NW NW section 10-O-69, elevation 988.5 feet, Powell County. Show of gas.

0-30 Surface sand and quartz pebbles.

MISSISSIPPIAN Greenbrier

- 30-33 Limestone, worn pebbles, white, very oolitic.
- 33-37 Clay.
- 37-55 Limestone, fine, light-brown, some very oolitic, some worn.
- 55-65 Limestone, fine to oolitic, cream; trace of translucent tan chert.
- 65-78 Limestone, as above, with some green and pink color.
- 78-84 Limestone, very fine grained, dense, pale gray-white, with pinkish chert, as above.
- 84-93 Limestone, as above, plus some very finely dolomitic, tan.
- 93-103 Dolomite, calcareous, very fine crystalline, with interbedded green, glauconitic shale.

Borden group

- 103-30 Shale, slightly dolomitic, green, and finely glauconitic.
130-40 As above, but more silty.
140-211 Siltstone, slightly dolomitic; green shale, in increasing amounts with depth.
211-336 Shale, very slightly silty, darker than above.
336-400 Shale, as above, some very silty.
400-545 Shale, very slightly silty, gray.
545-72 Shale, silty, dark-gray, with traces of red.

New Albany

- 572-78 Shale, as above, with some dark to black shale.
578-711 Shale, black, carbonaceous.
711-41 Shale, black, as above, with some green, pyritic.

SILURIAN

Lockport

- 741-53 Dolomite, gray, mottled, crinoidal, some porous; trace of fine sand in residue.
753-55 Dolomite, very finely broken, pale-gray, very porous (water).
755-65 Dolomite, cream, coarse, sucrose, vugular; trace of pyrite.
765-67 Dolomite, more gray, and stained with dead oil.
767-89 Dolomite, slightly argillaceous, gray, medium-crystalline.
789-804 Dolomite, crinoidal, gray; some fine sandstone, dolomitic.
804-21 Sandstone, dolomitic, fine-grained, well-sorted as to size, but with some heavy minerals included.
- "Big Six"
821-26 Dolomite, cream, very crinoidal; trace of sand, as above.
826-31 Dolomite, cream, as above, some very sandy, and with traces of gray, fissile shale.
831-37 Dolomite, very fine, dense, and cream.

Clinton

- 837-42 Dolomite, as above; green shale, fissile to siliceous.
842-48 Shale, slightly dolomitic, pale-green; much pyrite.
848-53 Shale, green and maroon, slightly dolomitic, to fissile.
853-85 Shale, slightly silty, green and maroon.
885-941 Shale, maroon, with little green.
941-67 Shale, gray-green, fissile.
967-85 Shale, bright, smooth, green, fissile.
985-96 Dolomite, densely crystalline, cream, with some red and green shale; glauconitic.
996-1009 Shale, dark-red, some green.
1009-14 Shale, red and green, some slightly dolomitic and silty.
1014-21 More dolomite than above.
1021-31 Dolomite, yellow, crystalline, with traces of green shale.
1031-41 Dolomite, as above, plus bright-green, fissile shale.
1041-46 Shale, green, fissile.

Brassfield

- 1046-56 Dolomite and shale, as above; much oolitic hematite.
1056-64 Dolomite, tightly crystalline, gray-cream, with much pyrite.
1064-73 Dolomite, creamy-gray, medium-crystalline, glauconitic; some translucent to fossiliferous chert.
1073-78 Dolomite, gray, crystalline, with some interstitial, gray-green shale.

ORDOVICIAN

Richmond

- 1084-1122 Shale, slightly dolomitic, gray-green, trace red.
1122-45 Dolomite, some very argillaceous, some gray, crystalline, mottled with fine phosphatic material; argillaceous material is green.
1145-60 Limestone, argillaceous, fine-grained, gray, fossiliferous.
1160-65 Limestone; some dolomite, fine-grained, very argillaceous and finely silty, gray-green.

- 1165-75 Dolomite, very finely silty and argillaceous, gray-green, with trace brownish-red.
 1175-80 Dolomite, less silty and argillaceous than above; some free calcite (Columnaria zone).
 1180-1210 Shale, dolomitic, very slightly silty, gray-green, more calcareous toward base.

Maysville

- (Gilbert)
 1210-30 Limestone, slightly argillaceous, fine, dark-gray, fossiliferous and slightly phosphatic.

- (Tate)
 1230-55 Limestone, very silty and argillaceous, greenish-gray, fine-grained.
 1255-1308 Limestone, very finely argillaceous, gray-brown, some fossiliferous.
 1308-64 Limestone, finely argillaceous, green, and some red.

(Fairmount)

- 1364-1425 Limestone, gray, slightly argillaceous, very fossiliferous and phosphatic; trace of gray chert replacement of fossils.
 1425-36 Limestone, gray-white and yellow, crystalline, very fossiliferous and phosphatic; traces of fine silt and calcareous shale.

Garrard

- 1436-1516 Limestone, slightly argillaceous and silty, gray, fossiliferous and phosphatic.
 1516-34 Limestone, gray, very fossiliferous and phosphatic; trace of calcareous shale.

Cynthiana-Million

- 1534-97 Limestone, very fossiliferous, crystalline and phosphatic; very slight argillaceous residue after acid treatment.
 1597-1625 Limestone, gray, fossiliferous, slightly phosphatic, densely crystalline; trace of dark calcareous shale.
 1625-95 Limestone, gray, fossiliferous, phosphatic, as above; small residue of gray, fissile shale.
 1695-1702 Limestone, as above, with more shale.
 1702-26 Limestone, white to gray, crystalline, fossiliferous, phosphatic; very small insoluble residue of shale.
 1726-50 Limestone, gray, fine, finely phosphatic; little gray, fissile shale.
 1750-68 Limestone, as above, with trace of chert replacement of fossils.
 1768-92 Limestone, as above, without chert.
 1792-1813 Limestone, gray, crystalline, very fossiliferous and phosphatic; little gray, fissile shale and gray replacement chert.
 1813-25 Limestone, gray, phosphatic and fossiliferous, with little interbedded gray calcareous shale.

Lexington

- 1825-50 Limestone, more finely crystalline, brownish-gray, fossiliferous.
 1850-82 Limestone, gray-brown, fine-grained, slightly argillaceous.
 1882-1911 Limestone, light creamy-tan, crystalline, very fossiliferous, very slightly phosphatic.
 1911-57 Limestone, gray-brown, fine-grained, slightly argillaceous.
 1957-63 Limestone, slightly argillaceous, more gray and fossiliferous than above, some phosphatic.
 (S.L.M.) 1963 = 1996
 1996-2002 Limestone, gray-brown, some very finely phosphatic.
 2002-25 Limestone, gray, fossiliferous and phosphatic; trace of calcareous shale and replacement chert.
 2025-37 Limestone, light-gray, crystalline, fossiliferous and phosphatic; some dark calcareous shale; trace of fossiliferous chert, bentonitic shale, and fine silt.

Chazy-Black River

- 2037-49 Limestone, lithographic, cream; trace of green bentonitic shale and chert.

- 2049-68 Limestone, lithographic, tan; some green bentonitic limestone; tan translucent chert.
- 2068-75 Limestone, lithographic, tan, with some green and bentonitic; trace of finely dolomitic limestone and fine, tan, translucent chert.
- 2075-85 Limestone, lithographic, tan; some bentonite and chert.
- 2085-2125 Limestone, fine-grained, brown to gray.
- 2125-46 Limestone, very fine grained, brown, some slightly dolomitic.
- 2146-93 Limestone, lithographic, very smooth, tan to cream; trace of brown, finely dolomitic limestone.
- 2193-2225 Limestone, more brownish-gray than above; trace of slightly argillaceous limestone.
- 2225-47 Limestone, brown, lithographic to finely crystalline.
- 2247-98 Limestone, slightly dolomitic, light-tan.
- 2298-2339 Limestone, light-tan, very fine grained to finely crystalline, dense, with rare fragments dolomitic.
- 2339-81 Limestone, light-tan, lithographic; traces of oil stain at 2345.
- 2381-93 Limestone, tan, fine-grained, some very finely dolomitic, and some green, with included shale.
- 2393-2410 Limestone, very fine to finely crystalline, light-tan, with trace of green shale.
- 2410-23 Limestone, very fine grained, smooth, brown.
- 2423-58 Limestone, as above, with traces of green shale.
- 2458-69 Limestone, very fine grained, tan, with occasional dark solution surfaces.
- 2469-81 Limestone, very fine grained, brown, with some very fine dolomite.
- 2481-93 As above, with more dolomite.
(S.L.M.) 2493 = 2522
- 2522-40 Dolomite and limestone, as above.
- 2540-69 Limestone, very slightly dolomitic, light-tan, clean, with occasional stained solution faces.
- 2569-93 Limestone, very slightly argillaceous, brown to brown-gray, very fine grained.
- 2593-2610 Limestone, brown to cream, very fine grained.
- 2610-31 Limestone, very finely dolomitic, some very slightly argillaceous, tan to greenish-gray.
- 2631-42 Limestone, brown, very fine grained, occasionally streaks of slightly argillaceous limestone.
- 2642-72 Limestone, brown to brown-gray, very finely argillaceous.
- 2672-97 Limestone, argillaceous, as above, interbedded with very fine grained, brown limestone.
- 2697-2706 Limestone, brown, very fine grained, with some slightly argillaceous, greenish-gray.
- 2706-48 Limestone, more argillaceous and finely dolomitic than above, gray-brown.
- 2748-60 Limestone, increasingly dolomitic and argillaceous with depth, gray, with interbedded brown limestone.
- 2760-66 As above, but enclosing some fine, rounded sand grains in the brown limestone.
- (St. Peter)
- 2766-71 Dolomite, very finely crystalline, white, finely silty; sandstone, dolomitic, very fine, rounded grains, with rare large, rounded and frosted sand enclosed.
- 2771-76 Dolomite, very fine, white, as above; less sand.
- 2776-82 Sandstone, dolomitic, white to gray to brown, very fine grained, rounded, with rare large grains.
- 2782-96 Dolomite, fine-crystalline, gray, studded with sand; some green shale.
- 2796-2806 Dolomite, very fine grained, finely silty, with occasional fine sand grains, light-gray; some green shale.
- 2806-12 Dolomite, very sandy, silty, some fine, rounded grains; green shale.
- 2812-24 Sandstone, dolomitic, very poorly sorted sand, fine to coarse, rounded and frosted; some green shale.
(S.L.M. 2824) = 2837
- 2837-43 Dolomite, very finely crystalline, slightly silty, with gray shale.
- 2843-48 Sandstone, fine to coarse, rounded and frosted, very slightly dolomitic.

CAMBRIAN

Eminence

- 2848-60 Dolomite, cream, fine- to medium-crystalline; much chert, translucent, white to chalky-white; rare dolomolds and green shale.
- 2860-94 Dolomite, cream, medium-crystalline; little chert, as above; trace of green shale and sand grains.
- 2894-99 Dolomite, cream, very finely broken (water); small insoluble residue of green, pyritic shale, dull, mottled chert, and rare sand grains.
- 2899-2903 Dolomite, light-tan, very densely crystalline; small residue of chalky-white and dense, translucent chert.
- 2903-05 Dolomite, white, very finely crystalline; 20% residue of very fine white silt, to fine, lacy, dolomoldic chert, to dense white chert; occasional large sand grains, with some secondary crystal growth.
- 2905-20 Dolomite, white, fine-medium crystalline, with occasional fragments coarser; small insoluble residue of large sand grains, dense chert, and green shale.
- 2920-26 Dolomite, cream, very finely crystalline; little fresh chert, dense to translucent.
- 2926-32 Dolomite, as above, very finely silty, with some gray, banded shale.
- 2932-44 Dolomite, very fine, cream, as above; chert, 30%, chalky-white to very finely porous.
- 2944-49 Dolomite, as above; finely distributed rounded and frosted sand grains.
- 2949-75 Dolomite, finely crystalline, with occasional large crystals; dense chert, and rounded and frosted sand grains.
- 2975-85 Dolomite, medium-coarse crystalline, light-tan, some vugular porosity; insoluble residue 5% chalky-white chert, some finely pyritic, some with dolomolds; rare large sand grains.
- 2985-95 Dolomite, medium-crystalline, sucrose, light-tan; residue 40% chalky-white chert, some with fine, lacy dolomolds, some dense, cream, with brown, irregularly shaped oolites without internal structure; shale, very light to dark; rare sand grains.
- 2995-3016 Dolomite, cream, medium-crystalline, dense to slightly vugular and porous; small residue of green, pyritic shale and chalky chert.
- 3016-34 Dolomite, creamy-gray, medium-crystalline, more dense than above; residue 10% chert, dense, white to chalky; green shale, some of it dolomoldic; rare large sand grains.
- 3034-53 Dolomite, densely crystalline, creamy-gray; 20% residue, chert, dense, white to quartzose, pale-gray, some almost drusy; rare large tan oolites.
- 3053-59 Dolomite, creamy-white, medium-crystalline; small residue of white to quartzose and drusy chert.
(S.L.M.) 3059 = 3076

Potosi

- 3076-3102 Dolomite, dense to coarse, light-gray; 30% chert residue, dense to vugular, drusy, with much crystalline quartz lining vugs; some green shale (cave?).
- 3102-08 Dolomite, gray-tan, texture of limestone, some vugular; very small residue of dense to chalky chert.
- 3108-12 Dolomite, fine-medium crystalline, light-tan; 5% chert, free, white, siliceous oolites.
- 3112-15 Dolomite, as above; 30% chert, white, dense to finely dolomoldic, some with irregular, structureless, tan oolites; occasional sand grains and finely banded gray shale.
- 3115-26 Dolomite, densely crystalline, cream; 50% chert, dense, white to drusy and dolomoldic; much crystalline quartz.
- 3126-43 As above, with less chert.
- 3143-49 Dolomite, cream, fine and dense, with very small residue of large sand grains.
- 3149-68 Dolomite, as above; more chert, dense, white, to drusy, with irregular oolites.
- 3168-74 Dolomite, light-tan, fine to medium, densely crystalline; chert, more fresh; trace of sand.
- 3174-3207 Dolomite, as above; chert, fresh, to drusy, many oolites.
- 3207-32 Dolomite, cream, fine to very fine, enclosing fine to medium sand, 10%.
- 3232-40 Dolomite, as above; chert, fresh, white, translucent to pale-gray, quartzose, 50%.

- 3240-53 Dolomite, pale-gray, crystalline to slightly argillaceous; 10% residue, large sand grains, chert, as above, and porous gray shale.
- 3253-3304 Dolomite, pale-gray, crystalline; residue chert, dense, white to drusy, slightly oolitic; occasional sand grains, 40%.
- 3304-10 Dolomite, pale-gray, crystalline, some slightly argillaceous; 40% residue of white, to gray, to bright-brown chert, dense to drusy; trace of rounded and frosted sand.
- 3310-15 Dolomite, cream, densely crystalline; small residue of fine sand and dense white chert.
- Elvins
- 3315-32 Dolomite, as above; small residue of coarse sand; some fine sand, with very fine enclosed glauconite.
- 3332-48 Dolomite, very fine crystalline, pale-gray; residue sand, as above, and a little chert; trace of gray shale at 3342.
- 3348-65 Dolomite, brown, medium-crystalline; small residue, dark shale, occasional sand grains, and rare chert.
- 3365-3420 Dolomite, as above, some slightly argillaceous; residue gray, chalky, mottled chert and some shale.
- 3420-31 Dolomite, cream, fine-medium crystalline; small residue of gray, chalky chert, and a trace of shale.
- 3431-61 Dolomite, cream, as above, with residue of gray, chalky chert; trace of green shale.
- 3461-65 Dolomite, pale-cream, fine-crystalline; small residue of white, chalky, finely mottled chert; trace of dark shale.
- 3465-76 Dolomite, brown, fine-medium crystalline; very small residue shale and fine chert.
- 3476-84 Dolomite, as above, some quite argillaceous and dark.
- 3484-3519 Dolomite, fine, cream, with streaks slightly argillaceous, enclosing very fine glauconite; some brown oolitic chert.
- 3519-25 Dolomite, brown-gray, fine-grained, some argillaceous; gray chert, with darker oolites.
(S.L.M.) 3525 = 3546
- 3546-52 Dolomite, pale creamy-gray, very fine, sucrose; trace of translucent chert.
- 3552-57 Dolomite, bright-brown, fine-medium crystalline; trace of very fine silt.
- 3557-62 Dolomite, brown to gray, fine-medium crystalline, some dark shale; chert, translucent, gray-brown, with white markings.
- 3562-67 Dolomite, more gray, more black shale (stylolitic).
- 3567-73 Dolomite, medium-crystalline, dense to sucrose, pale-gray to brown; chert, tan-gray; black shale.
- 3573-78 Dolomite, medium-crystalline, gray, dense to sucrose; chert, gray, translucent to oolitic.
- 3578-84 Dolomite, finer than above, darker, slightly argillaceous; chert, as above.
- 3584-89 Dolomite, fine-crystalline, gray; chert, gray, with some black shale streaks.
- 3589-96 Dolomite, pale-gray, fine-crystalline and coarsely crystalline; much chert, chalky-white to gray, translucent; rare dolomolds.
- 3596-98½ Cored, detailed descriptions follow: Thirty-three samples represent the 2½-foot section.

**Sample
Number**

- 33 Dolomite, brown; intervugular dolomite is dense, finely crystalline; some vugular, medium-coarse crystalline, with coarser crystals in vugs; some white, chalky, dolomoldic chert.
- 32 As above, with chalcopryite in rounded clusters.
- 31 Dolomite, brown, medium-crystalline, dense; some slightly coarser and porous, with interstitial chert (chalky dolomolds) and a little oily stain.
- 30 As above, with more of the porous dolomite.
- 29 As above; trace of finely disseminated dark pyrite.
- 28 Dolomite, fine-medium crystalline, dense, brown; less of the coarser dolomite.

- 27 Dolomite, dense and fine, as above; trace of chalky-white chert dolomolds.
- 26 Dolomite, fine-medium, very densely crystalline, brown.
- 25 Dolomite, medium-crystalline, brown, and dense; occasional surfaces showing some solution and replacement of chalky-white chert and isolated crystals of pyrite; some dead oil stain.
- 24 Dolomite, medium-crystalline, more dense than above; trace of recrystallization, with pyritization along fine joints.
- 23 Dolomite, medium-crystalline, very dense, brownish-gray; occasional vugs lined with coarse dolomite crystals, slightly stained with oil; some vugular connection by means of very fine jointing.
- 22 Dolomite, as above; more dense.
- 21 Dolomite, gray-brown, densely crystalline, with some recrystallization along joints.
- 20 Dolomite, as above; little pyrite marking jointing.
- 19 Dolomite, as above.
- 18 Dolomite, gray-brown, medium-crystalline, dense, as above; trace of recrystallization along joints.
- 17 Dolomite, as above.
- 16 Dolomite, as above; trace of staining in joints and fractures.
- 15 Dolomite, medium-crystalline, very dense, gray-brown, with some recrystallization along tiny fractures.
- 14 Dolomite, densely crystalline, as above, with some chalky, dolomoldic chert and much pyrite.
- 13 Dolomite, medium-crystalline, very dense, with some vugular spaces showing traces of dead oil.
- 12 Dolomite, crystalline, as above; more vugular, fracture faces showing some recrystallization; little interstitial chert and crystalline pyrite.
- 11 As above; no chert.
- 10 As above; trace of chalky chert on fracture surfaces.
- 9 Dolomite, medium-crystalline, very dense, gray-brown; less fracturing than above.
- 8 As above.
- 7 Dolomite, crystalline, as above; more vugular, with dolomoldic chert.
- 6 Dolomite, medium-crystalline; intervugular dolomite dense; many vugs lined with coarser dolomite, with some fine joint connections between vugs.
- 5 Dolomite, as above, less vugular; fracture surfaces show some recrystallization, with chalky chert and crystalline pyrite.
- 4 Dolomite, gray-brown, medium-crystalline, very dense.
- 3 Dolomite, crystalline, as above, more vugular, with some dead oil staining.
- 2 Dolomite, as above, very vugular, with coarse dolomite crystals lining vugs and connecting joints.

- 3598 $\frac{1}{2}$ -3603 Dolomite, cream to tan, dense, medium-crystalline; chert, translucent, white, with rare oolites.
- 3603-09 Dolomite, as above; some small structureless oolites in translucent chert.
- 3609-14 Dolomite, cream, fine-crystalline; very small residue of pyrite, trace of chert and very fine silt.
- 3614 = 3623 (S. L. M.) Dolomite, almost white, finely crystalline; chert, translucent, blue-white and chalky-white.
- 3623-28 $\frac{1}{2}$ Dolomite, cream, finely crystalline; chert, brown, translucent to white, finely dolomoldic.
- 3628 $\frac{1}{2}$ -34 $\frac{1}{2}$ Dolomite, tan, finely crystalline; chert, brown, translucent to finely dolomoldic.
- 3634 $\frac{1}{2}$ -40 Dolomite, cream, fine-medium crystalline; chert, white, finely dolomoldic.
- 3640-45 Dolomite, brown, fine-medium crystalline.
- 3645-51 Dolomite, cream and brown, finely crystalline.
- 3651-57 Dolomite, gray, finely crystalline, some slightly argillaceous, very finely silty, banded.

- 3657-63 Dolomite, gray-brown, fine-medium crystalline.
 3663-68 Dolomite, brown, medium-crystalline, almost sucrose; residue dark shale; rare fine silt.
 3668-74 Dolomite, slightly finer, gray-brown; residue dark shale and chalky-white chert.
 3674-79 Dolomite, light creamy-gray, medium-crystalline; much chert, chalky-white, rare dolomolds; green, porous shale.
 3679-86 Dolomite, pale creamy-gray to tan; residue fine, lacy dolomolds, gray.
 3686-91 Dolomite and green shale; occasional sand grains.
 3691-98 Dolomite, pale creamy-gray, medium-coarse crystalline; chert, chalky dolomoldic; green shale; more rounded and frosted sand.
 3698-3705 Dolomite, cream, very finely crystalline; residue of poorly sorted, rounded and frosted to angular sand.
 3705 = 3715 (S.L.M.)
 3715-22 Dolomite, finely crystalline, cream to pale gray-green; residue sandy and very finely silty.
 3722-28 Dolomite, gray; translucent chert and white, chalky chert; much poorly sorted sand, rounded.
 3728-32 Dolomite, light-tan, medium-coarse crystalline; much chert, translucent gray to white, with some obscure oolites.
 3732-35 Dolomite, light-tan, medium-coarse crystalline; much chert, as above, but some more dense, white.
- "Rose Run"
 3735-42 Sandstone, friable, fine-medium grained, angular to rounded and frosted
 3742-82 Sandstone, very poorly sorted, fine to coarse, angular to subrounded, with some rounded and frosted grains.
 3782-85 Sandstone, as above; much chert, oolitic, quartzose to chalky.
 3785-87 Sandstone, as above, very slightly dolomitic.
 3787-88 Dolomite, light-gray, medium-crystalline, very sandy; little translucent chert.
 3788-90 Dolomite, light-gray, fine-grained, very sandy, with sand grains, as above.
 3790-92 Dolomite, light-gray, finely crystalline; residue poorly sorted sand and finely pyritic gray shale.
 3792-95 Dolomite, as above; residue pale-gray shale and fine quartz silt.
 3795-96 Dolomite, light-gray, very finely crystalline; residue rounded and frosted sand grains and some translucent white chert.
 3796-3801 Sandstone, medium-grained, white, rounded and frosted to angular, some secondarily enlarged, friable.
 3801-Total depth.

Well No. 135 (15). Endicott and Compton No. 1 Seales, section 8-Q-67, elevation 732 feet, Powell County. No samples available above 174 feet; reported no "Corniferous."

ORDOVICIAN

Richmond

- 174-85 Dolomite, fine-medium crystalline, slightly silty and argillaceous, gray; some dark fossil inclusions.
 185-213 Dolomite, more calcareous than above, greenish-gray, slightly argillaceous and silty; some fossiliferous and phosphatic.
 213-19 Limestone, gray, fossiliferous and phosphatic, with some interbedded dark calcareous shale.
 219-31 Limestone, as above, with some interbedded green argillaceous dolomite.
 231-85 Dolomite, silty, slightly argillaceous, greenish-gray.
 285-92 Limestone, argillaceous, fine-grained, gray-brown.
 292-312 Limestone, some fossiliferous, some dark and fine-grained, as above; trace of replacement chert. (Sunset-Oregonia)

Maysville

(Tate-Mt. Auburn)

- 312-32 Limestone, finely fossiliferous, gray-brown, interbedded with some more argillaceous limestone.
 332-45 Limestone, gray, dense, fine-grained, slightly fossiliferous and argillaceous; trace of replacement chert.

45-65	Limestone, some as above, some very finely phosphatic.
65-418	Limestone, gray-green, argillaceous, very slightly silty.
18-25	As above, with more silt.
<u>Fairmount)</u>	
25-47	Limestone, gray, coarsely fossiliferous, phosphatic; trace of shale and replacement chert.
47-507	Limestone, very fossiliferous, as above; trace of silt.
507-41	Limestone, fossiliferous, gray, with some interbedded silty shale.
<u>Garrard</u>	
641-60	Siltstone to fine sandstone, slightly calcareous, with some interbedded fissile shale, as above.
60-606	Siltstone, slightly calcareous, and very slightly argillaceous, gray.
<u>Cynthiana-Million</u>	
606-26	Limestone, gray, densely crystalline, argillaceous; some dark calcareous shale.
26-42	Limestone, more crystalline, fossiliferous, and phosphatic than above.
42-62	Limestone, gray, dense and fine-grained, fossiliferous; insoluble residue is very coarse grained shale.
62-724	Limestone, gray, crystalline, fossiliferous, slightly phosphatic, porous.
724-824	Limestone, crystalline, fossiliferous and phosphatic; some dark, calcareous, fossiliferous shale.
824-46	Limestone, as above, with trace of mottled chert.
<u>Lexington</u>	
846-92	Limestone, densely crystalline, light gray-tan, some very slightly argillaceous; trace of fossiliferous chert.
92-914	Limestone, some crystalline, some dense, some argillaceous, with trace of calcareous shale and replacement chert.
914-1000	Limestone, more fine-grained than above, dense, slightly fossiliferous, occasional <i>Ceratopsis</i> .
1000-20	Limestone, fine-grained, gray, slightly argillaceous, some very finely phosphatic.
20-55	Limestone, more crystalline than above, phosphatic, with interbedded calcareous shale; trace of replacement chert; trace of silt at 1040.
<u>Chazy-Black River</u>	
1055-75	Limestone, very fine grained, sublithographic, to gray-green, slightly argillaceous.
75-1115	Limestone, tan, very fine, some slightly dolomitic; trace of bentonite and tan chert.
1115-54	Limestone, very fine grained, tan; trace of chert.
54-1154	Limestone, slightly dolomitic, cream to tan, fine-grained.
1154-1200	Limestone, cream, fine-grained to subcrystalline.
1200-42	Limestone, tan, very slightly dolomitic, fine-grained, earthy.
42-1242	Limestone, very fine grained, cream to pale-gray.
1242-1300	Limestone, very slightly argillaceous, gray-tan, lithographic.
1300-85	Limestone, slightly dolomitic, very light tan, fine-grained.
85-1385	Limestone, white to tan to slightly gray, slightly argillaceous.
1385-1459	Limestone, very slightly dolomitic and argillaceous, leaving finely banded shale residue.
1459-1500	
1500-52	
52-1552	
1552-1691	
<u>(St. Peter)</u>	
1691-1707	Sandstone, slightly dolomitic, fine to medium, poorly sorted, subrounded to rounded.

Well No. 136 (743). South Central Petroleum Company No. 1 James Hall, section 8-P-
Powell County.

New Albany

- 0-39 Shale, black, coarse-grained, numerous spores.
39-59 Shale, black, finer than above, still numerous spores.
59-75 Shale, black, as above, with some interbedded grayish-green shale.
75-84 Shale, as above, in contact with and interbedded with very dark argillaceous dolomite, earthy.

(Duffin)

- 84-90 Dolomite, very argillaceous, almost black, with some interbedded shale. Lower contact marked with phosphate nodules.

DEVONIAN

Beechwood (Boyle)

- 90-97 Limestone, very dolomitic, light-gray; trace of contact material as above; trace of pale-gray chert.
97-102 Dolomite, pale yellowish-gray, medium-crystalline, dense; much (50%) chert, pale-gray, translucent and fossiliferous.
102-05 Dolomite, as above, some calcareous, same color; chert, as above.
105-10 Limestone, dolomitic, mainly brown; much fossiliferous chert.

(Debris from Lockport -- Bisher)

- 110-15 Dolomite, enclosing much sand, mainly fine-grained, with occasional medium, rounded and frosted grains.
115-20 Dolomite, sandy, as above, in contact with shale, green, with much pyrite.

SILURIAN

Clinton

- 120-30 Shale, green and dark-red; much glauconite; trace of silt.
130-35 Shale, very finely silty, grayish-green; trace of dolomite and glauconite.
135-41 Dolomite, yellow to white to greenish, crystalline, pyritic, some slightly argillaceous; much glauconite. (Oldham)
141-48 Shale, pale greenish-gray, fissile, fine-grained.
148-61 Dolomite, yellow to gray, medium-crystalline; some greenish-gray, argillaceous.
161-68 Limestone, as above, more shale.

Brassfield

- 168-82 Dolomite, gray, slightly silty and argillaceous; trace of silt; glauconite and oil stain.
182-96 Dolomite, gray, medium-crystalline, fossiliferous, slightly argillaceous, some very vugular and oil-stained.

ORDOVICIAN

Richmond

- 196-207 Shale, very slightly silty, fine-grained, grayish-green; trace of dolomite.
207-50 Dolomite, slightly argillaceous, silty, pyritic, greenish-gray, mottled; some phosphatic.
250-60 As above, with some green, fissile shale.
260-70 Dolomite, as above; some coarser fragments oil-stained.
270-84 Dolomite, greenish-gray, argillaceous, slightly silty.
284-91 Dolomite, argillaceous, grayish-green, slightly silty; trace of dark mottled limestone.
291-334 Dolomite, argillaceous, very silty, greenish-gray to slightly red.
334-47 Limestone, gray, argillaceous, phosphatic, fossiliferous.
347-60 Siltstone, argillaceous, calcareous, fine-grained, greenish-gray, phosphatic.

Maysville

(Tate-Mt. Auburn)

- 360-75 Limestone, some very fine grained, some argillaceous; some dark calcareous shale.

375-400	Limestone, very fine grained, dense, slightly fossiliferous, brown to grayish-brown, argillaceous.
400-12	Limestone, argillaceous, fine-grained, gray, fossiliferous; numerous ostracods.
412-55	Limestone, fine-grained, slightly fossiliferous and argillaceous, as above; interbedded with silty and calcareous, greenish-gray siltstone.
455-79	Limestone, silty, grayish-green, argillaceous, slightly fossiliferous; some interbedded gray, fossiliferous limestone.
<u>(Fairmount)</u>	
479-519	Limestone, very fossiliferous, phosphatic, gray, with some interbedded gray calcareous shale.
519-49	Limestone, as above; some interbedded finely silty shale.
549-59	Limestone, crystalline, very fossiliferous, gray to yellow.
559-71	Limestone, gray, fossiliferous, crystalline, with interbedded slightly silty shale; some yellow, crystalline limestone.
571-77	Limestone, cream to yellow, crystalline, fossiliferous (biohermal), silty.
<u>Garrard</u>	
577-601	Siltstone, slightly calcareous, very slightly argillaceous, coarse-grained, gray.
601-19	Siltstone, as above, more argillaceous; some interbedded fossiliferous, gray limestone.
619-31	Limestone, gray, fossiliferous, phosphatic, including some yellow calcite crystals; much siltstone, as above, but finer grained.
632-45	Limestone, gray, fossiliferous, slightly argillaceous; some interbedded silt.
645-67	Limestone, argillaceous, fossiliferous, finely phosphatic, gray; still some interbedded silt.
<u>Cynthiana-Million</u>	
667-91	Limestone, argillaceous, gray, fossiliferous, finely phosphatic.
691-711	Limestone, slightly argillaceous, dark-gray, fossiliferous.
711-88	Limestone, coarsely crystalline, very fossiliferous and phosphatic; little interbedded shale.
788-809	Limestone, as above, slightly more argillaceous.
809-21	Shale, calcareous, dark-gray, with little interbedded limestone.
821-83	Limestone, gray, fossiliferous, slightly phosphatic, coarse-crystalline; little interbedded shale.
883-903	Shale, calcareous, dark-gray; little interbedded limestone.
<u>Lexington</u>	
903-16	Limestone, light-tan, biohermal; occasional dolomite in vugs; trace of translucent gray chert.
916-22	Limestone, gray, fossiliferous, phosphatic; little shale.
922-35	Limestone, gray to brown, crystalline, fossiliferous; little interbedded calcareous shale.
935-95	Limestone, grayish-brown, sublithographic, very slightly argillaceous; ostracods.
995-1027	Limestone, as above, but more argillaceous, slightly fossiliferous.
1027-60	Limestone, more gray and argillaceous than above, fossiliferous; numerous bryozoans and brachiopods.
1060-92	Limestone, gray, very fossiliferous, phosphatic; little shale.
1092-1106	Limestone, gray, very fossiliferous and phosphatic; trace of gray chert.
<u>Chazy-Black River</u>	
1106-27	Limestone, cream, lithographic; trace slightly greenish, argillaceous.
1127-41	Limestone, tan, lithographic; some bentonite; trace of white to brown translucent chert.
1141-55	Limestone, very slightly dolomitic, light-tan, fine-grained.
1155-63	Limestone, brown, lithographic, some argillaceous, greenish-brown.
1163-82	Limestone, light-brown, very fine grained.
1182-1200	Limestone, brown, lithographic, little finely dolomitic.
1200-20	Limestone, light-tan, very fine, lithographic.
1220-30	Limestone, as above, with much fine- to medium-crystalline, granular dolomite, brown.

- 1230-38 Limestone, fine, lithographic, brown.
 1238-75 Limestone, brown, lithographic, some grayish-brown, argillaceous; trace of finely dolomitic and argillaceous, greenish-brown limestone.
 1275-83 Limestone, fine-grained, brown.
 1283-1353 Limestone, tan, lithographic; some interbedded granular, brown dolomite.
 1353-95 Limestone, light-brown, lithographic.
 1395-1420 Limestone, as above; some slightly argillaceous to subcrystalline.
 1420-93 Limestone, lithographic, tan, with some very light cream.
 1493-1511 Limestone, lithographic, some slightly argillaceous.
 1511-48 Limestone, slightly dolomitic, tan, granular.
 1548-75 Limestone, brown, lithographic; rare dolomite.
 1575-1641 Limestone, brown, lithographic; little slightly argillaceous limestone.
 1641-59 Limestone, very finely dolomitic, brown, detrital, earthy.
 1659-87 Limestone, lithographic, brown, some finely argillaceous, darker.
 1687-99 Limestone, as above; some detrital dolomite, earthy, brown.
 1699-1717 Limestone, lithographic, brown; some very dark gray, argillaceous.
 1717-42 Limestone, dolomitic, detrital, fine-grained, slightly argillaceous, greenish-gray.
 1742-48 Dolomite, fine-grained, detrital, including a little very fine silt; some argillaceous.
 1748-65 Dolomite, calcareous, detrital, argillaceous, earthy; laminated with dark clay.
 (St. Peter)
 1765-77 Sandstone, dolomite-cemented, poorly sorted to coarse-grained, rounded and frosted.
 1777-83 Sandstone, friable, poorly sorted to coarse-grained, rounded and frosted.

CAMBRIAN

Eminence

1783-1801

- Dolomite, very finely crystalline, pale-gray, with some very finely disseminated pyrite; some dense white chert.
 1801-12 Dolomite, as above, with no chert; trace of very fine quartz silt enclosed.
 1812-19 Dolomite, as above; trace of dense white chert, with occasional small oolites.
 1819-34 Dolomite, finely crystalline, pale-gray, as above, with finely disseminated pyrite; dense, white chert; fine silt, enclosed in dolomite.
 1834-47 Dolomite, finely crystalline, silty, as above, enclosing coarse, rounded and frosted sand grains; trace of sandstone, poorly sorted, dolomite-cemented; trace of green pyritic shale.
 1847-54 Dolomite, cream, finely crystalline, dense; some medium-grained, sucrose; chert, dense, white.
 1854-67 Dolomite, as above, finely silty; no chert.
 1867-74 Dolomite, little as above; mainly medium-crystalline, white, sucrose and vugular; trace of pale-green pyritic shale.
 1874-80 Dolomite, as above; some gray, medium-crystalline, dense to very vugular; some enclosed sand and silt; much pyrite; trace of chalky-white, dolomoldic chert, thin-walled dolomolds.
 1880-93 Dolomite, pale-gray, medium to coarsely crystalline, porous to dense; chert, translucent, pale-gray to white, chalky; rare sand grains in pale-green clay.
 1893-1901 Dolomite, pale-gray, coarsely crystalline; trace of enclosed sand, green shale, and chert.
 1901-33 Dolomite, pale-gray, coarsely crystalline; trace of translucent gray chert.
 1933-60 Dolomite, as above; trace of pale-gray, quartzose to chalky-white chert.

Potosi

- 1960-66 Dolomite, medium-crystalline, pale-tan; more chert than above, dense to translucent, some slightly dolomoldic.
 1966-78 Dolomite, brown, fine- to medium-crystalline, some sucrose; much chert (25%), white, chalky, to brown, translucent; some pellet chert.
 1978-97 Dolomite, brown, medium-crystalline; rare drusy chert.
 1997-2010 Dolomite, as above; more chert (20%), dense to chalky, white to gray; numerous large rounded and frosted sand grains in dolomite.

- 2010-16 Dolomite, as above, some very fine grained, pale-gray; much chert, chalky, with quartz druse.
- 2016-32 Dolomite, medium-crystalline, tan; chert, as above.
- 2032-48 As above; much enclosed rounded and frosted sand.
- 2048-58 Dolomite, slightly grayish-tan, medium to coarsely crystalline; much chert (15%), translucent, quartzose to drusy, with some intermediate between oolites and granular druse typical of Potosi of Missouri.
- 2058-75 Dolomite, slightly grayish-tan, medium to coarsely crystalline; less sand and chert than above; trace of pale-green, very finely pyritic dolomite.
- 2075-92 Dolomite, pale-gray, medium to coarsely crystalline, enclosing some rounded and frosted sand grains; 15% chert, translucent, gray to chalky-white.
- 2092-97 Dolomite, tan, medium-crystalline, enclosing some sand, as above; chert, 20%, chalky, dolomoldic, some dense, translucent, some banded druse.
- 2097-2140 Dolomite, tan, medium-crystalline, enclosing some sand; chert, white, drusy, and some dolomoldic.
- 2140-52 Mainly chert, sub-oolitic to drusy, to quartzose, gray.
- 2152-85 Dolomite, tan, medium-crystalline; 30% chert, with chert oolites, some having sand centers, some radial structure, some free and coated with quartz crystals.
- 2185-2220 Dolomite, light-brown, crystalline, sucrose, with fine, interstitial chert; trace of silt.
- 2220-36 Dolomite, light-gray, finely crystalline, pyritic, sucrose; trace of greenish-gray argillaceous dolomite.
- 2236-75 Dolomite, fine- to medium-crystalline, tan to gray; trace of chert, dense to dolomoldic; trace of silt; pyrite.
- 2275-2306 Dolomite, brown, very slightly argillaceous to medium-crystalline, sucrose; some dense, white to gray, translucent chert.
- 2306-18 Dolomite, light-brown, finely crystalline, sucrose; trace of chert and silt; pyrite.
- 2318-28 Dolomite, white, fine- to medium-crystalline, sucrose; trace of silt and pyrite.
- 2328-42 Dolomite, as above; trace of chalky, interstitial chert and pyrite; trace of very fine glauconite.
- 2342-47 Dolomite, light-tan, finely crystalline, sucrose; trace of chalky-white chert.
- 2347-54 Dolomite, cream, finely crystalline, sucrose; trace of silt and pyrite.
- 2354-89 Dolomite, finely crystalline, as above, very slightly argillaceous, light-brown, enclosing rare silt, pyrite, and very fine glauconite.
- Elvins
- 2389-2412 Dolomite, brown, medium-crystalline, porous; trace of chert, with tiny oolites.
- 2412-38 Dolomite, brown, medium-crystalline, as above; trace of chert and very fine glauconite.
- 2438-50 Dolomite, cream, fine-medium crystalline, dense; trace of fine silt.
- 2450-56 Dolomite, as above; much chert (20%), quartzose, pale-gray and chalky-white, with rare dolomolds.
- 2456-92 Dolomite, finely crystalline, sucrose, light-tan; trace of quartzose chert, silt, and rare fine glauconite.
- 2492-2533 Dolomite, light-tan, fine-medium crystalline, sucrose; rare fragments slightly argillaceous.
- 2533-38 Dolomite, as above; trace of chert, white, dense, with tiny pellets.
- 2538-40 Shale, putty-colored to reddish.
- 2540-46 Dolomite, light grayish-tan, fine-medium crystalline, sucrose; trace of chert.
- 2546-67 Dolomite, as above; more chert, dense, white to chalky; some enclosed medium-grained sand, rounded and frosted.
- 2567-84 Sandstone, friable, white, poorly size sorted to medium-grained, angular to subrounded.
- 2584-2600 Sandstone, friable, better rounded and sorted than above.
- 2600-16 Sandstone, 75% quartz, better rounded and frosted and better sorted than above, medium-grained.

- 2616-32 Sandstone, 50% quartz, dolomite cement, finely crystalline, grayish-brown, some slightly argillaceous; trace of chert, coarsely oolitic.
- 2632-42 Sandstone, well size-sorted, medium-grained, rounded and frosted; little chert and dolomite.
- 2642-53 Dolomite, brown, fine-medium crystalline, sucrose; much sand, as above; trace of brown chert.
- 2653-82 Dolomite, gray, medium-crystalline; much sand, as above; some chert, gray, translucent to slightly oolitic, looks gradational from sand grains.
- 2682-2704 Dolomite, finely crystalline, sucrose, grayish-brown; much sand, as above; some gray, dense to drusy chert.
- 2704-28 Dolomite, fine-medium crystalline, pale-gray, sucrose; rare chert; much sand, as above.
- 2728-34 Dolomite, coarsely crystalline, pale yellowish-gray; some sand, as above; rare fine glauconite.
- 2734-39 Dolomite, finely crystalline to argillaceous, brown; sand, as above.
- 2739-44 Dolomite, some as above; sandstone, slightly dolomitic, poorly sorted to medium-grained; rare chert.
- 2744-68 Dolomite, cream, medium-crystalline, slightly sandy; trace of chert.
- 2768-76 Sandstone, dolomitic, poorly sorted to medium-grained, rounded and frosted.

Bonneterre

- 2776-84 Dolomite, brown, finely crystalline, dense; trace of brown chert, same color; still sand, as above.
- 2784-2807 Dolomite, brown, finely crystalline, some slightly argillaceous; trace of sand, as above.
- 2807-26 Dolomite, pale grayish-tan, finely crystalline, sucrose.
- 2826-2922 Dolomite, medium-crystalline, brown; trace of brown chert and rounded sand. Some chert is coarsely oolitic, with dark centers.
- 2922-41 Dolomite, slightly argillaceous, grayish-brown, finely crystalline.
- 2941-51 Dolomite, gray, some very slightly argillaceous; sand, as above.
- 2951-60 Dolomite, brown, finely crystalline, clean; rare oolitic chert and sand.
- 2960-79 Dolomite, brown, finely crystalline, clean; trace of sand.
- 2979-93 Dolomite, as above, tan to brown, mottled, dense.
- 2993-3005 Dolomite, as above; no chert; rare sand.
- 3005-46 Dolomite, pale-gray, finely crystalline, dense and vitreous; rare sand grains; rare fragments of dolomitic shale.
- 3046-3132 Dolomite, brown, vitreous, finely crystalline; trace of brown chert, with small irregular oolites with darker centers.
- 3132-52 Dolomite, pale-gray, fine-medium crystalline, vitreous; trace of chert, same color.
- 3152-3201 Dolomite, brown, finely crystalline, vitreous; trace of brown chert, with small, dark-centered oolites.
- 3201-08 Dolomite, as above; chert, less than above, brown, translucent to tan, dense; trace of brown shale.
- 3208-14 Dolomite, as above; chert, tan, dense, some cream and chalky.
- 3214-25 Dolomite, as above; chert, 15%, tan, dense, some with tiny pellets enclosed; occasional large oolites showing good concentric banding.
- 3225-33 Dolomite, very finely granular, light-tan, dense; chert, 15%, some same texture as dolomite, some translucent to quartzose, pale-gray.
- 3233-45 Dolomite, pale creamy-gray, fine-medium crystalline; rare chert; some crystalline quartz.
- 3245-51 Dolomite, brown, fine-medium crystalline, sucrose; quartz, as above.
- 3251-69 Dolomite, as above; encloses chert oolites, free of chert matrix, dark-gray, coated with fine-crystalline quartz.
- 3269-80 Dolomite, cream, medium-crystalline, sucrose; rare quartz druse.
- 3280-86 Dolomite, as above; chert, 2%, pale grayish-tan, some with banded druse.
- 3286-3301 Dolomite, brown, fine-medium crystalline, sucrose; chert, 2%, light-tan, dull, dense; rare rounded and frosted sand grains (from above?).
- 3301-17 Dolomite, very finely crystalline, grayish-tan; very small insoluble residue, mainly crystalline quartz.
- 3317-30 Dolomite, as above; trace of argillaceous dolomite, brown.
- 3330-61 Dolomite, brown, fine-medium crystalline; chert, brown, very oolitic, some quartzose.
- 3361-77 Dolomite, brown, as above; some cream, vugular; chert, 10%, tan, dense.

- 3377-92 Dolomite, very finely crystalline, sucrose, brown; some chert, as above, with trace of brown quartzose oolites.
- 3392-3520 Dolomite, fine-medium crystalline, brown; little tan, dense chert and slightly dolomitic shale.
- 3520-39 Dolomite, deep-brown, densely crystalline; chert, 5%, tan, with dark brown centered oolites.
- 3539-62 Dolomite, pale-gray, medium-crystalline; rare fragments of dolomitic shale.
- 3562-74 Dolomite, tan, fine-medium crystalline; trace of tan chert, with occasional oolites.
- 3574-97 Dolomite, pale-gray, medium-crystalline; rare dark shale.
- 3597-3725 Dolomite, brown, medium-crystalline, dense; rare shale and quartz fragments in insoluble residue.
- 3725-50 Dolomite, as above; trace of brown, quartzose and oolitic chert.
- 3750-3800 Dolomite, as above; trace of dark shale, some of it dolomitic.
- 3800-3984 Dolomite, calcareous, brown, crystalline; trace of siliceous oolites, white to quartzose, and slightly dolomitic brown shale.
- 3984-4040 Dolomite, calcareous, brown, fine-grained; rare dolomitic shale.
- 4040-66 Dolomite, calcareous, as above; more dolomitic, grayish-brown shale.
- 4066-75 Dolomite, calcareous, clear brown.
- 4075-4116 Dolomite, calcareous, brown, some argillaceous; some greenish-gray, waxy shale.
- 4116-35 Dolomite, slightly calcareous, medium-crystalline, clear brown; very little insoluble material.
- 4135-79 Limestone, very fine grained, brown, some interbedded brownish-green waxy shale.
- 4179-90 Limestone, as above; trace of coarse-grained silt, with glauconite.

Elbrook (? - near shore facies)

- 4190-4225 Shale, greenish-gray to red, very fine grained; some interbedded oolitic limestone, with large glauconite nodules.
- 4225-35 Shale, as above; some siltstone, glauconitic, coarse-grained, well-sorted.
- 4235-72 Shale, greenish-gray to dark-red, very fine grained; little interbedded fine-grained, dark-colored limestone; trace of fine glauconite.
- 4272-81 Shale, as above, with more glauconitic siltstone.
- 4281-98 Shale, mainly dark reddish-brown, some green, fine-grained; some interbedded calcareous and glauconitic silt.
- 4298-4317 Siltstone, fine-grained, glauconitic and micaceous, slightly calcareous; little shale, as above.
- 4317-4462 Shale, finely silty, micaceous, slightly calcareous, very dark greenish-gray and dark-red.
- 4462-4514 Shale, as above; some glauconitic limestone; more silt than above, very micaceous.
- 4514-81 Siltstone, slightly calcareous; much fine glauconite and mica; some shale, as above.
- 4581-4679 Siltstone, as above; more shale, dark-green to red.
- 4679-4709 Siltstone and shale, as above; some limestone, dark grayish-brown, fine-grained, with large glauconite nodules.
- 4709-5080 Shale, dark greenish-gray, fine-grained, with interbedded calcareous, coarse-grained, glauconitic and micaceous siltstone. Much pink feldspar in all of this section.
- 5080-88 As above; trace of rounded and frosted sand grains.
- 5088-93 Limestone, light-tan, crystalline, dense, enclosing very poorly sorted sand, rounded and frosted grains to coarse size; shale, as above.
- 5093-5138 Limestone, very fine grained, dense, brown to grayish-brown; trace of fine sand and coarse silt; shale, as above.
- 5138-48 Sandstone, calcareous, very poorly sorted to coarse, rounded and frosted grains.
- 5148-63 Sandstone, very poorly sorted to coarse-grained, angular to subrounded, very slightly calcareous.
- 5163-80 Sandstone, quartz-cemented, breaks through grains, white.
- 5180-85 Sandstone and coarse-grained silty, with calcareous cement.
- 5185-90 Limestone, dark brownish-gray, enclosing coarse silt to fine sand.
- 5190-95 Siltstone, to coarse silt, to fine-grained sand, with calcareous cement.
- 5195-5213 Limestone, slightly argillaceous, dark-brown, fine-grained, enclosing coarse silt grains.

5213-20	Sandstone, very poorly sorted, some calcareous cement.
5230-40	Limestone, slightly dolomitic, finely crystalline, enclosing fine pellets of darker limestone and occasional fine sand grains.
5240-44	Limestone, very dark brown, densely crystalline, enclosing some fine sand grains, 5%.
5244-57	Limestone, as above; more sand (as much as 50%).
5257-5316	Limestone, dark-brown, fine-grained, slightly argillaceous, enclosing some well-sorted, fine sand.
5316-5496	Shale, fine-grained, very dark green to gray; some limestone; some coarse-grained, glauconitic, calcareous, silt.
5496-5521	Siltstone, to fine-grained sand, slightly calcareous, with some shale, as above.
5521-26	Sandstone, poorly sorted to medium-grained, angular to subrounded, some quartz cement.
5526-39	Sandstone, as above, some quartz cement; logged slight show of gas at 5535-39, oil stain at 5496-5555, fluoresced under ultraviolet light.
5539-50	Sandstone, poorly sorted to medium-grained, less quartz cement.
5550-61	Sandstone, finer than above, some very fine and slightly argillaceous, very dark grayish-brown.
5561-5720	Siltstone, glauconitic, calcareous, with much dark-gray to black, fine-grained shale.
5720-69	As above, shale very dark green to gray.
5769-5872	Siltstone and shale; mainly shale, as above, dark-gray.
5872-5911	Siltstone, as above; rare rounded and frosted sand grains.
5911-18	Shale, black, fine-grained, noncalcareous.
5918-35	Sandstone, very coarse grained, rounded and frosted, quartz-cemented.
5935-40	Shale, black, fine-grained.
5940-51	Shale, black, as above; some slightly calcareous siltstone, coarse-grained.
5951-6003	Sandstone, poorly sorted to very coarse, rounded and frosted, quartz-cemented throughout most of the section.
6003-28	Shale, black, fine-grained; rare siltstone, as above.
6028-81	Shale, black, fine-grained, with interbedded very dense, fine-grained, dark brownish-gray, dolomitic limestone.

Well No. 137 (1256). Diamond, et al No. 1 A. J. Spall, Fishing Creek dome, NE corner section 24-H-58, elevation 670 feet, Pulaski County.

ORDOVICIAN

Richmond

202-14	Siltstone, light grayish-green, dolomitic.

Maysville

(Gilbert)

214-17	Limestone, dolomitic, fine-grained, tannish-gray, with a little pale-green glauconite.
217-29	Limestone, dense, fine-grained, gray, with occasional light-green glauconitic mottling.

(Tate)

229-32	Limestone, as above, but slightly silty.
232-87	Limestone, progressively more silty to 278, then less so.
287-90	Limestone, less silty and more argillaceous; little chert.

(Fairmount)

290-358	Limestone, gray, dull, slightly phosphatic, little chert; some argillaceous.
358-408	Limestone, less cherty, more fossiliferous.
408-11	Limestone, crystalline, with some gray, calcareous shale and a little very finely sandy limestone.

Garrard

411-17	Limestone, very finely sandy.

Well No. 138 (72). Fishing Creek Drilling Company No. 1 Babe Simpson, SE corner section 3-G-58, elevation 680 feet, Pulaski County. (Well was started 90 feet below the base of the New Albany shale at outcrop.)

ORDOVICIAN

Maysville

(Tate)

112-75 Siltstone, calcareous, argillaceous, gray to greenish-gray.

(Fairmount)

175-200 Limestone, gray, fossiliferous and slightly phosphatic, slightly argillaceous.

200-75 Limestone, less argillaceous than above, gray-brown, fossiliferous and phosphatic.

Garrard

275-85 Limestone, dolomitic, white, with yellow crystals enclosed; some fine sand.

285-305 Limestone, gray to yellow, crystalline, fossiliferous; little silt.

305-20 Limestone, more gray and phosphatic than above; some interbedded shale.

Cynthiana-Million

320-40 Limestone, crystalline, with much phosphate and streaks of argillaceous limestone.

340-60 Limestone, crystalline, fossiliferous, gray, some phosphatic; less shale.

360-480 (Composite sample) Limestone, gray-brown, crystalline, slightly phosphatic, with some gray, argillaceous limestone; some fracturing and mineralization.

480-505 Limestone, brownish-gray, fossiliferous, with much argillaceous limestone.

505-20 Shale, calcareous, gray, some fossiliferous.

Lexington

520-45 Limestone, very fine grained, brown, slightly argillaceous, to tan, crystalline; trace of chert; evidence of fracturing.

545-60 Limestone, brown, dense to tightly crystalline.

560-70 Limestone, gray, very fine, with rare chert; logged gas.

570-80 Limestone, light-tan, crystalline, with much cream to tan, translucent chert.

580-600 Limestone, light-gray, crystalline and phosphatic, with occasional gray, argillaceous limestone fragments.

600-10 Limestone, very fine grained to crystalline, porous.

610-50 (Composite sample) Limestone, as above.

650-70 Limestone, tan, dense to coarsely crystalline; rare chert.

670-710 (Composite sample) Limestone, gray, and some argillaceous limestone, fossiliferous, with numerous ostracods.

710-40 Limestone, light-gray, crystalline; little white translucent chert.

Chazy-Black River

740-50 Limestone, lithographic, very light tan, with bentonite.

750-70 Limestone, slightly argillaceous, gray, dense (included bentonite).

770-820 (Composite sample) Limestone, brown, lithographic, with trace of brown chert and bentonite.

820-25 Limestone, very fine and slightly argillaceous.

825-50 Limestone, fine-grained, brown; trace of chert.

850-90 Limestone, brown, lithographic, with occasional fragments almost white.

890-920 Limestone, fine, brown, as above, with occasional fragments showing brown, finely crystalline dolomite.

920-45 Limestone, brown, lithographic.

945-1270 Limestone, fine-grained, brown, to lithographic; occasional fragments showing finely crystalline brown dolomite.

1270-80 Limestone, very fine, brown.

1280-1315 Limestone, slightly argillaceous, darker gray-brown.

Note: This well was apparently drilled to the top of the Knox, but no samples are available on the lower part. At 1465 feet the well filled with sulphur water, which probably was at the top of the Knox, and the well was drilled to an unknown depth below this. It has been included in this report because it is located on top of the "Fishing Creek dome."

Well No. 139 (71). Rabbitfoot, et al No. 1 C. G. Shoun, NE NW NE section 13-H-59, Pulaski County.

MISSISSIPPIAN

New Providence-Fort Payne

115-20	Limestone, gray; siltstone, slightly dolomitic; much blue-gray chert.
145-50	Limestone, silty, gray, very glauconitic.
150-54	Siltstone, gray, with a little coarsely crystalline, light-gray limestone.
154-60	Siltstone, gray, lighter than above; some gray, silty shale; little gray chert.
160-65	Siltstone, light-gray and glauconitic.
189-93	Siltstone, very dark gray, argillaceous.
193-300	Siltstone, as above, increasingly argillaceous with depth.
300-35	Shale, dark blue-gray, coarse-grained.

New Albany

335-53	Shale, black, carbonaceous, coarse-grained.

ORDOVICIAN

Richmond

377-81	Dolomite, finely crystalline, light grayish-green, some bright-green; rare green shale and glauconite.
381-413	Dolomite, pale-green and sucrose.
413-23	Dolomite, as above, with a little oil staining.
423-31	Dolomite, some light-green, argillaceous and sucrose, as above, some light-tan.
431-39	Dolomite, as above, and some more argillaceous; some dark-gray calcareous shale, with many ramose bryozoan fragments; some coarsely crystalline brown limestone.
439-58	Limestone, tan, as above; much pale-green and tan, fine-grained dolomite similar to that above the limestone.

Maysville

(Gilbert)

458-62	Limestone, dense, gray, to subcrystalline.
462-70	As above, with some tan, crystalline limestone and some gray, argillaceous.

(Tate)

470-88	Little limestone, as above; mainly green and tan, finely crystalline, and silty dolomite.
488-533	Dolomite, light-green, sucrose.
537-46	Dolomite, tight, very hard, fine-grained, greenish-gray.

(Fairmount)

546-64	Shale, dark-gray, calcareous, with some interbedded gray, crystalline and fossiliferous limestone.
564-70	Limestone, almost black, argillaceous.
570-85	Limestone, very dark gray, fossiliferous and very argillaceous.
585-99	Limestone, lighter gray than above and less argillaceous; some phosphate.
599-620	Limestone, some gray, argillaceous, some crystalline, very fossiliferous numerous ostracods.
620-29	Limestone, some very argillaceous, some crystalline, fossiliferous, with ostracods and brachiopods.
629-36	Limestone, gray, crystalline and phosphatic, fossiliferous.

Garrard

636-41	Limestone, very coarsely crystalline, white to light-gray, with occasional yellow crystals; fossiliferous.

- 641-45 Limestone, as above, with some dark-gray calcareous shale.
 645-55 Shale, dark-gray, calcareous, with some siltstone; fossiliferous limestone.
 655-59 Limestone, coarsely crystalline and hematitic, with some greenish, argillaceous limestone.
 659-64 Limestone, very coarsely crystalline, fossiliferous, with many bryozoans; much hematitic limestone.
 664-72 Limestone, very coarsely crystalline, with many bryozoans; no hematite; little dark-gray, silty limestone.
 681-85 Limestone, very dark gray and argillaceous; fossiliferous, the fossils broken, giving appearance of very coarse limestone.
 685-90 Limestone, as above, with some crystalline gray limestone, phosphatic, and with many Cyclora minuta.

Cynthiana-Million

- 690-724 Limestone, crystalline and argillaceous interbedded, much phosphate and fossiliferous material.
 724-819 Limestone, very coarsely crystalline, white to light-gray; much phosphate.
 819-32 Limestone, very dark gray, argillaceous.
 832-36 As above, with little more crystalline and phosphatic limestone.
 836-41 Limestone, very dark gray, argillaceous and fine-grained.
 841-75 Limestone, very coarsely crystalline, fossiliferous and phosphatic; thin, dark, calcareous shale streaks.
 875-86 Shale, calcareous, very dark gray, coarse-grained.
 886-97 As above, with some argillaceous, light-gray limestone, fine-grained.
 897-901 As above, with some coarsely crystalline, fossiliferous and phosphatic, with Cyclora minuta.
 901-36 Limestone, coarsely crystalline, fossiliferous and phosphatic, with occasional calcareous shale breaks.
 936-40 As above, with some light-brown, very dense and fine-grained limestone. (Contains contact with Lexington "Salvisa.")

Lexington

- 940-45 Limestone, very fine grained, dense, brown, with some dark-brown chert.
 945-50 Limestone, very dense, brown, as above, with some very dark brown chert.
 950-65 Limestone, very dark brown, not so fine as that above, and some of it argillaceous; much dark-brown chert, translucent.
 965-73 Limestone, light tan-gray, crystalline to argillaceous; little chert.
 973-77 Limestone, more crystalline than above, fossiliferous.
 977-1008 Limestone, brown, crystalline, with trace of brown dolomite, slightly fossiliferous.
 1008-25 Limestone, as above, with some more coarsely crystalline and with occasional ostracods.
 1025-47 Limestone, coarser and more gray than above, with some dark-gray, argillaceous, and a little phosphatic; few brachiopod fragments.
 1047-67 Limestone, brown to gray, coarsely crystalline.
 1067-1101 Limestone, very coarsely crystalline, white to gray, phosphatic, fossiliferous, and with streaks of calcareous shale.
 1101-11 Limestone, more fine-grained than above, gray, less phosphatic; fossiliferous, with streaks of calcareous shale.
 1111-24 Limestone, more coarsely crystalline, phosphatic, very fossiliferous, and with calcareous shale streaks.
 1124-34 Limestone, as above, with some chert, clear, translucent, white to gray, with black inclusions.

Chazy-Black River

- 1134-39 At contact of Lexington and Tyrone; much bentonite, with large biotite flakes.
 1139-44 Limestone, tan, lithographic; bentonite, and some brown chert.
 1144-79 Limestone, as above; some slightly bentonitic and greenish-brown.
 1179-91 Limestone, lithographic, tan, with occasional streaks of finely crystalline dolomite and rare fragments of cream chert.
 1191-1202 Limestone, as above, with more brown chert and few fragments of brownish bentonite.
 1202-07 Limestone, as above, some darker and slightly argillaceous; few fragments show solution marks and suggestions of oil stain.

- 1207-30 Limestone, tan, lithographic, with occasional fragments darker and slightly argillaceous.
 1230-72 As above, with traces of finely crystalline brown dolomite.
 1272-1304 As above, with both limestone and dolomite, pale greenish-brown.
 1304-46 Limestone, lithographic, tan, with occasional streaks of brown, finely crystalline dolomite.
 1346-77 Limestone, tan, lithographic, dense, with streaks of finely crystalline dolomite.
 1377-1475 Limestone, lithographic, with a little dolomite.
 1475-80 Limestone, white, lithographic, very fine and brittle.
 1480-94 Limestone, dark gray-brown, dense.
 1494-1566 Limestone, light-cream to brown, lithographic, with occasional streaks of finely crystalline brown dolomite.
 1566-1642 Limestone, tan to brown, with little dolomite.
 1642-92 Limestone, tan to dark-gray, fine-grained, dense, some slightly argillaceous.
 1692-1710 Limestone, brown, lithographic, with occasional calcite crystals.
 1710-41 Limestone, dolomitic, fine-grained, dense, gray-brown.
 1741-47 Some as above, with some white, lithographic limestone.
 1747-1810 Limestone, very dark gray, dense, hard, a little slightly argillaceous.
 1810-26 Limestone, dark-brown, lithographic, some darker and slightly argillaceous, some slightly dolomitic.
- (Wells Creek)
 1826-39 Some as above; contact with white, finely crystalline dolomite.
 1839-45 Dolomite, calcareous, very finely crystalline, light-gray.
 1845-64 Dolomite, as above, and much lithographic limestone.
 1864-70 Limestone, very light gray, lithographic; some finely crystalline dolomite.

CAMBRIAN

Knox

- 1870-74 Contact with dolomite, finely crystalline, light-gray, with much white, oolitic chert.
 1874-81 Dolomite, light-tan, medium-crystalline; much chert, as above.
 1881-88 Dolomite, light-gray and tan, more finely crystalline, less chert; rare green shale fragments.
 1888-95 Dolomite, as above, with some green shale.
 1895-1905 Dolomite, finely crystalline, white to light-gray; little white chert, less oolitic than above; rare shiny green shale.
 1905-11 Dolomite, finely crystalline; little chert; very little apparent porosity, and no evidence of oil stain.
 1911-16 Dolomite, finely crystalline, cream; no chert.
 1916-21 Dolomite, as above, with some greenish bentonitic shale, which is slightly calcareous and leached to a finely porous residue.
 1921-27 Dolomite, finely crystalline, light-tan; 30% translucent white chert and fine silt.
 1927-50 Dolomite, finely crystalline, light-tan; 20% chert, with very fine dolomolds.
 1950-62 Dolomite, coarsely crystalline, cream; little chert.
 1962-65 Dolomite, more finely crystalline, cream; little blue chert.
 1965-73 Dolomite, as above, with rare large, rounded and frosted sand grains, sometimes enclosed in chert, sometimes in dolomite; occasional chert oolites.
 1973-79 Dolomite, medium-crystalline, white, with a little translucent white chert
 1979-2000 Dolomite, very finely crystalline, light-tan; no chert.

Well No. 140 (208). Calstar Petroleum Company No. 1 Pennington, NW corner, section 6-K-64, completed 8-16-44, Rockcastle County. This well stopped about 50 feet above the "Pencil Cave."

MISSISSIPPIAN

Brodhead and New Providence

- 30-45 Sandstone, fine-grained, pale-green; some fine, sandy dolomite, with much glauconite.
 45-50 Sandstone, more silt size, with slightly less glauconite.

- 50-55 Missing.
 55-80 Shale, dark-gray, micaceous and silty; glauconite at 70.
 80-130 Sandstone, very fine grained, argillaceous; little glauconite. Reported show of oil from 110-20, but there is no indication of it or of porosity in the samples.
 130-60 Sandstone, very fine grained, argillaceous, light-gray, increasingly argillaceous, with depth.
 160-250 Shale, gray, slightly silty; percentage of silt varies considerably between beds.
 250-300 Shale, very dark gray, coarse-grained, with traces of dark reddish-brown clay.
 300-50 Shale, dark-gray, slightly silty.

New Albany (with Duffin at base)

- 350-445 Black shale, with pyrite and occasional streaks of green shale; streak of calcareous dark shale at 445.
 445-60 Shale, black, with some very dark dolomitic shale.
 460-61 Some black shale, as above; some dolomite, medium-grained, dark-gray to brown.
 463-68 Dolomite and black shale, as above; probably interbedded.
 468-73 Some dolomite, as above, some enclosing large sand grains; much green shale.

SILURIAN

Clinton

- 473-88 Green shale, with much pyrite; little black.
 488-505 Green shale, fine-grained and fissile.
 505-15 Green shale, very fine and fissile, as above; little dolomite.
 515-20 Green shale and dolomite, both glauconitic; much pyrite.
 520-40 Green shale; only traces of glauconitic dolomite.
 540-50 Green shale, some dolomitic; trace brown; considerable chert, light-gray, microspcked.
 550-60 Shale, gray-green, fine-grained.

Brassfield

- 560-79 Dolomite, yellow and white, coarsely crystalline; little shale.
 579-85 Dolomite, more gray-brown, medium-crystalline.
 585-90 Dolomite, more fine-grained, and some green, dolomitic shale.

ORDOVICIAN

Richmond

- 590-615 Shale, very dolomitic, greenish-brown to gray at base.
 615-35 Dolomite, medium-crystalline, gray, slightly argillaceous.
 635-40 Dolomite, plus some fossiliferous and very phosphatic gray limestone.
 640-50 Limestone, gray, fossiliferous, fine-grained and argillaceous.
 650-55 Dolomite, very argillaceous, gray-green.
 655-705 Dolomite, greenish-brown, some argillaceous, with some red, argillaceous limestone at 670-80, and traces of red at 690-705.
 705-10 Shale, dolomitic, dark-red to gray-green.
 710-20 Shale, plus some limestone, tan, fossiliferous, to darker gray, argillaceous.
 720-55 Shale, dolomitic and calcareous, greenish-gray.

Maysville

(Gilbert)

- 755-65 Limestone, argillaceous, dark gray-brown, some ostracods.

(Tate)

- 765-85 Some as above, some greenish and dolomitic.
 785-805 Limestone, very argillaceous and dolomitic, green to dark-red.
 805-10 Limestone, as above, but less red.
 810-30 Dolomite, silty, greenish-gray, limy.
 830-40 Some as above, interbedded with tan-gray limestone.
 840-50 Limestone, dolomitic, shaly, very dark gray.

(Fairmount)

- 850-90 Limestone, very argillaceous, dark-gray, phosphatic and fossiliferous.
890-945 Limestone, very fossiliferous and phosphatic; some calcareous shale breaks.

Garrard

- 945-50 Limestone, crystalline, fossiliferous, light-colored, with some dolomite and pyrite.
950-65 Limestone; much more dolomite, white to yellow; some porosity.
965-85 Siltstone, calcareous, some shale.
985-95 Limestone, fossiliferous, gray; some siltstone, as above. (Many bryozoan fragments.)

Cynthiana (top of Trenton)

- 995-1000 Limestone, fossiliferous, gray; occasional calcareous shale breaks.
1005-10 Limestone, slightly finer grained, brownish-gray, crystalline, with dark, shale streaks.
1010-25 Limestone, crystalline, fossiliferous, with some dark calcareous shale.
1025-30 Limestone, crystalline, fossiliferous, unusually rich in phosphate.
1030-35 Limestone, crystalline, fossiliferous, phosphatic, light-gray to brown.
1045-65 Limestone, crystalline, fossiliferous, gray; little calcareous shale.
1065-70 Limestone, coarsely crystalline, slightly dolomitic, very porous.
1070-80 Limestone, as above, with a little more gray and phosphatic.
1080-1125 Limestone, gray, fossiliferous and phosphatic, with some dark-gray, calcareous shale streaks.

Cannon

- 1125-90 Limestone, slightly finer, and more brown than gray; more argillaceous material; several small phosphatic gastropods at 1175-90.
1190-1215 Little limestone; mainly shale, some of it calcareous, with some crystalline, fossiliferous, light-tan limestone at 1210-15.
1215-20 Limestone and shale.
1220-50 Limestone, brown, coarsely fossiliferous and crystalline, with much phosphate; some argillaceous limestone.
1250-65 Limestone, brown, finely crystalline slightly fossiliferous and phosphatic considerable shale.
1265-85 Limestone, tan, finely crystalline.
1285-95 Limestone, brown, light and reddish to dark, fine-grained.
1295-1300 Limestone, light-gray and brown, fine-grained, sublithographic; trace of gray chert and green shale.
1300-95 Limestone, brown, fine-grained to finely crystalline, ostracods, more gray chert; occasional dark shale streak.
1395-1420 Limestone, lighter than above, more crystalline and fossiliferous, soft, with some weathered portions; little of it phosphatic.
1420-25 Limestone, fine to crystalline, gray-brown, fossiliferous, some of it phosphatic; trace of gray shale.
1425-30 Limestone, tan to gray, crystalline and fossiliferous, with some porosity, to slightly argillaceous; several small phosphatic gastropods.

Well No. 141 (1282). J. I. Darst, et al No. 1 Al Adams, SW SW NW section 3-J-61, elevation 1,058 feet (Paulin altimeter), Rockcastle County.

MISSISSIPPIAN

New Providence-Fort Payne

- 0-15 Siltstone, argillaceous, green, fine-grained; trace of red surface chert.
15-25 Siltstone, finely broken, green, slightly argillaceous; trace of brown, crinoidal limestone.
25-85 Shale, finely silty, slightly greenish-gray, enclosing crinoidal fragments, increasing with depth.
85-115 Shale, more silty than above, gray, less fossiliferous.
115-35 Shale, very slightly silty, as above; no crinoidal fragments.
135-260 Shale, almost black, fissile, some claylike.

New Albany

- 260-69 Shale, black, coarse-grained, carbonaceous.

- 269-332 (Composite sample) Taken at contact with underlying formation. Shale, as above; trace of coarse, rounded and frosted sand, pyrite-cemented; trace of very tightly crystalline, dark dolomite. (Sellersburg)

SILURIAN

Clinton

- 332-35 Shale, dolomitic, green; trace of finely crystalline dolomite, pyrite.
335-39 Dolomite, light-gray, fine-medium crystalline.

Brassfield

- 339-41 Dolomite, very argillaceous, fine, green.
341-43 Dolomite, argillaceous, as above; some medium-crystalline, gray, pyritic, with oil staining.
343-50 Dolomite, medium-coarse crystalline, gray, oily, pyritic; little argillaceous dolomite, as above.
350-60 Dolomite, cleaner than above; less oily and less crinoidal.
360-65 Dolomite, gray-tan, mottled, clean, medium-coarse crystalline.

ORDOVICIAN

Richmond

- 365-70 Dolomite, medium-crystalline, sand-textured, gray, with tiny inclusions of glauconite and silt.
370-75 Dolomite, texture as above, without glauconite.
375-82 Dolomite, green, very argillaceous, fine-grained.
382-95 Dolomite, very slightly green and argillaceous, medium-crystalline, tight; some pyrite.

Well No. 142 (295). J. I. Darst, et al No. 1 Robert Gentry, CNW NE section 21-J-61, elevation 1,015 feet (Paulin altimeter), Rockcastle County.

MISSISSIPPIAN

New Providence-Fort Payne

- 5-20 Limestone, very argillaceous, fine-grained, white to light-tan, very finely glauconitic.
20-45 Siltstone, gray-green, fine, dense, very finely glauconitic; some silt so siliceous as to be almost chert.
45-95 Shale, very finely silty, darker gray-green.
95-130 Shale, very slightly silty, more gray than green.
130-220 Shale, very dark gray, some fissile, some very slightly silty.
260 Shale, very dark, fissile.

New Albany

- Top unknown, as samples from 260-96 are missing.
296-300 Shale, black, coarse-grained, carbonaceous.
300-30 Shale, as above.
355-60 Contact of shale with dolomite, light-gray, densely crystalline; some pyrite. (Trace of Beechwood.)

SILURIAN

Clinton

- 360-65 Dolomite, green, argillaceous, with trace of very fine silt.

Brassfield

- 365-70 Dolomite, gray, medium-crystalline; trace green, argillaceous; oil stain.
370-85 Dolomite, gray, coarsely crystalline, crinoidal, some mottled with darker gray.

ORDOVICIAN

Richmond

- 385-95 Dolomite, gray, medium-crystalline, even-textured, very finely glauconitic.
395-420 Shale, slightly dolomitic, green.
420-25 Dolomite, argillaceous, gray, mottled.
425-40 Dolomite, greenish-gray, argillaceous.

- 440-45 Dolomite, cleaner than above, light-gray.
 460-500 Dolomite, less argillaceous than above, green.
 500-10 Limestone, fine-grained, brown, fossiliferous, some argillaceous.
 510-30 Limestone, more argillaceous, green, with trace of silt.

Maysville

(Gilbert)

- 530-35 Limestone, fine-grained, gray, dark, fossiliferous, with much dark shale.

- 535-55 Limestone, slightly argillaceous, dark gray-brown, fine-grained.

(Tate)

- 555-90 Limestone, silty, slightly dolomitic, greenish-gray.

- 590-635 Siltstone, calcareous, slightly argillaceous, greenish-gray.

(Fairmount)

- 635-60 Limestone, very dark gray to brown, mottled, argillaceous, fossiliferous.

- 660-75 Limestone, as above, very dark; many ostracods.

Well No. 143 (297). W. J. Flesher, et al No. 1 Coffey, section 15-K-63, Rockcastle County.

MISSISSIPPIAN

Borden

- 15-45 Siltstone, very fine, light-gray; rich in glauconite in upper 20 feet.

- 45-55 Siltstone, more argillaceous, some gray, some brown.

- 55-80 Clay, light-gray.

- 80-85 Shale, light-gray, soft, and finely micaceous.

- 85-90 Shale, gray, finely silty.

New Providence

- 90-120 Clay, and gray, silty shale.

- 120-25 Shale, gray, silty, trace red.

- 125-30 Shale, gray, calcareous, with a little free, brown calcite.

- 130-70 Shale, gray, silty.

- 170-210 Shale, greenish-gray, less silty.

- 210-50 Shale, clayey, gray-green.

- 250-55 Shale, a few fragments slightly calcareous, gray-green.

New Albany

- 255-65 Shale, black, with some small black spores and some pyrite; shale is coarse-grained.

- 265-70 Shale, black, coarse-grained, with rare red spores; trace of very dark dolomite and pyrite.

- 270-80 Shale, black, with some red spores and pyrite; some dark dolomite.

- 280-325 Shale, black, and some gray-green, pyritic shale; red spores.

- 325-35 Shale, less black; some gray-green, pyritic shale.

- 335-50 Shale, black, more carbonaceous than above.

- 350-53 Shale, black, as above, some green; rare rounded and frosted sand grains embedded in pyrite.

- 353-66 Shale, black and green, pyritic.

SILURIAN

Clinton

- 366-83 Shale, green, few fragments slightly dolomitic; little glauconite.

- 383-87 Shale, some brighter green and more fissile than above; glauconite.

- 387-400 Shale, green, fissile, and fine-grained.

- 400-05 Shale, some green, as above, some reddish-brown, fissile, some clay-like; trace of red-brown dolomite.

- 405-10 Shale, green, fissile, with traces of dolomite and pyrite cubes.

- 410-15 Shale, some bright-green, very soft and fissile; some dolomitic and glauconitic.

- 415-20 Shale, green, as above; more dolomite, glauconitic, some of it very clean and densely crystalline. (Oldham)

- 420-25 Shale, pale gray-green, fissile; trace of red shale.

- 425-29 Shale, with some argillaceous dolomite; much glauconite.

Brassfield

- 429-32 Some shale, as above; more dolomite, very rich in glauconite, highly colored, cream, yellow and green, densely crystalline.
432-43 Dolomite, very argillaceous, green.
443-47 Dolomite, some clean, cream, very coarsely crystalline, some yellow; some medium-crystalline, argillaceous; some fissile shale; pyrite.
447-51 Shale, gray-green, with some argillaceous dolomite.
451-62 Shale, green; mainly coarsely crystalline, white to yellow dolomite.
462-67 Dolomite, coarsely crystalline, white to gray; some crinoidal; little glauconite.
467-69 Dolomite, coarsely crystalline, some of it quite porous and stained with dead oil.
469-76 Dolomite, coarsely crystalline, gray-brown, some porosity and dead oil; much glauconite.

ORDOVICIAN

Richmond

- 476-80 Dolomite, medium-crystalline, almost sucrose, with little fine sand enclosed, light-gray.
480-85 Dolomite, as above; little pale-greenish and slightly argillaceous dolomite.
485-90 Dolomite, silty and argillaceous, green.
490-500 As above, with streak of cleaner dolomite.
500-40 Dolomite, greenish-gray, some with darker mottling; some argillaceous.
540-55 Dolomite, medium-grained, slightly greenish-gray; trace argillaceous.
555-65 Dolomite, some as above; some more calcareous and red.
565-90 Dolomite, more argillaceous and green.
590-600 Dolomite, calcareous and argillaceous, gray-green.
600-05 Dolomite, much more silty and argillaceous.
605-15 Limestone, argillaceous, very dark gray, fossiliferous.
615-30 Dolomite, calcareous, argillaceous, and silty.
630-35 Limestone, some silty, as above, some very argillaceous, dark-gray.

Maysville

(Gilbert)

- 635-45 Limestone, some argillaceous, some fossiliferous; dark-gray.
645-55 Limestone, fine-grained, gray-brown; little argillaceous.

(Tate)

- 655-72 Limestone, very siliceous, gray-brown, fine-grained.
672-78 Limestone, very silty, green-gray and red.
678-80 Siltstone, calcareous, gray and red.
680-85 Limestone, silty, green, and some red.
685-715 Limestone, gray, very silty.
715-25 Limestone, as above, slightly less silty.
725-30 Siltstone, calcareous, gray to gray-green.
730-35 Same as above; some limestone, dark-gray, argillaceous.

(Fairmount)

- 735-50 Limestone, some very argillaceous, fossiliferous, dark-gray.
750-80 Limestone, some very argillaceous, as above; some dark brown-gray, fine-grained, and fossiliferous.
780-85 Limestone, fine-grained, as above, interbedded with dark, argillaceous limestone; more fossiliferous than above, gives effect of being very coarse grained.
785-800 Limestone, gray, more fossiliferous and crystalline, little phosphate; some dark calcareous shale.
800-20 Limestone, white to light-gray, coarsely crystalline, partly dolomitic, very phosphatic and fossiliferous, with some porosity; trace of dark shale.
820-30 Limestone, fossiliferous, phosphatic, and crystalline; slightly dolomitic with a little argillaceous limestone.

Garrard

- 830-35 Limestone, dolomitic, white to yellow to pale-gray, crystalline; trace of silt and slightly calcareous shale; some porosity.

- 835-40 As above, with more silt and fine-grained sand.
 840-45 Siltstone, calcareous and slightly argillaceous, dense.
 845-50 Some siltstone, as above; some limestone, similar to that above the shale; partially dolomitic, white to yellow.
 850-60 Limestone, yellow and white, crystalline; mainly shale, dark-gray, calcareous.
 860-80 Limestone and siltstone, very fine grained, gray.

Cynthiana and Lexington

- 880-85 Limestone, crystalline, fossiliferous, phosphatic, with some dark-gray, argillaceous limestone.
 885-90 Limestone, gray, very fossiliferous, some phosphatic, very slightly dolomitic.
 890-905 Limestone, gray, very fossiliferous, phosphatic; trace of dark calcareous shale.
 905-45 Limestone, white to pale yellow-gray, porous, very slightly dolomitic.
 945-55 Limestone, very porous, clean, white, crystalline, phosphatic; very slightly dolomitic. (Biohermal limestone, similar in lithology to "Granville" of Clinton County.)
 955-1000 Limestone, slightly dolomitic, crystalline, phosphatic, white to light-gray, some porosity; trace of dark calcareous shale at partings.
 1000-05 Limestone, gray, crystalline, phosphatic; more calcareous shale than above.
 1005-10 Limestone, darker, brown-gray, more finely crystalline than above, with considerable dark, argillaceous and silty residue.
 1010-20 Limestone, gray, tightly crystalline, fossiliferous; little dark-gray calcareous shale.
 1020-40 Limestone, dark-gray, crystalline and fossiliferous, with a little darker, very argillaceous limestone.
 1040-60 Limestone, dark gray-brown, finer grained, more argillaceous.
 1060-65 Limestone, as above, with some a little more crystalline and fossiliferous.

Well No. 144 (6). Ashland Oil and Refining Company No. 1 J. Caudill section 19-U-74, elevation 837 feet, Rowan County.

MISSISSIPPIAN

Lower Mississippian

- 12-93 Siltstone, slightly argillaceous, gray, micaceous.
 93-244 Siltstone, increasingly argillaceous, gray.
 244-61 Siltstone, to very fine sand, light creamy-gray, with some interbedded silty shale.
 261-66 More shale, silty to fissile, gray.
 266-354 Sandstone, very fine grained, some silty; well-sorted, both as to size and minerals; rare silty shale interbedded. (Weir oil sand)
 354-66 Shale, gray to green-gray to maroon, fine-grained to slightly silty.
 366-80 Shale, fine-grained to fissile, gray-green.

New Albany (Sunbury)

- 380-94 Shale, black, carbonaceous.

(Berea-Bedford)

- 394-438 Siltstone, argillaceous, very fine grained, gray.

(Ohio shale as used in Ohio)

- 438-77 Shale, black, coarse-grained, carbonaceous.
 477-500 Shale, as above, with some dark, dense, quartzitic siltstone.
 500-14 Shale, black, coarse-grained; trace greenish-gray, with chalcopryrite.
 514-75 Shale, black, carbonaceous, with many amber-colored spores.
 575-655 Shale, very dark gray, coarse-grained; not so carbonaceous as above.
 655-89 Shale, black, with interbedded green, pyritic shale; occasional amber-colored spores.

SILURIAN

Lockport

- 689-705 Dolomite, very densely crystalline, brown, medium-coarse grained, dense to vugular.
705-23 Dolomite, medium-crystalline, dense to slightly vugular; rare very fine sand enclosed.
723-34 Dolomite, gray to light-brown, medium-crystalline, very vugular.
734-40 Dolomite, as above, with some darker brownish-gray, very slightly argillaceous.
740-66 Dolomite, light creamy-gray, very dense to coarsely crystalline, vugular; trace of very fine silt.
766-72 Dolomite, as above, with much finely disseminated pyrite.
772-98 Dolomite, gray-brown, fine-grained, argillaceous and very silty, some almost fine sand, 30-50%.

Clinton

- 798-818 Shale, gray-green and red, with trace of fine silt.
818-94 Shale, green and maroon, fissile to almost silty.
894-932 Shale, more green than maroon, much glauconite; trace of chert; much hematite.
932-36 Dolomite, cream, densely crystalline, crinoidal; some dense and gray dolomite; glauconitic.
936-56 Shale, maroon, fine-grained.
956-79 Dolomite, gray, crinoidal, dense, with little green shale; some dolomite yellow to gray, in base. (Oldham)
979-89 Shale, green, fissile; some oolitic hematite and fossil replacements.

Brassfield

- 989-1016 Dolomite, very dense, yellow-tan, medium-grained.
1016-37 Dolomite, light-gray, crystalline, some crinoidal; much glauconite and gray mottled and fossiliferous chert.

ORDOVICIAN

Richmond

- 1037-76 Shale, slightly dolomitic and very slightly silty, gray-green; trace of interbedded gray, fossiliferous limestone.
1076-91 Shale, as above, interbedded with limestone, gray, very fossiliferous and phosphatic.
1091-1103 Limestone, gray, very fossiliferous, phosphatic, interbedded with gray-green shale, as above.
1103-35 Limestone, gray, fine-grained, fossiliferous and phosphatic, with more shale than above.
1135-50 Limestone, very fossiliferous (many bryozoans), slightly phosphatic, with interbedded shale, calcareous.
1150-67 Limestone, as above (many *Zygospira*), with interbedded calcareous shale, gray-green.

Maysville

(Gilbert)

- 1167-81 Limestone, very dark, gray-brown, fine-grained and dense, slightly fossiliferous and slightly argillaceous.

(Tate)

- 1181-93 Limestone, slightly dolomitic and argillaceous, very fossiliferous, with little interbedded shale.
1193-1208 Limestone, gray, dense, crystalline, to argillaceous, very fossiliferous, with many bryozoans.
1208-41 Limestone, very argillaceous, gray, fine-grained, with many ostracods.
1241-72 Limestone, very argillaceous, gray, fine, with ostracods as above.
1272-1300 Limestone, argillaceous, green, finely granular, with some glauconite.

(Fairmount)

- 1300-38 Limestone, argillaceous, very fine grained, gray; some ostracods.
1338-89 Limestone, still fine-grained, but more fossiliferous and phosphatic, with interbedded calcareous shale and some fine silt.

Garrard

- 1389-97 Limestone, very argillaceous, slightly silty, dark-gray; interbedded with fossiliferous limestone, some with yellow calcite inclusions.
1397-1438 Limestone, fossiliferous, with bryozoans and brachiopods, and with much interbedded silty shale, gray-green.
1438-56 Shale, slightly calcareous and silty, dark-gray.
1456-90 Shale, very slightly calcareous, fissile to finely silty, dark-gray; trace of yellow calcite, coarsely crystalline, in base.

Cynthiana-Million

- 1490-1553 Limestone, very dark gray, slightly argillaceous, very fossiliferous and phosphatic.
1553-63 Shale, slightly calcareous, dark-gray.
1565-72 Limestone, fossiliferous and phosphatic, gray, with little shale.
1581-1600 Shale, calcareous, dark-gray, dense to fossiliferous, with little interbedded limestone.
1600-12 Limestone, gray, very fossiliferous, coarsely phosphatic, some argillaceous; trace of interbedded fissile shale.
1612-70 Limestone, more fine-grained than above, dense, gray; argillaceous, and increasingly so with depth.
1670-82 Shale, calcareous, dark-gray, with some interbedded fossiliferous limestone.
1682-92 Limestone, very fossiliferous and phosphatic, crystalline to argillaceous, dark-gray.
1692-1712 Limestone, very argillaceous, dense, dark-gray.
1712-1806 Limestone, dark-gray, fossiliferous and phosphatic, with interbedded calcareous shale; trace of replacement chert.

Lexington

- 1806-18 Limestone, slightly argillaceous, brown, dense to fossiliferous.
1818-77 Limestone, very dense, brown, crystalline, fossiliferous to slightly argillaceous.
1877-1964 Limestone, dense, brown, slightly argillaceous, with some interbedded brown limestone, slightly more crystalline.
1964-79 Limestone, gray, argillaceous, fossiliferous and very finely phosphatic; trace of gray, dense chert. (Hermitage)
1979-90 Limestone, as above, with trace of silt.
1990-96 Contact of coarsely crystalline, fossiliferous limestone, cream-gray, having trace of interbedded calcareous shale (Curdsville), with very fine, lithographic limestone and bentonite.

Chazy-Black River (Tyrone at top)

- 1996-2004 Limestone, tan, crystalline to lithographic.
2004-41 Limestone, fine, brown, lithographic, to mottled, gray, with included bentonite (interstitial to the limestone); trace of microspecked chert, brown.
2041-49 Limestone, lithographic, tan.
2049-62 Limestone, argillaceous, with included bentonite.
2062-2131 Limestone, very slightly dolomitic, fine-grained, brown.
2131-68 Limestone and dolomite, tan, finely crystalline; some apparent porosity.
2168-2212 Limestone, very fine grained, lithographic, brown, with trace of gray, very slightly argillaceous limestone.
2212-2304 Limestone, very slightly dolomitic, fine-grained, brown.
2304-2447 Limestone, fine-grained, brown, as above; rare fragments dolomitic or very slightly argillaceous.
2447-97 As above, but with more dolomite, finely crystalline, brown.
2497-2585 Limestone, very fine grained; rare fragments argillaceous, dark-brown.
2585-2646 Limestone, very finely dolomitic; trace argillaceous, gray-brown, some apparently clastic.
2646-54 Limestone, very fine, brown to gray-brown, lithographic, with some dark-green, argillaceous limestone.

(St. Peter)

- 2654-70 Sandstone, limestone-cemented (80% sand), fine to coarse, rounded and frosted.

CAMBRIAN

Knox

- 2670-2973 Dolomite, with much chert and rare silt.
 2973-3008 Dolomite, with chert and some sand in the chert.

"Rose Run"

- 3008-48 Sandstone, fine- to medium-grained, angular to subrounded; most of it quartz-cemented.

Total depth 3721, in Bonnetterre.

Well No. 145 (340). Frank Hinkle, et al No. 1 Boone Howard, SE NW SE section 9-T-71, completed 10-7-49, Rowan County.

SILURIAN

Clinton

- 45-60 Shale, green and some red, very fine grained.
 60-80 Shale, green, clayey, glauconitic.

Oldham and Brassfield

- 80-90 Dolomite, bright-yellow, densely crystalline.
 90-95 Dolomite, as above, with some red and green, slightly argillaceous dolomite.
 95-105 Dolomite, some gray, fossiliferous, mottled with pyrite, some slightly argillaceous, gray-green.
 105-115 Dolomite, yellow, crystalline, and gray-green, very densely crystalline.
 115-32 Dolomite, yellow to light-gray, medium-crystalline.

ORDOVICIAN

Richmond

- 132-50 Dolomite, gray-green, finely crystalline, slightly silty and argillaceous.
 150-200 Shale, dolomitic, gray-green, with trace of glauconite at 180, and some gray interbedded below 180.
 200-35 Shale, dolomitic, gray-green; shale content very coarse grained.
 235-55 Limestone, and some dolomite, gray-green, argillaceous; some fossiliferous and phosphatic limestone.

Maysville

- 255-65 Limestone, argillaceous, very dark gray, fine-grained.
 265-85 Limestone, more fossiliferous and phosphatic than above, gray.
 285-325 Limestone, brown to gray-brown, fine-grained, slightly argillaceous.
 325-35 Limestone, gray, very fossiliferous, some phosphatic, interbedded with dark calcareous shale.
 335-50 Limestone, slightly argillaceous, fine-grained, brown-gray.
 350-60 Limestone, as above, some more fossiliferous and phosphatic.
 360-75 Limestone, argillaceous, fine-grained, gray, slightly fossiliferous.
 375-90 Limestone, slightly argillaceous, gray-green; residual shale very coarse, almost silt-size.
 390-410 Limestone, gray, argillaceous, slightly fossiliferous; trace of glauconitic limestone.
 410-40 Limestone, dark gray-brown, very argillaceous, slightly fossiliferous.
 440-50 Limestone, as above, with some slightly phosphatic and fossiliferous.
 450-65 Limestone, gray, fossiliferous, phosphatic and silty, very fine grained.
 465-80 Limestone, very fossiliferous and phosphatic, slightly silty, with trace of calcareous shale.

Garrard (Upper Eden)

- 480-520 Limestone, gray, crystalline, very fossiliferous and phosphatic, interbedded with calcareous and argillaceous siltstone.
 520-30 Limestone, as above, with some yellow and white, coarsely crystalline limestone.
 530-60 Limestone and siltstone, as above, gray.
 560-80 Limestone, silty, some fossiliferous, gray, argillaceous.
 580-85 Limestone, gray, fossiliferous, slightly phosphatic, interbedded with some calcareous and argillaceous siltstone.

- 585-610 Siltstone, very fine grained, argillaceous, calcareous, some gray and brown.
 610-30 Siltstone, coarser than above, argillaceous and calcareous, brown.

Million (Lower Eden)

- 630-70 Limestone, gray, phosphatic and fossiliferous, with trace of shale; trace of oily stain at 660, but no saturation indicated when fluoresced.
 670-75 Limestone, gray, finely phosphatic, fossiliferous, with some calcareous shale; residue flaky Million-type.
 675-80 Limestone, gray, more densely crystalline, less shale than above.
 680-710 Limestone, gray, dense, finely phosphatic, fossiliferous; trace of calcareous shale, with Million-type shale.
 710-25 Limestone, gray, argillaceous, fossiliferous, dark, and fine-grained.
 725-55 Limestone, very argillaceous, fine-grained, dark-gray; shale, coarse-grained.
 755-60 Limestone, as above, with some very fossiliferous and phosphatic, lighter gray.
 760-75 Limestone, very fossiliferous, gray, phosphatic, some interbedded shale as above.

Cynthiana

- 775-90 Limestone, fossiliferous, gray, many bryozoans, phosphatic; little interbedded calcareous shale.
 790-805 Limestone, very fossiliferous, fine-grained, finely phosphatic, gray to very slightly brownish-gray.
 805-15 Limestone, very fossiliferous, phosphatic; little interstitial shale.
 815-50 Limestone, lighter gray to slightly gray-brown, very fossiliferous, slightly phosphatic; interstitial shale.
 850-70 Limestone, gray, very fossiliferous, slightly phosphatic; trace of calcareous shale.
 870-80 Limestone, slightly argillaceous, densely crystalline, gray, fossiliferous.
 880-95 Limestone, densely crystalline, gray, finely phosphatic.
 895-905 Limestone, dense, slightly brownish-gray, fossiliferous; trace of replacement chert.

Lexington

- 905-25 Limestone, dense, gray-brown, some sublithographic, very dense, slightly argillaceous and fossiliferous.
 925-35 Limestone, fossiliferous, densely crystalline, gray-brown; trace of argillaceous limestone.
 935-40 Limestone, very densely crystalline, fossiliferous, gray-brown.
 940-85 Limestone, more brown, densely crystalline, fine-grained to sublithographic; occasional brachiopods.
 985-90 Limestone, very fine grained, brown, slightly fossiliferous (mainly brachiopods), occasional shale breaks.
 990-1000 Limestone, gray, argillaceous, fossiliferous, with trace of phosphate.
 1000-10 Limestone, gray, argillaceous, fine-grained, some slightly brown-gray, with numerous brachiopods.
 1010-40 Limestone, as above, interbedded with some more fossiliferous and very slightly phosphatic.

Well No. 146 (5). Smith and Cecil No. 1 John L. Lewis, Christie Creek, near Vale Post Office, NE corner section 21-U-74, elevation 876.75 feet, Rowan County. (Incomplete set of samples) "Pencil Cave" (top of Tyrone) recorded at 2145 feet.

ORDOVICIAN

Chazy-Black River

- 2525-35 Limestone, slightly dolomitic and dense, fine-grained, brown; trace of dark shale.
 2535-50 Limestone, fine-grained, brown.
 2550-60 Limestone, very fine grained, cream, with some very finely dolomitic and trace of green shale.
 2560-85 Limestone, very fine grained, cream to tan.
 2585-2600 Limestone, as above, with trace of finely crystalline dolomite.

- 2600-60 Limestone, tan, with stringers of finely crystalline dolomite.
 2660-85 Limestone, very fine grained, cream to light-brown; much bentonite (caving?).
 2685-2700 Limestone, lithographic, light-brown.

CAMBRIAN

Knox (Potosi?)

- 2700-09 Dolomite, white, densely crystalline, medium-grained; trace of white chert.
 2709-17 Dolomite, coarsely crystalline, white; trace of translucent chert and green shale.
 2717-29 Dolomite, coarsely crystalline, vugular porosity; trace of coarsely dolomitic chert, with rare obscure oolites and sand grains.
 2729-41 Dolomite, coarsely crystalline, cream, vugular; trace of chalky-white chert.
 2741-50 Dolomite, very coarsely crystalline, some faintly pink, crystalline; chert, with tiny obscure oolites and trace of druse.
 2750-62 Dolomite, cream, medium-crystalline; much translucent to dense chert.
 2762-72 Dolomite, light tan-gray, medium-crystalline, dense to vugular; chert, dense to chalky, and slightly dolomoldic.
 2772-78 Dolomite, coarsely crystalline, cream to slightly pink and green; rare rounded and frosted quartz grains.

Well No. 147 (4). Smith and Cecil No. 1 Withrow, on Christie Creek, six miles east of Morehead, section 11-U-74, elevation 1,024.24 feet, Rowan County. (Incomplete set of samples)

New Albany

- 895-903 Shale, black and gray-green, pyritic.
 903-27 Shale, black, pyritic, with very fine spores.
 927-35 Shale, black, as above; some gray-green, pyritic, with trace of pyritic dolomite.

SILURIAN

Lockport

- 935-40 Contact of shale with dolomite, dark, dense, brown, mainly very vugular, with much porosity.
 940-51 Dolomite, tan, more finely crystalline than above, slightly vugular.
 951-56 Dolomite, some finely sucrose; trace of oil stain.
 970-75 Dolomite, brown, with some dark-gray mottling, some porosity.
 975-92 Dolomite, brownish-gray, fine-medium crystalline; some dolomite, cream, medium-crystalline.
 992-1012 Dolomite, dark-gray, fine-medium crystalline, slightly argillaceous.
 1012-20 Dolomite, gray, fine-medium crystalline, interbedded with gray, very fissile and slightly sandy shale.
 1020-35 Dolomite, sandy, gray, fine-grained.

Clinton

- 1035-42 Shale, gray-green, some fissile and some slightly dolomitic.
 1065-70 Shale, green and very dark red, fine-grained.

ORDOVICIAN

- 1312-20 Limestone, very fossiliferous, gray, dense, occasional isolated dolomite rhombs; some slightly greenish-gray shale interbedded.
 1718-25 Limestone, very silty and slightly argillaceous, dark-gray (Garrard).

Chazy-Black River

- 2248-56 Limestone, bright-brown, very fine to finely crystalline (Tyrone); much pale-green bentonite.
 2334-56 Limestone, very fine to finely crystalline to slightly argillaceous, gray-brown.
 2356-66 Limestone, very fine grained, brown; trace of fine dolomite.
 2400-12 Dolomite, slightly calcareous, tan, fine-medium crystalline, sucrose.
 2418-26 Limestone, fine-grained, brown, sublithographic.

- 2497-2535 Limestone, very slightly dolomitic, light-brown, very fine grained.
 2576-85 Limestone, fine, lithographic, cream to tan.
 2605-15 Limestone, darker than above, very slightly argillaceous.
 2627-34 Limestone, light-tan, "bird's-eye."
 2648-75 Limestone, slightly argillaceous, darker gray-brown.
 2710-43 Limestone, slightly dolomitic, clear brown.
 2762-75 Limestone, argillaceous, dark greenish-brown.
 2775-80 Limestone, lithographic, light-brown.
 2780-2817 Limestone, very slightly argillaceous, smooth, brown to slightly gray-brown.
 2817-44 Limestone, cream, lithographic.

CAMBRIAN

Knox (Potosi?)

- 2844-48 Sharp contact of limestone with dolomite, cream, coarsely crystalline; much chert, very dense, with trace of druse.
 2848-59 Dolomite, cream to pale-gray; much chert, as above; trace of dolomitic chert.
 2859-65 Dolomite, more dense than above, medium-crystalline, pale-gray; trace of glauconite; chert, chalky to translucent to drusy.
 2871-76 Dolomite, as above; chert, with very small oolites in quartzose matrix.

Well No. 148 (106). O. P. Hamilton No. 2 Kermit Hughes, NE NW NW section 13-F-55, elevation 630 feet, completed 10-8-42, Russell County.

New Albany

- 1-35 Black shale, carbonaceous.
 35-40 Contact of black shale with Duffin, marked by pyritic sand; dark-gray, argillaceous limestone below contact.

ORDOVICIAN

Maysville

(Tate)

- 40-45 Limestone, gray, fine-grained, with isolated dolomite rhombs; glauconite.
 45-70 Limestone, more green than gray, some very silty; trace of chert.
 79-90 Limestone, greenish-gray, more silty than above.
 90-100 Limestone, very silty, but darker in color than above.

(Fairmount)

- 100-05 Limestone, some silty, as above; some dense, dark-gray, with fragments of fossils and traces of mottled white chert.
 105-40 Limestone, dark-gray, fossiliferous and phosphatic; some fragments dark and argillaceous; traces of gray chert.
 140-45 Less argillaceous than above; limestone, partially dolomitized, very dark gray in color. Logged gas and show of oil.
 145-60 As above, with some very dark, argillaceous limestone.
 160-67 Limestone, dark-gray, fine-grained, some dolomitic; many ostracods.
 167-73 Limestone, some as above; mainly more coarsely fossiliferous.
 173-76 Limestone, some light-gray, fossiliferous, and very finely mottled with phosphate, and some darker gray, very slightly silty. Gas.
 176-81 Limestone, gray, fossiliferous and phosphatic.
 181-85 Some limestone, as above; some calcareous, dark-gray shale.
 185-88 Limestone, fine-grained, dark-gray, with smooth ostracods.
 188-99 Limestone, same as above, some with more microfossils and coarsely crystalline.
 199-201 Limestone, light-gray, finely broken, crystalline and fossiliferous.
 201-08 Limestone, gray, crystalline and fossiliferous; some calcareous shale.
 208-18 Limestone, finer textured than above, and more brown than gray.
 218-23 Limestone, some crystalline, lighter gray, fossiliferous.

Garrard

- 223-27 As above, with fine silt.
 227-32 Limestone, very silty and argillaceous, with shale residue, light-gray and flaky.

- 232-40 Limestone, white and saffron-yellow, coarsely crystalline; residue is dark-greenish, porous, shaly material.
- 240-45 Same, plus some gray, shaly limestone.
- 245-50 Some yellow and white, crystalline lime, some more densely crystalline, gray.
- 250-59 Limestone, coarsely crystalline, containing considerable dark-red hematite.
- 259-63 Limestone, crystalline, white, with a little yellow and light-gray.
- 263-76 Limestone, crystalline, white and gray, phosphatic.
- 276-78 Limestone, as above, plus a trace of dark-gray, calcareous shale.
- 278-90 Limestone, coarsely crystalline, gray and white, fossiliferous, phosphatic.
- 290-323 Limestone, coarsely crystalline, cream to pink, and some red, porous.
- 323-46 Limestone, coarsely crystalline, gray and white, fossiliferous and phosphatic.

Well No. 149 (1276). Hamilton and Wilson No. 1 B. S. Hughes, Wolf Creek, Russell County.

MISSISSIPPIAN

New Albany

- 6-40 Shale, black, coarse-grained, carbonaceous.

DEVONIAN

Sellersburg

- 40-45 Shale contact with limestone, dolomitic, with rhombs separately embedded in the limestone matrix; much chert, brown and gray, mottled, translucent.
- 45-50 Limestone, slightly dolomitic, light-tan, finely crystalline, with a trace of glauconite; some chert, as above.

ORDOVICIAN

(Tate)

- 50-55 Limestone, much more dolomitic and granular than above, pale-green.
- 55-95 Dolomite, very silty, pale-green.
- 95-100 Dolomite, some silty, as above; mainly nonsilty, more gray dolomite.

(Fairmount)

- 100-15 Limestone, dolomitic, dark-gray; slightly fossiliferous, partially sili-cified fossils; little calcareous shale, very dark gray-brown.
- 115-75 As above, with less dolomite; some limestone phosphatic.
- 175-90 Limestone, more fossiliferous than above; less shale.
- 190-200 Limestone, gray, fossiliferous, with some dark, slightly calcareous and fossiliferous shale.
- 200-20 Limestone, gray, very fine grained; less shale.

Garrard

- 220-30 Limestone, lighter gray, more coarsely crystalline and fossiliferous.
- 230-53 Limestone, as above, with some that is slightly silty.
- 253-60 Limestone, cream to gray, crystalline, coarse-grained, fossiliferous.

Cynthiana-Million ("Granville" pay horizon of Clinton County)

- 260-65 Limestone, coarsely crystalline, some deep yellow color.
- 265-350 Limestone, light-gray, crystalline, phosphatic and fossiliferous; trace of calcareous shale.
- 350-77 Limestone, as above, with some dark-gray, calcareous shale; only a trace of limestone that is finer grained than above.
- 377-82 Limestone, gray, more dense than above; little calcareous shale.
- 382-420 Limestone, crystalline, gray, phosphatic; trace of calcareous shale.
- 420-40 Limestone, more fine-grained, gray, little more shale.
- 440-60 Limestone, very coarsely crystalline and fossiliferous, phosphatic.
- 460-80 Limestone, some as above; some very dark, calcareous shale, slightly silty.
- 480-85 Limestone, gray to white, very coarsely crystalline and phosphatic; little calcareous shale.

Lexington

485-90

Limestone, more brown than gray, slightly finer crystalline than above; some calcareous shale, and considerable gray, mottled and pyritiferous chert.

490-516

Limestone, brownish-gray, fine-crystalline; little calcareous shale, some phosphate.

516-40

Limestone, dense, sublithographic, brown, with little dark-brown chert at 525-30, and lower portion is very dark brown.

540-51

Limestone, cream, dense to crystalline; trace of light chert.

Well No. 150 (1277). Murphy and Buskirk No. 1 Theodore McFarland, section 12-E-52, Russell County.

ORDOVICIANMaysville

(Fairmount)

30-90

Limestone gray, densely crystalline, fossiliferous, some argillaceous.

90-100

Limestone, more coarsely crystalline, slightly phosphatic, fossiliferous streaks of gray, argillaceous limestone.

100-05

Limestone, as above, with some yellow mottling.

Garrard

105-20

Limestone, as above, with some gray, silty limestone.

120-25

Limestone, coarsely crystalline, yellow to gray, fossiliferous; less of the silty limestone.

125-30

Siltstone, dark-gray, argillaceous and calcareous.

130-40

Same, plus some yellow and gray, coarsely crystalline.

140-45

Limestone, coarsely crystalline, very fossiliferous, slightly phosphatic; some porosity.

145-50

As above, some slightly argillaceous and granular.

Cynthiana-Million

150-57

Limestone, as above; some dolomitic limestone.

157-200

Limestone, very coarsely crystalline, fossiliferous, with some yellow mottling, slightly phosphatic; trace of argillaceous limestone.

200-08

Slightly darker in color, more brown than gray; trace of siltstone.

208-13

Limestone, white to gray, coarsely crystalline, fossiliferous; slightly porous.

213-18

Little limestone, as above; mainly gray, finely silty, argillaceous limestone.

218-35

Limestone, coarsely crystalline, fossiliferous, slightly phosphatic; some porosity at 223-28.

235-40

Limestone, as above, some argillaceous; some crystalline quartz.

240-46

Limestone, darker gray, crystalline, fossiliferous, some slightly argillaceous.

246-78

Limestone, darker grayish-brown, more densely crystalline, very phosphatic.

278-84

Limestone, densely crystalline, dark grayish-brown, fossiliferous; little very calcareous shale.

284-304

Limestone, as above, some very coarsely crystalline, fossiliferous and phosphatic limestone.

304-40

Limestone, more densely crystalline, grayish-brown, fossiliferous.

340-65

Limestone, coarsely crystalline, fossiliferous, white to gray.

Lexington

365-95

Limestone, fine-grained, brownish-gray, some argillaceous.

395-425

Limestone, very finely crystalline, dense, clear brown; trace of translucent, brown chert at 400.

Well No. 151 (1275). Vawter and Diamond No. 22 Cosby Coffee, section E-52 (?), Russel County.

ORDOVICIAN

Maysville

(Fairmount)

- 35-40 Limestone, slightly dolomitic and argillaceous, fossiliferous, gray; little replacement chert.
40-99 Limestone, brown, fossiliferous, some argillaceous, very phosphatic; considerable replacement chert.
99-111 Limestone, gray, very fossiliferous and phosphatic; some dark, calcareous shale.

Garrard

- 111-23 Limestone, as above, some silty.
123-29 Some silty limestone, as above; some coarsely crystalline, white to yellowish-gray limestone.
129-41 Some yellowish-gray, crystalline limestone; some very sandy limestone.
141-59 Siltstone, calcareous, gray.
159-71 As above, but some is more argillaceous.

Cynthiana-Million

- 171-77 Some limestone, silty; some dense to crystalline, fossiliferous, dark-gray.
177-95 Limestone, dark, some argillaceous and phosphatic.
195-206 Limestone, silty and argillaceous, dark-gray.
206-12 Limestone, gray, fossiliferous and phosphatic, little argillaceous.
212-36 Limestone, very slightly dolomitic, lighter gray, crystalline; some argillaceous streaks.
236-42 Limestone, very slightly dolomitic, pinkish and coarse, porous; some argillaceous breaks.
242-64 Limestone, very coarsely fossiliferous, pink and white.
264-76 Limestone, gray, phosphatic, with dark shale breaks.
276-387 Limestone, dark grayish-brown, finer grained, some slightly argillaceous; more argillaceous below 335-50.

Lexington

- 387-400 Limestone, very fine grained, dark-brown, but slightly argillaceous.
400-09 Limestone, very fine grained, brown, slightly argillaceous, considerable brown chert.

Well No. 152 (1278). ? No. 2 Kermit Hughes, Wolf Creek, section 12-E-52, elevation 630.1 feet, Russell County.

New Albany

- 0-35 Shale, black, carbonaceous, coarse-grained, pyritic.
Lower contact marked by pyritic sand and dark, argillaceous limestone.

ORDOVICIAN

Maysville

(Tate)

- 35-70 Limestone, argillaceous, silty, grayish-green.
70-100 Siltstone, calcareous, argillaceous.

(Fairmount)

- 100-40 Limestone, gray, fossiliferous, phosphatic; trace of replacement chert and shale.
140-70 Limestone, dolomitic, dark-gray, oil-stained.
170-85 Limestone, light-gray, fossiliferous, phosphatic; some interbedded shale.
185-225 Limestone, crystalline, fossiliferous; some interbedded gray shale.

Cynthiana-Million-Garrard

- 225-32 Siltstone, calcareous, argillaceous, fine-grained.
232-50 Limestone, white and yellow, crystalline, coarse-grained; little gray shale.

- 250-65 Limestone, coarsely crystalline, fossiliferous, red and white.
 265-70 Limestone, coarsely crystalline, pale-gray and yellow.
 270-90 Limestone, coarsely crystalline, gray and white, fossiliferous, phosphatic; little shale.
 ("Granville")
 290-323 Limestone, coarsely crystalline, cream to pink, biohermal, porous.
 323-46 Limestone, gray and white, phosphatic, fossiliferous, coarsely crystalline.

Well No. 153 (117). Stoll Oil Refining Company No. 1 Whittaker, section 9-T-54, Shelby County.

ORDOVICIAN

Lexington

- 230-98 Limestone, gray to white, coarsely crystalline, fossiliferous and phosphatic, with trace of calcareous shale.
 298-313 Limestone, finer than above and darker, with much dark, calcareous shale.
 313-19 Limestone, crystalline, fossiliferous, dense to fractured, with trace of calcareous shale.
 319-38 Shale, calcareous, coarse-grained, gray.
 338-49 Limestone, crystalline, light-gray, very fossiliferous, phosphatic, with trace of gray, mottled chert.

Chazy-Black River

- 349-55 Limestone, lithographic, cream to tan.
 355-61 Limestone, as above, with some bentonite.
 361-70 Limestone, very fine, lithographic, tan.
 370-90 Limestone, slightly dolomitic, brown, and very fine.
 390-421 Limestone, very light cream to tan, lithographic.
 441-45 Dolomite, very finely crystalline, tan, slightly sucrose.
 445-53 Limestone, slightly dolomitic, very fine grained, brown.
 453-65 Dolomite, fine, sucrose, cream to brown.
 465-81 Limestone, finely dolomitic and slightly argillaceous, grayish-brown.
 481-533 Limestone, fine-grained, interbedded with finely crystalline dolomite.
 533-694 Limestone, very fine grained, light-tan, with traces of dolomite and slightly argillaceous limestone.
 732-41 Limestone, fine-grained, brown, interbedded with finely sucrose dolomite.
 741-840 Limestone, very dark grayish-brown, slightly argillaceous.
 840-50 Limestone, as above, with some very slightly dolomitic.
 (Wells Creek)
 850-75 Limestone, very dolomitic, to dolomite, fine-grained, grayish-tan.
 875-90 Dolomite, finely crystalline, light-tan.
 890-915 Limestone and much dolomite, as above, some of it detrital; some green shale.
 915-40 Dolomite, light-gray, medium-grained, with much green shale.

CAMBRIAN

Jefferson City

- 940-80 Dolomite, pale-gray, fine- to medium-crystalline, sucrose, enclosing rare, poorly sorted quartz grains; some green shale.
 980-1010 Dolomite, very fine grained, brown, some slightly argillaceous, enclosing rare sand grains; trace of dense, white chert and crystalline quartz.
 1010-30 Dolomite, as above; to 60% chert, white, dense, to rubby, some dolomitic, botryoidal, with rare sand grains enclosed.
 1030-40 Dolomite, very fine grained, slightly argillaceous; trace of quartz and sandy chert.
 1040-60 Dolomite, as above; chert, gray-tan, with much fine silt.
 1060-70 Mainly chert, finely porous to dense, tan.
 1070-1100 Dolomite, very finely crystalline, gray; trace of gray-tan chert, silt to sand, and green shale.
 1100-20 Dolomite, very coarsely crystalline; much chert, gray, with obscure oolites, and some green shale.

- 1120-30 Dolomite, coarsely crystalline, pale-gray, with rare irregular masses of chalky-white chert.
- 1163-85 Dolomite, coarsely crystalline, cream; trace of oolitic chert and greenish shale.
- 1185-94 Dolomite, coarsely crystalline, as above; no chert.
- 1194-1202 Sandstone, slightly dolomitic and cherty, medium to very coarse grains.
- 1202-20 Dolomite, dense, white to coarsely crystalline; chert, 50%, dense, white to gray.
- 1220-45 Dolomite, cream, dense to coarsely crystalline; chert, in irregular oolites, and some sandy chert.
- 1245-58 Dolomite, creamy-gray, coarsely crystalline; rare fine sand.
- 1258-75 Dolomite, as above; chert, 5%, white, dense, to chalky, granular, some finely disseminated.
- 1275-85 Much chert, white to translucent to drusy, with irregular oolitic masses.
- 1285-1325 Dolomite, pale-gray, coarsely crystalline; rare chert.

Roubidoux

- 1325-64 Dolomite, white to cream, coarsely crystalline; chert, white to pale-gray (less than 5%), rare sandy.
- 1364-1432 Dolomite as above, interbedded with much chert, white to translucent, some sandy, some drusy; occasional irregular oolites.
- 1432-85 Dolomite, gray, crystalline; trace of chert, oolitic, with some druse and some sand enclosed.

Gasconade

- 1485-1501 Dolomite, white to cream, finely crystalline; trace of white chert; much pyrite.

Well No. 154 (139). Stoll Oil Refining Company No. 1 Nat Cochrane, section 20-S-49, Spencer County. (Incomplete set of samples. Logged show of gas at 260 feet, "Pencil Cave" at 665 feet.)

ORDOVICIAN

Chazy-Black River

(Wells Creek)

- 1175-85 Limestone, some finely dolomitic, brown; trace of fine silt and tan chert.
- 1185-1200 Limestone, dolomitic, as above; more silt, with rare coarse, rounded and frosted sand grains.
- 1200-20 Dolomite, gray, very fine grained, slightly argillaceous, leaves banded shale residue.
- 1220-40 Dolomite, argillaceous, grayish-green, encloses some fine sand.

CAMBRIAN

Jefferson City

- 1240-79 Dolomite, fine- to medium-crystalline, light-tan, with rare sand grains enclosed; trace of crystalline quartz.
- 1279-84 Dolomite, fine-grained, creamy-gray, with little poorly sorted, rounded and frosted quartz sand.
- 1284-94 Dolomite, fine- to medium-crystalline, sucrose, cream; rare sand.
- 1294-1301 Dolomite, brown, medium-crystalline, vugular; chert, 20%, very oolitic, white to brown; trace of pyrite.
- 1301-14 Dolomite, as above; trace of chert, some drusy; rare sand grains.
- 1314-30 Dolomite, very densely crystalline, fine-grained; trace of sand.
- 1330-35 Dolomite, very argillaceous, grayish-brown; some crystalline quartz.
- 1335-64 Dolomite, very finely crystalline, cream; rare sand and green shale.
- 1364-74 Dolomite, finely crystalline; trace of chert, white, quartzose, with trace of sand.
- 1374-90 Dolomite, as above; much chert (60%), quartzose to granular.
- 1390-1400 Dolomite, gray, finely crystalline; less chert than above, enclosing sand grains.
- 1400-18 Dolomite, finely crystalline, cream; some chert, dull-white, with some angular sand.

Well No. 155 (140). Stoll Oil Refining Company No. 1 Shelborne, section 16-S-50, Spencer County. (Incomplete set of samples. Logged gas at 230 and 330 feet, "Pencil Cave" -- top of Black River -- at 645 feet.)

ORDOVICIAN

Chazy-Black River

- 1160-80 Limestone, very fine grained, lithographic, brown; trace of black shale
1180-90 Limestone, slightly dolomitic, fine-grained, grayish-tan.

(Wells Creek)

- 1190-1200 Dolomite, slightly calcareous, finely crystalline, detrital; some fine, dark grayish-green shale.
1205-10 Limestone, very slightly argillaceous, fine-grained to subcrystalline.
1210-25 Dolomite, calcareous, fine-grained, grayish-brown; trace of green shale.
1225-30 Dolomite, fine-crystalline to vugular, grayish-tan; much green shale.
1230-57 Dolomite, argillaceous, greenish-gray, enclosing coarse sand grains.

CAMBRIAN

Jefferson City

- 1257-95 Dolomite, white to cream, finely crystalline; rare sand grains; trace of oolitic chert.
1295-1305 Dolomite, very finely argillaceous and silty, dark gray-brown.
1305-60 Dolomite, very finely crystalline to medium-grained; rare sand.
1360-70 Dolomite, very finely crystalline; chert, 10%, very finely porous, with rare sand grains enclosed.
1370-85 Dolomite, very finely crystalline; some pyrite and chert.
1385-1410 Dolomite, dense, finely crystalline; chert, 5%, very finely disseminated trace of sand.
1410-20 Dolomite, with 25% sand enclosed.
1420-35 Dolomite, very fine grained, cream; trace of translucent chert.
1435-50 Dolomite, finely silty; some crystalline quartz.
1450-60 Dolomite, fine-crystalline, cream; chert, 5%, dense to quartzose, very finely dolomoldic; rare irregularly shaped oolites.
1460-65 Dolomite, very finely argillaceous and silty, grayish-green.
1465-70 Dolomite, very finely crystalline, cream.
1470-1530 Dolomite, white, medium-crystalline to sucrose; chert, 20-60%, white, dense to quartzose, some druse; trace sandy.
1530-50 Dolomite, medium-crystalline, with some finely disseminated pyrite; little white chert.
1550-60 Dolomite, medium coarsely crystalline, slightly sandy, with some fine silt; trace of chalky-white chert.

Roubidoux

- 1560-80 Dolomite, with chert (70%), very sandy to dense; some pyrite.
1580-95 Dolomite, coarsely crystalline, gray; only trace of chert.
1595-1640 Dolomite, coarsely crystalline, light-gray; much chert (to 50%), translucent, white to pale-gray, some drusy and quartzose.
1640-50 Mainly chert, white to light-tan, dull to quartzose, very oolitic, with some oolites having hollow centers.
1650-65 Dolomite, medium-crystalline, cream; little sandy chert.
1665-1700 Dolomite, medium-crystalline, pale-gray; much chert, some oolitic, some sandy.

Well No. 156 (170). Ada Belle Oil Company No. 2A Hillman, section 25-D-18, elevation 397 feet, Trigg County.

CRETACEOUS

- 10-95 Chert gravel, rusty and very weathered and fossiliferous, dolomoldic at surface, tan-gray, dense to weathered nearer base.

DEVONO-MISSISSIPPIAN

New Albany

- 95-150 Shale, very black, coarse-grained, rich in large black spores.
150-65 Shale, as above, with some very fine, gray-brown quartzite.

165-80 Shale, black, trace, dense dark dolomite; pyrite, trace of pink limestone (Bainbridge type) in base.

Fault

185-210 Shale, dark-gray, siliceous, with much glauconite. (New Providence)
210-20 Shale, as above, with limestone, argillaceous, bright-brown, fine-grained. (Rockford)

220-300 Shale, black, coarse-grained, and some Devonian chert, worn, as in the Cretaceous above.

300-10 Shale, black, with trace of pink to red limestone (Bainbridge).

Fault

310-15 Limestone, gray-brown, fine, with some red (Bainbridge), and some dense, gray-tan chert.

315-32 Shale, black, coarse-grained, with many spores; limestone, densely crystalline, dark-brown.

332-80 Shale, very black, carbonaceous, fine-grained.

380-85 Shale, as above, with some red and brown limestone (Bainbridge).

385-90 Shale, black, with streak of very siliceous shale.

390-95 Shale contact with limestone, slightly dolomitic, cream to tan, finely crystalline; chert, slightly dolomoldic. (Jeffersonville-Grand Tower)

395-410 Limestone, fine-grained, brown, more dense than above; chert, as above.

410-20 Limestone, cream, dense to crystalline; chert, cream, dense to translucent; occasional rounded and frosted sand grains enclosed. (Dutch Creek)

420-30 Mainly chert, earthy, tan to quartzose, some almost quartz. (Clear Creek)

Fault

430-50 Shale, black, carbonaceous; some translucent chert, as above.

450-70 Shale, black, carbonaceous; some shows slickensides.

DEVONIAN

Jeffersonville

470-75 Limestone, fine, gray-brown, slightly dolomitic; much chert, 50%, gray-brown, dense to chalky, with some dolomoldic.

475-85 Limestone, gray-brown, densely crystalline to argillaceous; chert, translucent, gray-tan (see 405-10).

485-90 Limestone, finely crystalline, cream, slightly dolomitic; trace of rounded and frosted sand grains.

Clear Creek

495-500 Chert, calcareous, translucent, same color as limestone.

500-45 Limestone, fine, densely crystalline, tan; chert, brown to gray-brown, translucent; glauconite.

545-55 Limestone, white and yellow, crystalline, crinoidal; little chert.

555-90 Chert, slightly calcareous and dolomitic (70% chert), very tripolitic, gray-tan.

590-600 Chert, tripolitic, some slightly dolomitic, gray-tan.

600-725 Mainly chert, gray-tan, dense, quartzose, spiculose to dolomoldic.

725-30 Limestone, pale-gray, slightly dolomitic, finely crystalline, dense; chert, white, quartzose to pale-gray, fossiliferous.

730-912 Chert, tripolitic and dolomitic, increasingly dolomoldic with depth (chert 75%).

Fault

912-15 Limestone, red, crystalline (Bainbridge type).

915-1080 Chert, dolomitic, white, dense and dull.

1080-1185 Chert is fresher than above, some micromottled, some calcareous; little limestone, pale-gray, crystalline.

1185-90 Limestone, finely crystalline, white; trace of chert, as above, glauconitic.

- 1190-95 Chert, microspecked, slightly calcareous.
 1195-1245 Limestone, pale-gray, densely crystalline; little chert, same color as limestone, calcareous.

Grassy Knob-Bailey

- 1245-80 Chert, slightly calcareous, chalky to porous in residue.
 1280-1330 Limestone, fine-grained, slightly grayish-brown, dense; chert, 20%, translucent, gray-brown, microspecked, dense.
 1330-80 Chert, calcareous, increasingly darker in color with depth.

Fault

- 1380- Few fragments of Bainbridge-type limestone.
 1390-1494 Chert, calcareous, dark-brown, translucent to dense.

Fault, Bainbridge-type limestone fragments.

- 1510-20 Chert, very finely disseminated through limestone, argillaceous; dark gray-brown.

SILURIAN

Brownsport

- 1520-35 Limestone, crystalline, white to pale-gray, glauconitic.
 1535-45 As above, with some gray, translucent chert.
 1545-70 Limestone, light-tan, fine, densely crystalline; 60% chert, pale-gray, translucent.
 1570-1675 Limestone, with much very finely disseminated silica and clay.

Bainbridge

- 1675-1700 Limestone, pink, crystalline, and some dark-red, slightly argillaceous.
 1700-10 Shale, slightly calcareous, dark-red and dark-green, slightly siliceous.
 1710-35 Limestone, richly red, hematitic, slightly argillaceous.
 1735-85 Limestone, very fine, pale greenish-gray, with some enclosed red crystals.
 1785-1807 Limestone, fine-grained, pale-green to dark-red, slightly argillaceous.
 1840-65 Limestone, argillaceous, gray-green, slightly greasy in appearance.
 1885-90 Limestone, very finely crystalline, gray, with some green shale. (Bedding at an angle in the core)
 1910-19 Limestone, red, argillaceous, iron-rich, with much glauconite.

Brassfield

- 1919-33 Limestone, crystalline, gray, very glauconitic; traces of green shale.

ORDOVICIAN

Cynthiana-Eden

- 1933-35 Siltstone, fine, gray, slightly argillaceous.
 1935-41 Limestone, crystalline to dense, slightly fossiliferous and glauconitic.
 1941-50 Shale, silty, black, coarse-grained.
 1950-59 Limestone, very dark brown-gray, crystalline, mottled with phosphate; some shale.
 1988-91 Limestone, very coarsely crystalline, fossiliferous, richly phosphatic.
 1991-2007 Limestone, dark gray-brown, fine-grained to densely crystalline, ostracodal.
 2007-15 Limestone, very fossiliferous and phosphatic; some shale, calcareous.
 2029-35 Limestone, argillaceous, fine, dark brownish-gray, some very phosphatic.

Lexington (Hermitage?)

- 2050-60 Limestone, very argillaceous, dark-gray, fine-grained, barren.
 2075-80 Limestone, brown-gray, fine-crystalline, very dense.
 2098-2110 Limestone, very dark gray, fine-grained.
 2130-35 Limestone, very argillaceous, dark gray-brown.
 2140-47 Limestone, slightly argillaceous, very dark brown-gray.
 2147-56 Shale, calcareous, almost black.
 2170-75 Limestone, medium-crystalline, brown, dense.

- 2195-99 Limestone, very fine grained, tan; traces of fine dolomite; fragments of brachiopods.
- 2199-2205 Shale, slightly calcareous, very dark gray.
- 2222-27 Limestone, light-tan, very coarsely crystalline, fossiliferous; shale at 2227; much chalcOPYrite.
- 2227-34 Limestone, light-tan, coarsely crystalline, fossiliferous; occasional irregular black shale.
- Chazy-Black River
- 2234-38 Limestone, fine-grained, tan-gray, slightly dolomitic; stylolitic clay.
- 2238-48 Limestone, fine, gray-tan; facets of calcite; traces of stylolitic clay.
- 2248-58 Limestone, very fine, slightly dolomitic; traces of calcarenite, rounded pellets of limestone giving oolitic appearance.
- 2258-72 Limestone, very fine, tan, slightly dolomitic.
- 2272-82 As above, with trace of chert, almost black, mottled.
- 2282-92 Limestone, very fine, sublithographic, mottled with tan, crystalline dolomite.
- 2292-2306 Limestone, as above, with trace of chert, same color as limestone; trace of dark, stylolitic clay.
- 2306-11 Limestone, tan-gray, fine-grained, with inclusions of resinous calcite.
- 2311-16 Limestone, very fine, brown, including oolite-like pellets of limestone.
- 2316-40 Limestone, medium-crystalline to fine, tan, slightly fossiliferous.
- 2340-45 Limestone, brown, with some very fine dolomite; microveined with white calcite.
- 2345-90 Limestone, very fine grained, brown, microveined with calcite.
- 2390-2404 Limestone, slightly darker and argillaceous; fragments of brachiopods.
- 2404-10 Limestone, as above; chert, dark-gray, finely mottled.
- 2410-53 Limestone, brown, fine-grained to crystalline; microveined with resinous calcite; occasional ostracods.
- 2453-56 Chert, gray-tan, micromottled.
- 2456-65 Limestone, fragmental; lithographic limestone pebbles in crystalline matrix with resinous calcite.
- 2465-66 Chert, gray-tan, micromottled.
- 2466-80 Limestone, very fine, brown, fractures filled with resinous calcite and stylolitic clay.
- 2480-2502 Limestone, slightly argillaceous, dark gray-brown, occasional clay partings and calcite veins.
- 2502-53 Limestone, dark-brown, coarse-crystalline, dense, and some very fine grained, with irregular mottling of crystalline limestone.
- 2553-63 Limestone, enclosing pebbles of dolomite and chert.
- 2563-93 Limestone, brown, densely crystalline to very fine grained, with dark mottling; occasional calcite veins; rare oily stains.
- 2593-2602 Limestone, slightly argillaceous, dense, brown, with partings of fine, black clay.
- 2602-65 Limestone, fine-grained, brown, finely streaked with calcite stringers; occasional patches of brown, crystalline limestone; occasional ostracods.
- 2665-73 Limestone, as above, interbedded with very fine, argillaceous limestone.
- 2673-79 Graded contact with dolomite, very dark brown, finely crystalline and dense.
- 2679-94 Limestone, very smooth, brown, lithographic; rare dolomite veins.
- 2694-2719 Limestone, fine-grained, sublithographic, light-tan; occasional vugs partly filled with calcite.
- 2739-67 Limestone, fine-grained, light-brown, with microveins of calcite; numerous ostracods.
- 2767-2837 Limestone, very fine grained, dense, slightly argillaceous; occasional fine, black clay partings.
- 2837-50 Limestone, very fine grained, brown, with microveins of calcite.
- 2850-52 Limestone, dolomitic, very fine grained and earthy.
- 2852-2909 Limestone, slightly argillaceous, enclosing occasional pebbles.
- 2909-14 Limestone, dark-brown, fine-grained; fractures healed with brown calcite; trace of oily stain.
- 2914-40 Limestone, very dark gray, fine-grained, argillaceous; microveins.
- 2940-48 Limestone, very fine grained, brown, streaked irregularly with blue limestone.

- 2948-3037 Limestone, slightly dolomitic, argillaceous, irregularly mottled and microveined, rare veins filled with fluorite instead of calcite.
- 3037-80 Limestone and fine-grained dolomite, interbedded and irregularly mixed, brown, microveined.
- 3080-86 Dolomite, pale-gray, finely crystalline, clastic (Everton).
- 3086-88 Shale, calcareous, black.
- 3088-3102 Dolomite, pale-gray, finely crystalline, dense, studded with very fine to medium, rounded and frosted quartz sand.
- 3102-15 Dolomite, very dense, pale-gray, finely crystalline.
- 3115-25 Limestone, pale-gray, very fine grained, subcrystalline; trace of fine dolomite.
- 3125-32 Dolomite, pale-gray, very finely silty and argillaceous, very fine grained, almost green.
- 3132-37 Limestone, dolomitic, pale-gray, fine-grained.
- 3137-40 Sandstone, quartz-cemented, medium grains.
- 3140-44 Limestone, irregularly dolomitic, pale-gray.
- 3144-49 Dolomite, very fine, pale-gray; veins of calcite.
- 3149-53 Shale, calcareous, very dark, studded with fine sand.
- 3153-59 Dolomite, argillaceous, pale-green, very fine grained.
- 3159-62 Sandstone, very dolomitic (50% sand), medium-rounded grains.
- 3162-72 Dolomite, argillaceous, bentonitic.
- 3172-77 Shale, dark-green, very fine grained.
- 3177-80 Dolomite, very fine crystalline, slightly argillaceous, pale-gray.
- 3180-89 Sandstone, some quartz-cemented, some dolomitic; occasional fragments of dolomite enclosed in sand.
- 3189-3205 Dolomite, greenish-gray, dense, slightly sandy.
- 3205-10 Dolomite, very fine crystalline, pale-gray, dense.
- 3210-20 Sandstone, quartz-cemented, very slightly dolomitic, fine to medium, occasional dolomite pebbles.
- 3220-62 Dolomite, fine-crystalline and slightly argillaceous, pale greenish-gray, some washed with red.
- 3262-67 As above, including 50% sand, poorly sorted, fine to coarse, rounded and frosted.
- 3267-81 Dolomite, green and red mottled, pebbly.
- 3281-90 Sandstone, argillaceous, dense to fragmental, quartz-cemented.
- 3290-97 Dolomite, slightly green and red, argillaceous.
- 3297-3301 Shale, green and some red, smooth, fine-grained.
- 3301-24 Dolomite, very argillaceous, pale-green, impregnated with very finely crystalline pyrite, studded with sand grains.
- 3324-29 Pebbles of dolomite, as above, with much poorly sorted sand; some pink, crystalline dolomite.
- 3329-38 Dolomite, very fine crystalline, dense; veins of coarsely crystalline calcite.
- 3338-61 Dolomite, light-tan, fine-crystalline, some vugular.
- 3361-63 Shale, black, fine, some pebbly.
- 3363-72 Dolomite, pebbly, including some sand.
- 3372-78 Dolomite, fine-grained, slightly argillaceous, greenish-gray.
- 3378-96 Dolomite, cream, densely crystalline, fine-medium grained with pebbles of very fine, slightly sandy dolomite.
- 3396-3427 Dolomite, argillaceous, pebbly, including some sand.
- 3427-78 Dolomite, very irregularly shaped pebbles in brown, medium-crystalline matrix.
- 3478-96 Dolomite, very finely silty, with some microveins of dolomite.
- 3496-3502 Dolomite, more argillaceous than above; some brecciated.
- 3502-12 Dolomite, fine-medium crystalline, tan, densely fractured and recemented with crystalline dolomite.
- 3512-38 Dolomite, very coarsely clastic, gray, enclosing green, waxy shale, pyrite, and occasional pebbles of pink dolomite and of fine dolomite.
- 3538-68 Dolomite, finely crystalline, dense, with veinlets of dolomite, and some finely disseminated pyrite.
- 3568-84 Dolomite, fine-crystalline pebbles in medium-crystalline matrix, with interstitial shiny, green clay.
- 3584-3630 Dolomite, light-tan, medium-crystalline, microveined with coarse dolomite.
- 3630-56 Dolomite, medium-coarse crystalline, some vugular, some with veining of coarse dolomite.

Well No. 157 (158). ? No. 3 Lena Doyle, $3\frac{1}{2}$ miles north of Bowling Green, SW SE SE, section 9-G-37, elevation 501 feet (Paulin altimeter), Warren County.

SILURIAN

Brownsport

(Lobelville)

- 1028-34 Limestone, little crystalline; mostly dark-gray, siliceous and argillaceous, fossiliferous, with brownish crinoid stem fragments and fragments of brachiopods.
- 1034-40 Same, some of the crystalline lime has fragments of finely perforate, thin-shelled brachiopods; some chert, as partial fossil replacements.
- 1040-53 Limestone, crystalline, to grayish-green, argillaceous, leaving greenish porous shale residue; fossiliferous.
- 1053-59 Limestone, tan, crystalline, finely dolomitic, fossiliferous; rare fragments of blue-white chert.
- 1059-65 Limestone, dark-gray, very argillaceous.
- 1065-71 Dolomite, very light gray, finely crystalline, sucrose; some argillaceous material.
- 1071-76 Limestone, tannish-gray, fine-grained, dolomitic.
- 1076-87 Limestone, white to tan, coarsely crystalline, with considerable white chert.
- 1087-92 Limestone, tan-gray, dolomitic, some slightly argillaceous; little chert.
- 1092-98 Limestone, gray, crystalline, crinoidal; few fragments of brachiopods and bryozoans; some phosphate.
- 1098-1104 Limestone, dark-gray, silty, and fossiliferous.
- 1104-11 Limestone, tan, coarsely crystalline, very fossiliferous.
- 1111-17 Limestone, slightly argillaceous, dark-gray.
- 1117-24 Limestone, slightly argillaceous, very fossiliferous.
- 1124-30 Limestone, gray, some as above, and some crystalline; very fossiliferous. Ostracods of the Ionesella type.
- 1130-36 Limestone, tannish, slightly argillaceous; much tannish chert.
- 1136-42 As above, plus some dark-gray, argillaceous limestone.
- 1142-54 Limestone, dark-gray, silty and argillaceous; many brachiopods.
- 1154-60 Same, but residual shale is almost black.
- 1160-66 Same, but some of it is finely dolomitic.

(Bob)

- 1166-73 Same, plus limestone, tan, coarsely crystalline, with many brown oolites.
- 1173-78 Limestone, dolomitic, gray, fossiliferous (phosphatic).
- 1178-91 Limestone, light-gray or white, coarsely crystalline to finely dolomitic.

Beech River

- 1191-96 Limestone and green, calcareous shale.
- 1196-1215 Gray, silty limestone.

Dixon

- 1215-22 Gray-green siltstone, calcareous; some of residue is red.
- 1222-28 Gray-green, calcareous shale, with enclosed crinoid plates.
- 1228-58 Gray, argillaceous limestone (has appearance of fine dolomite); many crinoid plates enclosed.
- 1258-68 Gray, silty limestone (dolomite texture).
- 1268-73 Same (actually a little dolomitic), plus some white, coarsely crystalline, fossiliferous limestone.

Lego

- 1276-86 Limestone, very white, coarsely crystalline, with rare pink flecks.
- 1286-92 Limestone, light-gray or white, coarsely crystalline.
- 1292-95 Limestone, white, coarsely crystalline, with a little pale-greenish dolomite.

Waldron

- 1297-1303 Dolomite, rather finely crystalline, light-gray, with dark-gray shale break.
- 1303-09 Limestone, coarsely crystalline and fossiliferous; dolomite, light-gray, silty; dark-gray, smooth, fissile shale breaks.

- 1309-23 Dolomite, calcareous, crystals distinct, white to light-cream, and a little gray.
 1323-30 Dolomite, medium crystals, light-gray, with porosity (little chalcedonic quartz).
 1330-37 Same, with few fragments of dolomite molds in gypsum.
 1337-50 Same, but pale-green and not argillaceous.

Osgood

- 1350-57 Same, plus much dark-red, calcareous shale.
 1357-63 Mostly dark-red, slightly calcareous shale.
 1363-70 Red and green dolomitic shale.

Brassfield

- 1370-76 Same, plus a little coarse limestone with dark-mottled chert. (Chert is white, with irregular markings of dark color.)

ORDOVICIAN

Maysville

(Tate)

- 1376-82 Dolomite, gray, with distinct rhombs; few calcite fragments, and some chert, as above.
 1382-1400 Same, with some enclosed fine sand.
 1400-07 Same, but silt instead of sand.
 1407-14 Same kind of dolomite, but less silt; a little coarse limestone.
 1414-21 Dolomite, dark-gray, slightly argillaceous, with a few crinoid plates.
 1421-27 Dolomite, dark-gray, silty, calcareous, fossiliferous.

(Fairmount)

- 1427-34 Limestone, very argillaceous, dark-gray; little silty.
 1434-53 Same; little is dolomitic.
 1453-60 Same, plus some coarse limestone with phosphatic material.
 1460-66 Limestone, very coarsely crystalline, fossiliferous; little dark, argillaceous lime.
 1466-79 Limestone, as above; rare chert fragments.
 1479-85 Same, with phosphatic *Cyclora*.
 1485-1526 Same; shale residue is almost black.
 1526-57 Limestone is lighter in color; residue lighter.
 1557-72 Shale, calcareous, very dark gray.
 1572-84 Limestone, light, coarsely crystalline, phosphatic, interbedded with dark gray, argillaceous limestone.

Garrard

- 1584-90 Limestone, gray, argillaceous and silty, with a little very fine sand.
 1590-97 Gray, silty limestone.
 1597-1655 Very dark gray, silty limestone.

Cynthiana-Million

- 1655-61 Some as above, plus some very coarsely crystalline, fossiliferous, gray limestone.
 1661-73 Shale, very calcareous, dark-gray; occasional coarsely crystalline limestone fragments.
 1673-79 Limestone, coarsely crystalline, fossiliferous and phosphatic.
 1679-85 Limestone, silty, some fossiliferous and crystalline; some dark-gray, papery shale.
 1685-92 Limestone, crystalline and argillaceous, phosphatic and fossiliferous.
 1692-1711 Calcareous, dark-gray siltstone.
 1711-23 Fine sand in dark-gray limestone. Streaks of crystalline, fossiliferous limestone through siltstone.
 1723-29 Dark-gray, silty and argillaceous limestone.
 1729-35 More crystalline than siltstone.
 1735-73 Crystalline, tannish, fossiliferous limestone, streaked with dark-gray, argillaceous limestone; little replacement chert.
 1773-1800 Mainly very dark gray, argillaceous limestone or calcareous shale (very little silt).
 1800-05 Limestone, very crystalline, tannish and gray, fossiliferous; some argillaceous limestone; occasional chert fragment (secondary).

Lexington

- 1805-10 Some of limestone is dark to light-brown and almost lithographic in appearance.
- 1810-16 Limestone, some is fine-grained, Brannon-like, and with phosphate.
- 1816-23 Dense, brownish-gray, ostracod limestone.
- 1823-37 Same, with rare sand grains embedded in the dense limestone.
- 1837-44 Limestone, very coarsely crystalline, white to gray, many fossils; much phosphate; little argillaceous limestone.
- 1844-51 Limestone, very coarsely crystalline, white to light-gray, many fossils; even more phosphate, and less argillaceous material.
- 1851-58 Some of the limestone is darker brownish-gray and more finely crystalline.
- 1858-65 Limestone, dark brownish-gray, dense, fine-grained; occasional brachiopods and chert.
- 1865-71 Same, plus light-gray, coarsely crystalline, phosphatic limestone.
- 1871-90 Limestone, very dark brownish-gray, argillaceous; occasional secondary chert.
- 1890-1910 Limestone, some as above, and some very light gray, very fossiliferous, phosphatic, and crystalline.
- 1910-64 Very argillaceous, dark brown-gray, fine-grained, as above.

Chazy-Black River (Tyrone at top)

- 1964-93 Limestone, light-tan, lithographic (Tyrone type).
- 1993-2021 Same, with rare streaks of fine dolomite and tan chert.
- 2021-27 Same, with few fragments of what may be bentonite, but different in appearance than usual.
- 2027-33 Same, with a little cream to tan chert, which breaks with good conchoidal fracture.
- 2033-75 Occasional thin dolomite streaks in lithographic lime; little tan and white chert, some dolomoldic.
- 2075-83 Same, plus a little slightly argillaceous lime, leaving coarsely porous, brown shale residue.
- 2083-2100 Limestone, tan, lithographic, with a little brownish-gray, dense chert.
- 2100-38 Same, with a little dark-brown, dolomoldic, shaly residue.
- 2138-46 Limestone, lighter in color than above, but still lithographic; rare fragments of dark-gray, argillaceous limestone.
- 2150-57 Limestone, same, but considerable light-cream, dolomoldic chert.
- 2157-82 Same, but leaves some light-gray, porous shale in residue.
- 2182-2216 Limestone, darker brown, still lithographic, with fine streaks of dolomite, leaving a little porous and dolomoldic shale residue.
- 2216-42 Limestone, tan, lithographic, with almost no residue.
- 2242-48 Same, plus a little light-tan chert.
- 2248-52 Same kind of lithographic limestone, with streaks of brown dolomite, and more chert, brown and tan, some mottled, and with rare dolomolds.
- 2252-55 Same, with more dolomite and less chert.
- 2259-97 Same, a few fragments more argillaceous.
- 2297-2303 Slightly more argillaceous, the shale residue being porous and very dark brown.
- 2303-71 Same (all this limestone is lithographic and brown, with occasional streaks dark-gray, fine-grained, argillaceous).
- 2371-78 Slightly more argillaceous, the shale residue being porous and lighter gray than any above. (Pierce?)
- 2378-84 Residue slightly darker and more siliceous.
- 2384-2414 Less shaly material.
- 2414-21 Introduction of white, lithographic limestone.
- 2421-46 Same white, lithographic limestone.
- 2446-59 Brown, lithographic limestone.
- 2459-2532 Limestone, some of it argillaceous.
- 2532-40 Limestone, some a little dolomitic.
- 2540-2672 Same dark brownish-gray, dolomitic limestone, fine-grained, and occasionally argillaceous.
- 2672-2701 Little lighter gray -- same texture; dolomite, finely crystalline; limestone, lithographic.

(Wells Creek)

- 2701-08 Limestone, as above, very fine, lithographic, light-cream, with cream dolomite that is little coarser grained than above.
2708-15 Dolomite, cream, rather finely crystalline.
2715-23 Same, plus some green shale.
2731-39 Dolomite, much more coarsely crystalline, light-tan to cream; some green shale, some silty, white shale in residue; occasional large rounded and frosted sand grains.

CAMBRIAN

Knox

- 2739-48 Dolomite, as above, plus chert, some dull-white, with fine, lacy dolomolds, and some tannish, very translucent (opalescent).
2748-61 Dolomite, only chert is opalescent.
2761-67 Dolomite, light-tan, vitreous; little rough, white chert in residue.
2767-2809 Dolomite, very finely crystalline; cherty, some dull, finely porous, and some opalescent.

Well No. 158 (1350). Davidson No. 1 Oatts, F-56, Wayne County.

ORDOVICIAN

Maysville

(Tate)

- 69-73 Contact of black shale with dolomite, green, slightly argillaceous; pyrite.
73-109 Dolomite, as above.
109-19 Dolomite, argillaceous, more gray than green.

(Fairmount)

- 119-41 Limestone, slightly dolomitic and argillaceous, gray, fossiliferous.
141-222 Limestone, argillaceous, dark brownish-gray, occasional streaks fossiliferous.

Garrard

- 222-53 Limestone, silty; traces crystalline, white to yellow.
253-89 Limestone, crystalline, white to amber-yellow; traces of silty limestone.

Cynthiana-Million

- 289-343 Limestone, gray, fossiliferous and phosphatic, with calcareous shale breaks.
343-84 Limestone, fossiliferous and phosphatic, slightly dolomitic and porous.
384-420 Limestone, more phosphatic, with calcareous shale breaks.
420-29 Limestone, more fine-grained and argillaceous than above, dark grayish-brown.
429-61 Limestone, very fossiliferous and phosphatic; occasional shale breaks.

Lexington

- 461-529 Limestone, finer, browner.
529-48 Limestone, fine-crystalline to sublithographic, stringers of shale; traces of brown, translucent chert.
548-640 Limestone, more crystalline, light-cream to brown, slightly dolomitic.
640-703 Limestone, some fine-grained, brown; some more argillaceous, with fossiliferous, phosphatic streaks.
703-08 Limestone, as above, plus bentonite, both brown and green.

Chazy-Black River

- 708-12 Very fine, lithographic limestone.
712-22 Essentially all bentonite in sample.
722-31 Limestone, very fine, lithographic, brown.
731-57 Limestone, fine-grained, bentonitic, greenish-brown.
773-90 Limestone, brown, fine-grained, with streaks of dolomite; traces of translucent chert.
790-813 Limestone, fine-grained, slightly argillaceous.
813-30 Limestone, fine-grained, brown; trace of chert.
830-49 Limestone, as above; some finely dolomitic.
849-65 Limestone, fine-grained, some greenish-gray, argillaceous.

Well No. 159 (1344). W. M. Davidson No. 1 Tuggle, section 17-F-57, elevation 627 feet, Wayne County.

44 Top New Albany

ORDOVICIAN

Maysville

(Fairmount)

190-220 Limestone, densely crystalline, with some shale; grayish-brown, ostracodal.

220-30 Limestone, more coarsely crystalline than above; still considerable calcareous shale.

Garrard

230-35 Limestone, as above; trace of fine, calcareous sand.

250-60 Limestone and calcareous siltstone.

260-70 Limestone, coarsely crystalline, very fossiliferous, some phosphate.

270-80 Limestone, some as above; some calcareous, gray shale.

Cynthiana-Million

285-90 Limestone, finer, darker, some argillaceous.

290-330 Limestone, phosphatic; some calcareous shale.

330-80 Limestone, cleanly crystalline, phosphatic; trace of dolomite, with good porosity from 360-80.

380-400 Limestone, more finely crystalline, phosphatic, slightly dolomitic; more calcareous shale.

400-25 Limestone, finer grained, grayish-brown; some calcareous shale; much phosphate.

425-90 Limestone, coarsely crystalline, phosphatic and fossiliferous; some calcareous shale.

Lexington

490-530 Limestone, brown, densely crystalline, less phosphatic.

530-70 Limestone, sublithographic, brown, with some brown, translucent chert; some limestone is very dark and argillaceous; limestone is rich in ostracods.

570-640 Limestone, fine-grained, tan to light, dense to crystalline.

640-75 Limestone, darker, fine-grained; much dark, argillaceous limestone.

695-705 Limestone, very dark brownish-gray, argillaceous.

705-15 Limestone, crystalline, phosphatic, little argillaceous.

Chazy-Black River

715-25 Bentonite; some lithographic, brown limestone.

725-50 Limestone, fine-grained, some bentonitic.

750-75 Limestone, very fine grained, vaughanitic, brown.

775-80 Limestone, fine-grained; much brown, translucent chert.

780-95 Limestone, brown, sublithographic; traces of brown, translucent chert.

795-820 Limestone, brown, fine-grained, some argillaceous.

820-35 Limestone, brown, lithographic; some translucent, brown chert.

835-45 Limestone, brown, lithographic.

845-50 Limestone, as above, with some cream, lithographic, enclosing tiny dolomite rhombs.

855-60 Limestone, fine-grained, some argillaceous.

860-65 Limestone, fine-grained, brown, with traces of dolomite.

Well No. 160 (1351). Francis Friestad No. 1 Sandusky, Wayne County.

MISSISSIPPIAN

New Providence-Fort Payne

290-340 Shale, calcareous, grayish-green; some free, translucent chert; crinoidal from 300-15.

340-65 Limestone, crinoidal, white; little chert.

365-425 Limestone, very coarsely crinoidal; some red and green shale.

425-30 Limestone, crinoidal; some green shale.

- 430-67 Shale, green, calcareous and crinoidal; little chert.
467-84 Shale, green.

New Albany

- 484-520 Black shale, carbonaceous.
520-25 Black shale, and some green, argillaceous dolomite.

ORDOVICIAN

Maysville

(Gilbert)

- 555-65 Limestone, very fine grained, light-gray.

(Fairmount)

- 565-650 Limestone, very silty, grayish-tan, dolomitic.
650-60 Limestone, argillaceous, dark grayish-brown, ostracodal.
660-730 Limestone, very argillaceous, dark-gray, fossiliferous.

Garrard

- 730-35 Limestone, very silty and argillaceous, dark-gray.
735-65 Limestone, some silty, as above, some crystalline and fossiliferous, with some yellow calcite.

Cynthiana-Million

- 765-80 Limestone, fossiliferous and phosphatic, interbedded with darker, calcareous shale.
780-95 Limestone, fossiliferous and phosphatic, with trace of calcareous shale.
795-820 Limestone, gray, more densely crystalline than above, slightly argillaceous.
820-50 Limestone, fine-grained and argillaceous, dark-gray, interbedded with more fossiliferous strata.
850-70 Limestone, fine-grained, dense, grayish-brown, slightly argillaceous.
870-75 Limestone, crystalline, white, some phosphatic.
875-965 Limestone, grayish-brown, densely crystalline, slightly argillaceous, with occasional streaks more crystalline.
965-90 Limestone, very silty and argillaceous.

Lexington

- 990-1005 Limestone, brown, densely crystalline, some argillaceous; trace of replacement chert.
1005-20 Limestone, tan, fine-grained to crystalline, some slightly argillaceous; some replacement chert.
1020-25 Limestone, white, crystalline, porous.
1025-1110 Limestone, brown, fine-grained to finely crystalline, little argillaceous.
1110-40 Limestone, some brown, as above, some lighter and slightly more crystalline.
1140-55 Limestone, brown, dense, fine-grained, with some argillaceous.
1155-65 Limestone, more gray, argillaceous, some phosphatic.
1165-80 Limestone, crystalline, fossiliferous and phosphatic, little argillaceous.
1180-85 Limestone, gray, as above, with much bentonite, gray, with biotite.
1185-95 Limestone, gray, fine-grained and very argillaceous; much bentonite.
1195-1220 Limestone, gray, phosphatic, fine-grained, slightly argillaceous.
1220-30 Limestone, brown, fine to crystalline, argillaceous, leaving white clay residue; bentonitic, and with little chert.

Chazy-Black River

- 1230-50 Limestone, very fine grained, brown, argillaceous, with white clay residue; some bright-green bentonite.
1250-55 Limestone, sublithographic, brown; little bentonite.
1255-85 Limestone, cream to light-tan, lithographic; bentonite cave.
1285-1305 Limestone, tan, slightly dolomitic; trace of dull, brown chert.
1305-25 Limestone, dull-gray and argillaceous; residue clay from bentonite.
1325-45 Limestone, dolomitic, brown.
1245-50 Bentonite.
1250-60 Limestone, slightly dolomitic, brown.

- 1260-65 Limestone, argillaceous, with finely disseminated bentonite, leaving light clay residue.
 1365-95 Limestone, darker; trace of argillaceous limestone.

Well No. 161 (1349). Jarvis Bros. No. 1 O. D. Bertram, 165 feet from Bertram-Dalton line, elevation 934 feet (aneroid), Wayne County.

MISSISSIPPIAN

New Providence-Fort Payne

- 50-68 Shale, very siliceous and black, slightly calcareous.
 68-70 Some limestone, phosphatic, with much free, translucent chert.
 70-92 Limestone, very siliceous and argillaceous; some free chert.
 92-100 Shale, slightly calcareous, very dark gray.
 100-38 Shale, slightly calcareous, light greenish-gray, crinoidal; some free chert.
 138-43 Some shale; some very crinoidal limestone.
 143-77 Shale, calcareous, green; some free chert; some crinoid fragments.
 177-246 Shale, dark-green, crinoidal.
 246-60 Limestone, very crinoidal; some green shale ("Beaver").
 260-80 Shale, green, crinoidal.

New Albany

- 280-310 Black shale, carbonaceous.
 310-15 Contact of black shale with very argillaceous, black dolomite, enclosing sand grains. (Remnant of Duffin)

ORDOVICIAN

Maysville

- (Tate)
 315-60 Dolomite, argillaceous and silty, tan to green.

(Fairmount)

- 360-95 Limestone, some dolomitic, argillaceous, with little replacement chert at base.
 395-400 Limestone, very finely broken (water ?), less argillaceous than above.
 400-30 Limestone, argillaceous, dark brownish-gray.
 430-75 Limestone, slightly argillaceous, lighter brown than above, fossiliferous.

Garrard

- 475-500 Limestone, crystalline, fossiliferous, with little argillaceous limestone; porous? Little yellow calcite, and traces of silty limestone.
 500-05 Limestone, as above, with some dark-gray shale.
 505-10 Limestone, very fossiliferous, coarsely crystalline, white to yellow; trace of dark shale.

Cynthiana-Million

- 510-20 Limestone, crystalline, some argillaceous, fossiliferous, gray.
 520-90 Limestone, more fine-grained, argillaceous, brownish-gray; occasional more crystalline layers.
 590-610 Limestone, fine-grained, brown.
 610-45 Limestone, crystalline and phosphatic; occasional streak of shale, interbedded with some finer and browner.
 645-720 Limestone, more fine-grained and brown, argillaceous.
 720-30 Limestone, very argillaceous and silty.
 730-45 Limestone, more crystalline, fossiliferous, phosphatic, with little argillaceous.

Lexington

- 745-810 Limestone, fine-grained, brown, with little argillaceous and brown replacement chert.
 810-920 Limestone, brown, very fine grained; a little silt at 900-05.
 920-50 Limestone, more gray and argillaceous, fossiliferous; some crystalline and phosphatic.
 950-55 Limestone, grayish-brown, with brown bentonite.
 955-60 Limestone, very argillaceous; much brown bentonite.

- 960-80 Limestone, crystalline, fossiliferous and phosphatic, some argillaceous
Bentonite all through this section.
980-95 Limestone, more fine-grained, argillaceous; trace of chert.

Chazy-Black River

- 995-1005 Limestone, fine-grained, brown, still very argillaceous (leaves light-gray, porous shale residue).
1005-25 Limestone, fine-grained, tan; trace of chert, same color as limestone
1025-1125 Limestone, fine-grained, occasional streaks dolomitic; trace of sand grains and yellow quartz at 1110.
1125-30 Limestone, brownish-gray, very argillaceous, leaving light-gray, porous shale residue, as at 995.

Well No. 162 (1342). Jarvis Bros. No. 1 Dalton, 165 feet south of Bertram-Dalton line and 425 feet due south of Bertram No. 1, elevation 992 feet (aneroid), Wayne County. I.P. 2½ BO 88 BW.

MISSISSIPPIAN

New Providence-Fort Payne

- 15-20 Limestone, very fossiliferous and phosphatic, with siliceous crinoid fragments.
100-15 Limestone, with much translucent chert, white to dark grayish-brown; some limestone is dark and argillaceous.
115-40 Shale, calcareous, very dark grayish-brown; some gray chert.
140-275 Shale, green, crinoidal; little translucent chert.
275-300 Limestone, very crinoidal, crystalline, white; trace of pyrite and quartz ("Beaver").
300-18 Shale, slightly calcareous and crinoidal, green.

New Albany

- 318-50 Black shale, carbonaceous, coarse-grained.
(Duffin)
350-55 Dolomite, very argillaceous, silty, and black; much pyrite.
355-60 Dolomite, brown, sucrose, enclosing rare rounded and frosted sand grains; green, dolomitic shale.

ORDOVICIAN

Maysville

(Tate)

- 360-400 Dolomite, very silty and argillaceous, green.

(Fairmount)

- 400-30 Limestone, dolomitic, gray; trace of replacement chert from 415.
430-65 Limestone, slightly argillaceous, fine-grained, grayish-brown; ostracodal.
465-69 Limestone, as above; little slightly more fossiliferous.

Well No. 163 (1343). Jarvis Bros. No. 2 Dalton, 538 feet SW of Dalton Heirs well, elevation 992 feet (aneroid), Wayne County. Drilled to 970 feet about 40 years ago, reamed and deepened to 1,253 feet in 1945. I.P. 9½ BO 9½ BW.

- 980-85 Limestone, gray, crystalline, phosphatic; much brown bentonite.

Chazy-Black River

- 985-92 Limestone, brown, argillaceous; much bentonite.
992-96 All green bentonite.
996-1010 Limestone, fine-grained, sublithographic (leaving residue of porous white clay); some bentonite.
1010-48 Limestone, fine, brown, lithographic. Bentonite scattered all through this section, much of it cave.
1048-50 Limestone, very dolomitic, brown; 20% chert, same color as limestone
1050-63 Limestone, fine, lithographic, with some dolomitic.

- 1063-95 Limestone, fine-grained, brown; some slightly argillaceous, with one very argillaceous streak at 1077.
 1095-1121 Limestone, some slightly dolomitic, brown.
 1121 Limestone, lithographic, brown.

Well No. 164 (76). J. T. Wilson, et al No. 1 Lloyd, near Monticello, section 13-E-55, Wayne County.

ORDOVICIAN

Maysville

(Fairmount)

- 0-72 Limestone, dark-gray, argillaceous, fossiliferous, with many brachiopods and bryozoans; little pyrite.
 72-90 Limestone, fine-grained, dark-gray, slightly argillaceous; many ostracods.
 90-109 Limestone, dark-gray, argillaceous, fossiliferous and phosphatic.

Garrard

- 109-97 Limestone, argillaceous and silty, very dark gray.

Lexington-Cynthiana-Million

- 197-234 Limestone, brownish-gray, very slightly argillaceous; trace of white, translucent chert, and some angular quartz.
 234-542 Limestone, gray, with some argillaceous limestone; chert, white, brown to black, mainly fossil replacements; trace of pyrite.
 542-48 Bentonite.
 548-87 Limestone, argillaceous, gray, very fossiliferous and phosphatic; trace of fossiliferous chert.

Chazy-Black River

- 587-600 Limestone, light-gray to tan, lithographic, with much bentonite.
 600-724 Limestone, dark-brown, lithographic, with occasional fragments slightly argillaceous.
 724-840 Limestone, gray-brown, lithographic, with occasional finely crystalline dolomite streaks.
 840-941 Limestone, brown, very slightly argillaceous, sublithographic; trace of chert.
 941-70 Limestone, slightly argillaceous, as above; no chert.
 970-1112 Limestone, very fine crystalline to sublithographic, brown.
 1112-1224 Limestone, brown, lithographic, with occasional fragments slightly argillaceous.
 1224-1301 Limestone, very dense, brown, with occasional fragments showing finely crystalline brown dolomite and some very slightly argillaceous.
 1301-45 Limestone, dense, gray-brown, fine-grained, with some slightly argillaceous.

CAMBRIAN

Knox

- (Descriptions of this section made only from insoluble residues.)
 1345-56 Dolomite; chert, dolomoldic, white to translucent, with rare oolites; trace of green shale.
 1356-1415 Dolomite; chert, slightly dolomoldic, rare rounded and frosted quartz grains; traces of green shale.
 1415-20 Chert, 80%, white to translucent, with some drusy banding, some crystalline quartz.
 1420-45 Chert, white to translucent; trace of green shale and angular quartz.
 1445-60 Chert, 60%, white, brown oolites with brown quartz coating and good radial structure; rare rounded and frosted quartz grains.
 1460-90 Dolomite, with only trace of chert, oolitic and dolomoldic; rare sand grains.
 1490-1500 Dolomite, with 25% chert, oolitic, and druse, with thin-walled dolomolds; some chert sandy, as in the Roubidoux.
 1500-85 Dolomite, with only trace of chert, chalky, and with thin-walled dolomolds; rare sand and green shale.
 1585-92 Chert, 60%, brown, with some oolitic and dolomoldic.
 1592-1612 Dolomite, with trace of dolomoldic chert; occasional sand grains.

1612-25	Dolomite, with 50% chert, white, slightly dolomoldic and oolitic; some sand.
1625-50	Dolomite, with trace of oolitic chert and sand grains; pyrite.
1650-56	Mainly chert (80%), brown and white, with trace of shale.
1656-68	Dolomite, with trace of finely dolomoldic, brown chert.
1668-81	Dolomite, with 10%-80% chert, white to translucent; trace of dolomoldic chert.
1681-90	Dolomite, with only trace of chert, having thin-walled dolomolds.
1690-1700	Chert, to 80%, heavy, white, with rare dolomolds.
1700-15	Dolomite, with little blue-white, translucent chert.
1715-1810	Dolomite, with about 50% chert, brown and white, translucent, some white, slightly dolomoldic.

Well No. 165 (168). Pure Oil Company, Ashland Oil and Refining Company, and I. B. Browning No. 1 M. L. Walker, section 22-N-24, elevation 490 feet, Webster County.

PENNSYLVANIAN

40-60	Sandstone, very poorly sorted, fine to very coarse, rounded to sub-angular.
60-122	Sandstone, poorly sorted, medium-grained, friable.
122-50	Sandstone, fine-grained, well-sorted for size, poor mineral sorting; much silty shale, dark-gray.
150-282	Sandstone, conglomeratic, coarse-grained, angular to subrounded.
282-305	Shale, very dark gray, coarse-grained, slightly siliceous and micaceous.
305-10	Coal.
310-40	Shale, dark-gray, with some fine-grained sandstone interbedded.
340-50	Shale, fine-grained, and some limestone, brown, fine-grained, dense.
350-80	Shale, coarse-grained, dark-gray, some carbonaceous.
380-82	Sandstone, fine-grained, in contact with limestone.

MISSISSIPPIAN

Kinkaid

382-410	Limestone, fine-grained, brown, dense to finely crystalline; trace of argillaceous limestone.
410-40	Samples missing.

Palestine-Clore-Degonia

440-60	Shale, dark-gray, fissile, carbonaceous to calcareous; trace of dolomite brown, finely crystalline.
460-70	Limestone, dolomitic, as above; some shale.
470-500	Shale, dark, slightly greenish-gray, fine-grained to fissile.
500-20	Shale, as above, with some limestone, dark, gray-brown, argillaceous.
520-65	Shale, slightly greenish-gray, fine-grained.

Menard

565-70	Shale, dark-gray, fine-grained, some calcareous.
570-80	Limestone, brown, crinoidal, slightly fossiliferous to dense.
580-610	Limestone, brown-gray, finely crystalline, slightly fossiliferous; trace of blue-gray, translucent chert.
610-30	Limestone, brown, dense, finely crystalline, some coarsely mottled, with a trace of fine-grained limestone conglomerate.
630-50	Limestone, as above, with some fine-grained, green shale.

Waltersburg

650-710	Shale, very fine grained, gray, interbedded with some very finely silty.

Vienna

710-20	Limestone, tan, finely crystalline; trace of fine conglomerate (coarse, rounded sand, with dark-red and chalky-white matrix).
720-25	Limestone, as above, becoming sandy toward base.

Tar Springs

725-40	Sandstone, poorly sorted, fine- to medium-grained, subrounded; trace of quartz cement, some calcareous cement.
740-50	Shale, green to gray-green, very fine grained, some fissile.

- 750-90 Sandstone, poorly sorted to medium-grained, subrounded to angular, with some secondary crystallization; more friable.
- 790-800 Sandstone, fine-grained, less well sorted mineralogically; trace of limestone and much shale.
- 800-45 Sandstone, poorly sorted, fine- to coarse-grained, some rounded, with a trace of secondary crystallization.
- 845-50 Sand, as above, with more limestone cement.

Glen Dean

- 850-60 Limestone, some argillaceous, some crystalline, crinoidal, fossiliferous; trace of translucent chert.
- 860-75 Limestone, dolomitic, brown, fine-grained; some blue-gray, translucent chert.
- 875-90 Limestone, fine-grained, argillaceous, slightly gray-brown.
- 890-95 Limestone, fine-grained, gray-brown; trace of glauconite.

Hardinsburg

- 895-915 Sandstone, fine-grained, quartzitic.
- 915-40 Sandstone, very poorly sorted to coarse-grained, with some secondary crystallization; interbedded with gray and brownish-red shale.
- 940-75 Siltstone, argillaceous, medium-grained, gray.
- 975-92 Sandstone, white, fine-grained, quartzitic; some dark, carbonaceous inclusions.
- 992-1010 Shale and siltstone, dark-gray.

Golconda

- 1010-22 Limestone, light-tan, crystalline, fossiliferous; some rust-colored inclusions.
- 1022-60 Shale, dark gray-green and some red, slightly calcareous.
- 1060-70 Limestone, light-tan, crystalline, fossiliferous, with rounded limestone pellets enclosed.
- 1070-78 Limestone, dolomitic, tan, fossiliferous, crystalline; trace of calcareous sandstone.
- 1078-85 Sandstone, fine-grained, quartzitic; some dark, carbonaceous inclusions.
- 1085-1102 Sandstone, as above, some calcite cement.
- 1102-20 Limestone, fine-grained, dark-brown, mottled, slightly fossiliferous ("Barlow lime").

Cypress

- 1120-55 Sandstone, fine-grained, well-sorted, tan, slightly porous.
- 1155-68 Sandstone, as above, and trace of limestone with large oolites.

Paint Creek

- 1168-80 Limestone, fine-grained, brown, earthy; trace of shale, some crinoidal.
- 1180-1220 Sandstone, calcareous, and sandy limestone, fossiliferous.
- 1220-30 Sandstone, quartzitic, gray, some shale.
- 1230-40 Shale, gray, fine-grained, fissile.
- 1240-50 Limestone, brown-gray, finely crystalline, some slightly dolomitic.
- 1250-80 Limestone, brown-gray, finely crystalline, some argillaceous.
- 1280-1300 Limestone, fine-grained, pale creamy-gray; dense chert, same color as limestone.
- 1300-20 Limestone, finely crystalline, light tan-gray; some clastic, with pellets of different colors of limestone.
- 1320-30 Limestone, as above, with trace of red and green calcareous shale.
- 1330-40 Sandstone, fine-grained, white, quartz-cemented.
- 1340-50 Limestone, very argillaceous, fossiliferous; red and gray shale.

Renault

- 1350-70 Limestone, fine-grained, obscurely oolitic, some slightly argillaceous.
- 1380-1402 Limestone, clastic, finely sandy.

Ste. Genevieve

- 1402-10 Limestone, clastic, some sandy; trace pink and green, more coarsely crystalline.

- 1410-40 Limestone, very finely dolomitic, fine-grained, tan, some clastic, very slightly vugular.
 1440-1515 Limestone, fossiliferous, tan, clastic, with some irregular oolites.
 1515-30 Limestone, very finely dolomitic, slightly argillaceous.
 1530-90 Limestone, brown, very irregularly oolitic, some porosity.
 1590-1680 Limestone, very slightly dolomitic, light-tan; trace of translucent chert.
 1680-90 Limestone, very porous, slightly dolomitic, oolitic. ("McClosky")
 1700-60 Limestone, tan, with limestone pellets, fine-grained.
 1772-92 Limestone, finely dolomitic, pale tan-gray.
 1792-1808 Limestone, densely crystalline, brown, with limestone pellets.

St. Louis

- 1808-35 Limestone, dolomitic, brown; chert, blue-gray, translucent.
 1835-85 Limestone, tan, densely crystalline to fine-grained, slightly fossiliferous chert, finely fossiliferous, tan.
 1885-1943 Limestone, slightly argillaceous, very dark gray-brown.
 1943-73 Limestone, finely dolomitic, very slightly argillaceous, gray-brown; trace of milky-white chert.
 1973-2000 Limestone, dark-brown; some very dark brown, mottled chert.
 2000-73 Limestone, slightly argillaceous, fine-grained to finely crystalline, dark gray-brown; trace of brown, mottled chert.

Salem

- 2073-2100 Limestone, dark-brown, fine-grained, to rubbly, very fossiliferous, with rounded limestone pellets.
 2100-19 Limestone, dolomitic, very dark brown to black; trace of milky geode chert.
 2119-80 Limestone, gray-brown, rubbly, fossiliferous, porous; some small fossils.

Harrodsburg

- 2180-2233 Limestone, gray, very fossiliferous, crinoidal, slightly mottled.
 2233-70 Limestone, light gray-tan, very fossiliferous, fragmental.

New Providence-Borden

- 2270-84 Limestone, very fine grained, brown, argillaceous.
 2284-2313 Limestone, very argillaceous, very dark gray-brown; trace of chert, translucent, gray.
 2313-25 Shale, calcareous, gray.
 2325-35 Limestone, fossiliferous, gray, crystalline.
 2335-75 Limestone, dark-gray, very argillaceous, fine-grained to fossiliferous; some translucent, gray chert.
 2375-2423 Shale, calcareous, very dark gray-brown; brown, dense, blocky chert.
 2423-33 Limestone, light gray-tan, fossiliferous, clean.
 2442-2520 Shale, calcareous, dark gray-brown; chert, very dark brown, translucent to dense.
 2520-2790 Shale, very slightly calcareous, very dark brown-gray; trace of dense, brown chert.
 2790-2888 Shale, slightly calcareous, black.
 2888-2915 Shale, slightly calcareous, gray, glauconitic.

Rockford

- 2915-21 Limestone, gray, fine-grained, dense.

New Albany

- 2921-95 Shale, black, coarse-grained, carbonaceous, pyritic.
 2995-3035 Shale, black, coarse-grained.
 3035-60 Shale, dark-gray, silty and pyritic.
 3060-3157 Shale, black, carbonaceous.

DEVONIAN

Sellersburg

- 3157-74 Shale, slightly calcareous, very dark brown, fine-grained; chert, brown, translucent.
 3174-3217 Shale, slightly calcareous, almost black.

Grand Tower (Jeffersonville)

- 3217-22 Limestone, cream, crystalline, fossiliferous.
3222-27 Limestone, slightly dolomitic; trace of translucent, cream chert.
3227-51 Limestone, light-tan; mainly chert, cream, translucent.
3251-67 Limestone, dark-brown, fine-grained; chert, brown, translucent.
3267-80 Limestone, white, crystalline to chalky, fossiliferous, coralline.

Dutch Creek

- 3280-93 Sandstone, very poorly sorted, fine to very coarse, rounded and frosted; trace of limestone cement.
3293-3309 Limestone, sandy, white to pale-gray, chalky.

Clear Creek

- 3309-19 Limestone, pale-gray to tan, slightly mottled, fossiliferous.
3319-26 Limestone, as above, slightly dolomitic; trace of chert.
3326-41 Chert, slightly dolomitic, novaculitic.
3341-56 Limestone, dolomitic, cream, with cream to brown chert, very spiculose.
3356-76 Limestone, cream, chalky; chert, same color; rare spores in dull chert.
3376-97 Limestone, slightly dolomitic, chalky to fine-grained; chert, same color.
3397-3441 Limestone, dolomitic, light-gray; chert, same color, dolomoldic, and with trace of glauconite.
3441-64 Limestone, light-gray, finely crystalline; chert, gray, spiculose; chert and limestone more fresh than that above.
3464-3564 Samples missing.
3564-90 Limestone, creamy-gray, with light glauconite pellets; chert, same color, irregular texture.
3590-3612 Limestone, very slightly dolomitic, chalky-white to finely crystalline, cream; chert and glauconite, as above.
3612-45 Limestone, pale-gray, with dark mottling; trace of chert, mottled and fossiliferous.
3645-56 Limestone, slightly dolomitic, gray-tan, fine-grained; chert, white, micromottled with dark.

Grassy Knob-Bailey

- 3656-88 Limestone, finely crystalline, gray-tan, fine dark markings; chert, white, micromottled with dark.
3688-3712 Limestone, tan, finely crystalline, with occasional fine, dark inclusions; chert, micromottled.
3712-32 Limestone, finely crystalline, gray-tan; rare dark inclusions; chert, micromottled, same color as limestone.
3732-58 Limestone, white, chalky to crystalline; trace of pale-green glauconite; trace of translucent chert.
3758-86 Limestone, light-tan, finely crystalline, rare dolomite rhombs; some stylolitic; pale-green glauconite.
3786-3806 Limestone, as above, with occasional spores.
3806-50 Limestone, brown, finely crystalline, dense; some dark carbonaceous inclusions.
3850-55 Limestone, light-brown, crystalline, fine-grained, with occasional spores and glauconite.
3855-85 Limestone, light-brown, crystalline, as above; chert, finely micromottled.
3885-3925 Limestone, dolomitic, brown; chert, brown-gray, mottled, 15%.
3925-50 Limestone, dolomitic, tan, fine-grained; chert, brown, spiculose.
3950-80 Limestone, dolomitic, finely siliceous and argillaceous, leaving finely porous siliceous residue.
3980-4005 Limestone, as above, with more finely disseminated chert.

SILURIAN

Brownsport

- 4005-15 Limestone, light creamy-gray; much dark glauconite; trace of light-colored, finely disseminated chert.
4015-60 Limestone, cream to light gray-tan, dolomitic; chert, white, translucent, some finely disseminated.
4060-4105 Limestone, slightly dolomitic, darker than above; chert is finely disseminated.
4105-50 Limestone, slightly dolomitic, very slightly argillaceous; chert, finely disseminated.

- 4150-4220 Limestone, very argillaceous and siliceous, silica finely disseminated, greasy texture; trace of brown, translucent chert.

Wayne (Bainbridge)

- 4220-30 Limestone, very argillaceous, light-gray to pink.
 4230-45 Limestone, light-gray, with some red, argillaceous; occasional pink calcite crystals enclosed.
 4245-70 Limestone, gray, light, fine-grained, densely crystalline; occasional pink calcite and dark-red, argillaceous limestone.
 4270-90 Limestone, red, coarsely crystalline, with hematite-coated fossils.
 4290-4300 Limestone, finely crystalline, red; occasional fragments including more iron-rich particles.
 4300-25 Limestone, light-gray, crystalline, with pink calcite included; traces of pale-green limestone.

Brassfield

- 4325-35 Limestone, light tan-gray, finely crystalline; trace of vitreous chert.
 4335-65 Limestone, light tan-gray, finely crystalline, with finely disseminated argillaceous content and translucent, brown chert.

ORDOVICIAN

"Thebes"

- 4365-80 Siltstone, argillaceous, very fine grained, green-gray to brown.

Fernvale lithology

- 4380-4410 Limestone, light-brown, finely crystalline; large, irregular, oolite-like pellets, varicolored in limestone matrix.

Lexington-Cynthiana

- 4410-50 Shale, calcareous, and limestone, mottled, with fossiliferous inclusions.
 4450-4530 Shale, calcareous, dark gray-brown.
 4530-4755 Shale, slightly calcareous, very dark gray; occasional breaks of limestone, fossiliferous and richly phosphatic.
 4755-60 Limestone, light-tan, cleanly crystalline, coarsely fossiliferous; rare fragments of siliceous limestone.

Chazy-Black River

- 4760-85 Limestone, very fine grained, lithographic, brown.
 4785-4830 Limestone, dolomitic, brown.
 4830-35 Dolomite, fractured and recrystallized, with much vein dolomite; trace of oil staining.
 4835-45 Limestone, fine-grained, tan, with some fine limestone pellets.
 4845-4900 Limestone, dolomitic, clear brown, fragmental, with much vein dolomite; show of oil at 4875.
 4900-10 Mainly recrystallized dolomite, much vein dolomite, with oil stain.
 4910-30 Limestone, finely dolomitic, fine-grained, brown, with vein dolomite.
 4930-55 Limestone, brown, fine-grained; slightly argillaceous fragments rare.
 4955-95 Limestone, dolomitic, some stylolitic, fine-grained, brown.
 4995-5005 Limestone, very fine grained, brown; occasional brachiopod fragments.
 5005-5105 Limestone, very slightly dolomitic, fine-grained, brown.
 5105-5210 Limestone, fine, lithographic, brown.
 5210-80 Limestone, very dolomitic, recrystallized, vugular, with much vein dolomite; trace of oily stain in top.
 5280-5325 Limestone, fine-grained, brown.
 5325-40 Limestone, slightly argillaceous, very dark gray-brown; occasional fragments show slickensides and polish. (Movement on this fracture?)
 5340-55 Limestone, dark, slightly gray-brown, fine-grained.
 5355-5440 Limestone, slightly argillaceous, slightly silty, dark gray-brown.
 5440-60 Limestone, lighter than above, not argillaceous.

Joachim

- 5460-5510 Dolomite, very dark, gray-brown, densely crystalline, fine-grained, slightly argillaceous, and rarely sandy.

(St. Peter)

- 5510-50 Sandstone, slightly dolomitic, very tight, some quartz cement, very poorly sorted; quartz-cemented sandstone interbedded with dolomite-cemented sandstone.
- 5550-65 Sandstone, as above, with some pale-green dolomite.
- 5565-95 Sandstone, very poorly sorted, quartz and dolomite cement.

Everton

- 5595-5610 Dolomite, very densely crystalline, hard, brown; trace of dark shale.
- 5610-25 Dolomite, very densely crystalline, brown, fine-grained; much pyrite in fractures.
- 5625-55 Dolomite, very densely crystalline, lighter brown, lithographic.
- 5655-60 Dolomite, as above, studded with occasional coarse sand grains.
- 5660-90 Dolomite, creamy-gray, very dense, fine, lithographic; trace of dark-green, bentonite-like shale.
- 5690-5740 Dolomite, very fine, lithographic, creamy-gray.
- 5740-5800 Dolomite, very finely crystalline, dense, light-tan; slightly fractured.
- 5800-20 Dolomite, light-brown, very densely crystalline; trace of chert, fresh and vitreous.
- 5820-30 Dolomite, very fine, pale-gray, pyritic.
- 5830-5975 Dolomite, very fine grained, dense, with some fracturing; chert shows fracturing and recementation.

CAMBRIAN

Knox

- 5975-6030 Dolomite, fine-medium crystalline, dense; trace of chert, white, with very fine oolites.
- 6030-35 Dolomite, as above, with much more chert.
- 6035-6105 Dolomite, brown, finely crystalline, slightly mottled, with some brown chert showing fracturing.
- 6105-20 Dolomite, light gray-tan, very finely crystalline; little poorly sorted sand; occasional fragments brecciated and pyritic.
- 6120-60 Dolomite, very finely crystalline, dense, brown; trace of chert.
- 6160-70 Dolomite, as above; some lighter, medium-coarse crystalline, with trace of pyritic chert.
- 6170-6380 Dolomite, light-tan, finely crystalline; rare chert; rare sand grains. Some fracturing of dolomite and chert.
- 6380-6640 Dolomite, light gray-tan, finely crystalline, dense, with some finely disseminated fine silt and a trace of sand; pyrite.

Roubidoux

- 6640-50 Dolomite, mainly fine-grained, gray, studded with sand.
- 6650-65 Dolomite, slightly argillaceous, dark gray-brown; some sand, as above.
- 6665-75 Sandstone, very poorly sorted, dolomite-cemented, fine- to medium-grained.
- 6675-88 Dolomite, very arenaceous, light-gray, thickly studded with poorly sorted, rounded and frosted sand grains.
- (Samples picked up in basket included large pieces of tightly cemented sandstone, quartzitic and poorly sorted.)

Well No. 166 (115). Stoll Oil Refining Company No. 1 G. Wilhoit, section 17-R-57, Woodford County.

ORDOVICIAN

Chazy-Black River

- 40-55 Limestone, brown, fine-grained; trace of finely crystalline dolomite.
- 55-65 Limestone, bright-brown, lithographic, with some bentonite.
- 65-95 Limestone, tan, lithographic; rare fragments showing dolomite.
- 95-100 Limestone, as above; trace of slightly argillaceous limestone.
- 100-51 Limestone, very dolomitic, brown, fine-grained to sucrose. (Oregon)
- 151-245 Limestone, slightly dolomitic, brown, fine-grained.
- 245-383 Limestone, very fine grained to lithographic, brown; rare fragments showing finely crystalline dolomite.
- 383-405 Limestone, very dolomitic, light-brown, fine-grained to sucrose.
- 405-44 Limestone, very slightly dolomitic, dark-brown; occasional fossils.

444-560 Limestone, dark-brown, very fine grained, some of it stylolitic.

(Wells Creek)

560-75 Limestone, very finely dolomitic, green, with some green shale.
575-600 Dolomite, very fine grained, detrital (enclosing larger fragments), slightly argillaceous.

CAMBRIAN

Jefferson City-Cotter

600-10 Dolomite, fine-grained, some very finely silty, with trace of green shale.
610-20 Dolomite, medium-crystalline, light-gray, enclosing some medium, rounded and frosted sand grains.
620-25 Dolomite, white, very finely crystalline, slightly silty.
625-40 Dolomite, very coarsely crystalline, vugular; trace of chalky, dolomoldic chert.
640-50 Dolomite, very densely crystalline, cream, enclosing rare sand grains.
650-60 Dolomite, cream, finely crystalline, dense; chert, dull-white to translucent, sandy.
660-70 Dolomite, white, densely crystalline, fine-grained; trace of very finely disseminated silica.
670-85 Dolomite, very finely crystalline, dense, white; occasional rounded and frosted sand grains enclosed in chert; some chert dull, oolitic to drusy.
685-90 Dolomite, cream, finely sucrose; no chert.
690-720 Dolomite, very finely crystalline, white; trace of crystalline quartz and sandy chert.
720-60 Dolomite, as above, enclosing rare sand grains; trace of green shale and chert.
760-80 Dolomite, very coarsely crystalline; no chert.
780-805 Dolomite, very coarsely crystalline, pale-gray; trace of dull chert and green clay.
805-20 Dolomite, coarsely crystalline; little chalky-white chert.
820-40 Dolomite, cream, finely sucrose; trace of green shale.
840-55 Dolomite, medium-crystalline; little chalky chert.
855-90 Dolomite, as above; rare sand grains enclosed.
890-900 Dolomite, cream, finely crystalline; no chert.
900-15 Dolomite, coarsely crystalline, cream; trace of quartz and sand.
915-25 Dolomite, cream, coarsely crystalline, vugular; pyrite; green shale; trace of drusy to oolitic chert.
925-55 Dolomite, white, coarsely crystalline; little sand and chert, translucent to oolitic.
955-80 Dolomite, white, coarsely crystalline; trace of chert and sand; pyrite.
980-95 Dolomite, white, very densely crystalline; chert (to 50%), white, micro-mottled.
995-1015 Dolomite, densely crystalline, white; trace of chert.
1015-25 Dolomite, densely crystalline, white; much chert, white, with some drusy, and trace of sand.

Roubidoux

1025-85 Dolomite, densely crystalline; chert (to 30%), dense, white, and sandy.
1085-95 Dolomite, white, coarsely crystalline; trace of translucent chert.
1095-1100 Mainly chert, dull-white, dense to quartzose, some oolitic.
1100-15 Dolomite, cream, densely crystalline; chert, as above, about 20%.
1115-25 Mainly chert, translucent, gray-white to chalky, some druse.
1125-50 Dolomite, medium to coarsely crystalline; chert (to 20%), oolitic, with much sand enclosed; trace of green shale.
1150-80 Dolomite, very coarsely crystalline, slightly sandy; trace of dolomoldic chert.

Van Buren-Gasconade

1180-90 Dolomite, finely crystalline, tan, slightly porous; rare chert.
1190-1201 Dolomite, cream, densely crystalline; chert (to 30%), chalky to dense, white, and dolomoldic.
1201-17 Dolomite, coarsely crystalline, vugular, cream; trace of poorly sorted sand.
1217-25 Dolomite, finely argillaceous, grayish-brown.

1225-45	Dolomite, pale-gray, medium-crystalline; chert, white to chalky; rare sandy chert.
1245-55	Dolomite, fine-grained, light-gray; trace of slightly argillaceous dolomite.
1255-65	Dolomite, brown, medium-crystalline; brown chert, with some dark druse.
1265-95	Dolomite, medium-crystalline; 5% chert druse.
1295-1310	Dolomite, light-tan, finely sucrose; trace of green shale, and chert with brown oolites.
1310-30	Dolomite, cream, finely crystalline; rare very fine glauconite, chert, and green shale.
1330-50	Dolomite, cream, fine- to medium-crystalline; trace of dark shale; some pyrite.
1350-85	Dolomite, medium-crystalline, dense, to coarsely crystalline and vugular; much chert (to 50%), dense, white to dark-gray, pyritic, rare druse.
1385-1405	Dolomite, brown, sucrose, finely crystalline; no chert.
1405-10	Dolomite, dark-brown; trace of dull chert and black shale.
1410-15	Dolomite, cream, densely crystalline; trace of pyrite.
1425-35	Dolomite, very finely crystalline, brown; much chert (to 80%), translucent, gray, to quartzose, some quartz druse.
1435-60	Dolomite, dense, tan, finely crystalline; chert rare.
1460-70	Dolomite, finely crystalline, sucrose; much chert, dense to quartzose.
1470-96	Dolomite, tan, finely crystalline, to brown, medium-crystalline; rare chert, tan to brown, mottled, with irregularly shaped oolites.

ARKANSAS

Well No. 167 (194). Benedum-Trees, SW section 3, T. 15 N., R. 12 E., elevation 267 feet, Mississippi County, Arkansas.

TERTIARY

Eocene

(Holly Springs)

1000-20	Sand, poorly sorted, angular, polished.
1020-40	Clay, light to dark, with some black plant remains.
1040-90	Sand, medium to very coarse, well-rounded, low sphericity.
1090-1150	Clay, light-gray, micaceous.
1150-60	Sand, poorly sorted, polished.
1160-1280	Clay, light to very dark gray, with some carbonaceous plant remains.
1280-1370	Clay, lighter gray; some sand.
1370-1430	Sand, poorly sorted, polished; some clay.
1430-1600	Sand, better sorted, medium-grained, subrounded.

(Porters Creek)

1600-1980	Clay, gray, coarse-grained, to brown, lignitic.
1980-2100	Shale, dark-gray, micaceous, some glauconitic, some fine sand, fossiliferous, ostracods and pelecypods.
2100-45	Clay, dark-gray, micaceous.
2145-55	Clay; some marl, enclosing glauconite and oxidized glauconite.

CRETACEOUS

Ripley

2155-70	Marl, fossiliferous and glauconitic.
2170-2200	Sand, medium to coarse, subrounded.
2200-2340	Clay, gray, glauconitic.
2340-50	Marl, with glauconite.
2350-60	Sand, medium-grained, angular.
2360-2450	Clay, gray, micaceous.
2450-60	Sandy marl, oxidized glauconite, foraminifera.
2460-2700	Sand, very coarse grained.
2700-2806	Clay, gray, micaceous and fossiliferous.

CAMBRIAN

Jefferson City

2806-30	Limestone, dark-brown, very fine grained, dense; occasional enclosed rounded and frosted quartz grains; rare dark-brown, translucent chert.

- 2830-40 Limestone, very dark, argillaceous, fine-grained; occasional quartz stringers and pseudo-oolites.
 2840-70 Limestone, as above; chert, dark-brown, translucent; some rounded and frosted quartz grains.
 2870-90 Limestone, very sandy, enclosing rounded and frosted grains.
 2890-2902 Limestone, enclosing poorly sorted sand.
 2902-10 Limestone, very dark brown, some oolitic; trace of black shale.
 2910-30 Limestone, brown, sublithographic to finely crystalline; trace of brown, oolitic chert.
 2930-35 Dolomite, tan, medium-crystalline, with much chert, tan, smooth, dense to translucent.
 2935-55 Limestone, very dark to black; trace of tan chert, as above.
 2955-63 Dolomite, fine- to medium-crystalline, sandy; sand, fine to medium, angular to rounded.
 2963-72 Limestone, dark, lithographic; chert, brown, smooth.
 2972-85 Limestone, black, argillaceous; trace of silt.
 2985-99 Limestone, fine-grained, slightly dolomitic; chert, very dark brown.
 2999-3014 Limestone, black, crystalline to argillaceous; trace of dark-brown, translucent chert.
 3014-18 Limestone, finely dolomitic, dark-brown.
 3018-41 Limestone, dark-brown; trace of chert, quartzose, with small brown oolites.
 3041-46 Mainly chert, almost black and dense.
 3046-85 Limestone, very fine grained, dark-brown; chert rare.
 3085-95 Limestone, lighter brown than above; very sandy; sand, very poorly sorted, with secondary crystal growth.
 3095-3110 Limestone, very fine, lithographic, brown; trace of very finely porous, tan chert.
 3110-16 Limestone, lighter brown, with much fine to coarse sand.
 3116-35 Limestone, slightly argillaceous, dark grayish-brown.
 3135-45 Limestone, as above; trace of black chert, with small oolites.

Roubidoux

- 3145-50 Limestone, as above; secondary quartz growth on rounded sand.
 3150-60 Sand, calcareous, very poorly sorted, fine to coarse, angular to round.
 3160-70 Limestone, fine-grained, brown; 50% chert, dark-brown to black, dense.
 3170-3285 Limestone, very dark, some mottled and fragmental; trace of chert, dark-brown, translucent, drusy; rare poorly sorted sand.
 3285-3305 Limestone, very fine, brown, enclosing much coarse sand; trace of quartzose chert.
 3305-25 Limestone, fine-grained, brown; trace of dark-brown, translucent chert.
 3325-30 Limestone, dark-brown, very oolitic; trace of white, quartzose chert.
 3330-58 Limestone, fine-grained, brown; trace of brown, translucent chert.
 3358-68 Mainly chert, dark-brown, translucent to quartzose.
 3368-72 Limestone, brown, fine-grained, very oolitic.
 3372-82 Limestone, sandy, quartzose.
 3382-3400 Limestone, dark-brown, fine-grained; trace of dense, brown chert.

Van Buren-Gasconade

- 3400-50 Limestone, fine-grained, brown, some oolitic; trace of brown chert and black shale.
 3450-3512 Limestone, lighter brown than above, sublithographic; rare brown chert.
 3512-25 Limestone, as above, enclosing sand grains.
 3525-30 Mainly chert, tan to brown, translucent, to black, dense.
 3530-50 Limestone, brown, with chert, as above; fractured and healed with crystalline calcite.
 3550-65 Limestone, dark-brown, dense, rare sand; crystalline dolomite, vein filling.
 3565-80 Limestone, clear brown, lithographic; trace of brown, translucent chert.
 3580-90 Limestone, as above, with some oolites; much fracturing, with dolomite vein filling.
 3590-95 Limestone, finely dolomitic; trace of secondary brown quartz.
 3595-3615 Limestone, slightly dolomitic, with much vein dolomite.
 3615-55 Limestone, very dark brown, fine-grained; trace of chert, quartzose, brown.
 3655-65 Limestone, lighter brown, oolitic.

3665-68	Limestone, dark-brown, fine-grained; 50% chert, dark-brown, translucent to finely porous.
3670-95	Limestone, slightly dolomitic, dark-brown; chert, quartzose, brown.
3695-3740	Limestone, fine-grained, dark-brown; chert, brown, quartzose to finely porous.
3740-75	Limestone, slightly dolomitic and argillaceous, lighter gray.
3775-92	Limestone, slightly argillaceous, very dark gray.
3792-98	Limestone, brown, lithographic, very oolitic; chert, brown, oolitic.
3798-3840	Limestone, argillaceous, gray to black.
3840-70	Limestone, brown, slightly oolitic; trace of black shale.
3870-3985	Limestone, very dark gray to black, argillaceous; chert, rare.
3985-4260	Limestone, argillaceous, dark-brown to black, fine-grained; little chert, black or brown, finely banded.
4260-65	Dolomite, almost black, fine-grained.
4265-70	Limestone, black, with dolomite veins.
4270-82	Dolomite, white, crystalline.
4282-95	Limestone, dark, fine-grained.

Eminence

4295-4400	Dolomite, white, veined to black, asphaltic.
4400-4635	Dolomite, white to light-gray, medium-crystalline.

INDIANA

Well No. 168 (415). ? No. 1 Grove, NW NE section 11, T. 4 S., R. 3 E., Harrison County, Indiana.

MISSISSIPPIAN

St. Louis

40-60	Limestone, fine-grained, detrital, fossiliferous, earthy.
60-80	Limestone, very slightly dolomitic, light-tan.
80-85	Limestone, fine-grained, clastic, many small fragmental fossils, with brown calcite and fine-grained matrix.
85-100	Limestone, weathered, earthy; trace of grayish-green, calcareous shale.
100-20	Limestone, dolomitic, light-cream, dense to vugular; some gray, argillaceous.
120-45	Limestone, finely dolomitic, some clastic, with enclosed fossil fragments and limestone nodules.
145-75	Limestone, fine-grained, fossiliferous, slightly argillaceous.
175-90	Limestone, slightly argillaceous, fine-grained, fossiliferous; trace of gray, fossiliferous chert.
190-225	Limestone, gray to slightly brown, fine-grained, fossiliferous, some ostracods.

Salem

225-60	Limestone, very dolomitic, slightly grayish-brown, rubbly, very fossiliferous, mottled.

Harrodsburg

260-80	Limestone, slightly argillaceous, densely fossiliferous; chert, light-gray, with black and white mottling.
280-325	Limestone, gray, coarsely crystalline, many fenestrated bryozoans, phosphatic, some light-green glauconite; very fossiliferous, gray chert.

Edwardsville

325-45	Sandstone, calcareous, fine-grained, glauconitic.
345-50	Sandstone, as above; much geode chert.
350-60	Limestone, very siliceous; much blue-white chert and glauconitic shale.

Borden

360-85	Siltstone, calcareous, argillaceous, light-gray; trace of geode chert.
385-95	Siltstone, slightly greenish-gray, medium-grained, well-sorted, some heavy minerals.
395-430	Siltstone, argillaceous, greenish-gray, much glauconite.

- 430-675 Siltstone, gray, micaceous, coarse-grained.
 675-722 Siltstone, coarser than above, less argillaceous.

New Providence

- 722-45 Shale, gray, fine-grained, pyritic.
 745-60 Shale, as above, some brown.
 760-818 Shale, gray to slightly greenish-gray, fine-grained, fissile.

New Albany

- 818-35 Shale, black, carbonaceous, coarse-grained.
 835-80 Shale, black, carbonaceous, many spores.
 880-900 Shale, black, carbonaceous, pyritic.
 900-10 Shale, as above; trace of pyritic dolomite.

DEVONIAN

Beechwood

- 910-20 Dolomite, pale yellowish-gray, medium-crystalline, very dense, enclosing bluish-gray, translucent chert.
 920-25 Dolomite, medium-crystalline, dense to slightly sucrose, phosphatic; chert, as above.

Silver Creek

- 925-30 Dolomite, fine-grained, slightly argillaceous, brownish-gray, earthy.

Jeffersonville

- 930-40 Limestone, slightly dolomitic, cream, fine-grained.
 940-55 Limestone, light grayish-brown, crinoidal, fossiliferous.
 955-65 Limestone, cream to tan, slightly chalky; chert, chalky, microspecked.
 965-70 Limestone, cream, chalky, fossiliferous; trace of bentonite-like clay.
 970-80 Limestone, as above; trace of chert.

SILURIAN

Brownsport

- 980-90 Dolomite, pale-gray, very densely crystalline, fine-grained.
 1005-15 Dolomite, pale creamy-gray, densely crystalline to very vugular, fine-grained.
 1015-35 Shale, very dolomitic, greenish-gray; much pyrite; trace of fine silt.
 1035-45 Dolomite, slightly argillaceous, fine-grained, densely crystalline to slightly vugular, light olive-gray.
 1045-75 Dolomite, finely crystalline, sucrose, light olive-gray; 20% chert, light-gray, micromottled.
 1075-1105 Limestone, coarsely crystalline, fossiliferous, glauconitic; trace of argillaceous, greenish-gray dolomite and white, translucent chert.

Dixon

- 1105-15 Siltstone, slightly dolomitic and argillaceous, light-gray.
 1115-20 Siltstone, as above, interbedded with creamy-gray, very fossiliferous limestone.

Lego

- 1120-45 Limestone, creamy-gray, crinoidal, fossiliferous.
 1145-60 Limestone, more coarsely crystalline, pale yellowish-tan.
 1160-65 Limestone, as above; trace of shale.

Waldron

- 1165-72 Shale, slightly calcareous, fossiliferous, some fissile, grayish-green.

Laurel

- 1172-82 Limestone, coarsely crystalline, cream, with pink calcite inclusions.
 1182-87 Dolomite, finely crystalline, sucrose; trace of slightly argillaceous, green dolomite.
 1187-1207 Limestone, dolomitic, very coarsely crystalline; some very vugular pale gray, with pink calcite enclosed.

Osgood

1207-10

Dolomite, argillaceous, greenish-gray.

1210-20

Dolomite, light reddish-gray to brown, fine-grained, very slightly argillaceous.

Brassfield

1220-30

Limestone, dolomitic, medium-crystalline; trace of gray chert, micro-specked.

1230-40

Limestone, light-tan, very fossiliferous, glauconitic; trace of chert.

1240-50

Limestone, slightly dolomitic, argillaceous; trace of gray, fossiliferous chert.

ORDOVICIANMaysville

1250-85

Limestone, dolomitic, argillaceous; some crystalline, fossiliferous and phosphatic; some very dark gray, argillaceous.

1285-1300

Limestone, finer grained than above, gray to slightly greenish-gray; some phosphatic and fossiliferous.

1300-20

Limestone, finely crystalline, tan, fossiliferous and phosphatic; some argillaceous, dark-gray.

1320-30

Limestone, more green than above; many ostracods.

1330-55

Limestone, argillaceous, gray, fine-grained; some calcareous shale; trace of glauconite.

1355-60

Limestone, very argillaceous, dark-gray, coarse-grained.

1360-85

Limestone, very fossiliferous, coarsely crystalline, phosphatic (biohermal); numerous brachiopods and bryozoans.

1385-1440

Limestone, very fossiliferous and phosphatic, gray, interbedded with dark, calcareous shale.

Cynthiana-Million-Garrard

1440-65

Limestone, very fossiliferous, gray, phosphatic, with much dark, calcareous shale.

1465-1520

Shale, calcareous, gray, with some interbedded fossiliferous limestone.

1520-55

Shale and limestone, as above, with trace of silt.

1555-75

Shale, slightly calcareous and finely silty, coarse-grained, gray.

1575-80

Shale, as above; much black, coarse-grained.

1580-1655

Shale, slightly silty and calcareous, dark-gray; little interbedded fossiliferous limestone.

1655-1750

Shale, slightly calcareous, dark-gray, some slightly greenish-gray.

Lexington?

1750-65

Shale, slightly calcareous, dark-gray to greenish-gray; little limestone.

1765-1845

Shale, dark-gray, calcareous, with little limestone.

1845-70

Limestone, very fossiliferous (biohermal), grayish-tan, pyritic and phosphatic. (Top of Indiana "Trenton")

1870-1905

Limestone, grayish-brown, fine-grained, fossiliferous, ostracodal; some calcareous shale.

1905-40

Limestone, very argillaceous, fine-grained, dark grayish-brown, with some shale, almost black, ostracodal.

Chazy-Black River

1940-45

Limestone, light grayish-tan, dense to very finely crystalline, slightly fossiliferous.

1945-75

Limestone, some grayish-brown, argillaceous; some lithographic, tan; trace of translucent, brown chert, bentonite, and pyrite.

1975-90

Limestone, finely dolomitic, light-brown, dense, some slightly fragmental.

1990-2005

Limestone, coarsely crystalline, cream, slightly pyritic.

2005-40

Limestone, dolomitic, finely crystalline to fine-grained, slightly fossiliferous.

2040-70

Limestone, very fine grained, brownish-gray, very slightly argillaceous.

2070-90

Limestone, dark-brown, lithographic.

2090-2165

Limestone, fine-grained to finely crystalline; rare dolomitic and gray, argillaceous limestone; some ostracods.

Well No. 169 (125). Petroleum Development Corporation No. 1 J. Binegar, section 29, T. 24 N., R. 13 E., Jay County, Indiana.

ORDOVICIAN

Utica

- 855-65 Shale, very dark gray, fine-grained.
- 865-922 Shale, black, coarse-grained (less petroliferous than New Albany).
- 922-55 Shale, gray and green, fine-grained.
- 955-95 Shale, dark-gray, slightly calcareous.
- 995-1008 Shale, black and carbonaceous.

Trenton (Lexington of Kentucky)

- 1008-35 Dolomite, white to cream, very coarsely crystalline, vugular, porous, some fossiliferous.
- 1035-45 Dolomite, very coarsely crystalline, as above; little coarse, fossiliferous limestone.
- 1045-85 Limestone, slightly dolomitic, tan, coarsely crystalline, fossiliferous.
- 1085-1120 Limestone, dolomitic, coarsely crystalline, fossiliferous, with little chert, same color.
- 1120-30 Limestone, slightly finer and more brown, fossiliferous; trace of shale.
- 1130-67 Limestone, tan, crystalline, slightly dolomitic, fossiliferous.
- 1167-74 Limestone, slightly dolomitic, crystalline, fossiliferous and phosphatic.

(Top of Chazy-Black River of Kentucky)

- 1174-85 Limestone, cream, lithographic, with trace of chert, same color as limestone.
- 1185-1200 Limestone, light grayish-tan, fine-grained.
- 1200-50 Limestone, dense, fine-grained, gray, with some crystalline dolomite.
- 1250-75 Limestone, cream, lithographic.
- 1275-1320 Limestone, very dolomitic, some earthy and slightly argillaceous.
- 1320-55 Dolomite, finely crystalline, brown, with little interbedded lithographic limestone.
- 1355-1430 Limestone, with much interbedded finely crystalline dolomite, light-tan.

(Glenwood-St. Peter)

- 1430-50 Limestone, very dolomitic, white, with much pale-green, slightly dolomitic shale; rare sand grains.
- 1450-65 Dolomite, light-gray, crystalline to vugular.
- 1465-95 Dolomite, light-gray, porous and coarsely crystalline, with occasional rounded and frosted sand grains enclosed.

CAMBRIAN

- 1495-1505 Dolomite, white, finely crystalline; occasional large, rounded and frosted quartz grains and oolitic chert.
- 1505-20 Dolomite, white, crystalline, with occasional large sand grains enclosed.
- 1520-50 Dolomite, white, crystalline; rare chert.
- 1550-70 Dolomite, medium to coarsely crystalline, white, porous; rare dull-white chert.
- 1570-1600 Dolomite, cream, medium-crystalline; trace of oolitic chert.
- 1600-40 Dolomite, sucrose, cream; trace of chalky, dolomoldic chert.
- 1640-70 Dolomite, pale-gray, fine to coarsely crystalline; no chert.
- 1670-1709 Dolomite, pale-gray, very coarsely crystalline; rare dull-white chert.
- 1709-21 Dolomite, white, densely crystalline to sucrose; occasional sand grains.
- 1740-58 Dolomite, white, sucrose to coarsely crystalline; no chert.
- 1764-80 Dolomite, white, coarsely crystalline.
- 1780-1805 Dolomite, cream, medium-crystalline; trace of angular to rounded sand.
- 1825-35 Dolomite, light-tan, porous, with little enclosed sand.
- 1835-60 Dolomite, pale-gray to tan; trace of finely oolitic white chert.
- 1860-70 Dolomite, light-tan, medium-crystalline; no chert.
- 1870-91 Dolomite, finely crystalline; trace of very fine glauconite and trace of faintly oolitic chert.

Trempealeau

- 1891-1940 Dolomite, medium-crystalline, tan, to slightly porous.
- 1940-2030 Dolomite, cream to gray, very coarsely crystalline, some porous.

- 2030-2241 Dolomite, very fine to medium crystalline, cream to tan; no chert.
 2241-2312 Dolomite, white, medium-crystalline, with trace of glauconitic silt.

Franconia

- 2312-21 Dolomite, pale-gray, medium-crystalline, some porous; more glauconite, coarser than above.
 2321-59 Dolomite, gray, argillaceous, with little sand enclosed; much glauconite.
 2359-87 Sandstone, slightly dolomitic, medium-grained, very micaceous and glauconitic.
 2387-2405 Dolomite, pale gray-tan, finely crystalline.
 2405-15 Dolomite, tan, sucrose, porous, with some glauconite and fine sand.
 2415-37 Dolomite, argillaceous, gray, micaceous and glauconitic..
 2437-2508 Sandstone, very dolomitic, glauconitic and slightly micaceous.

Eau Claire?

- 2508-12 Shale, sandy and slightly dolomitic, micaceous and glauconitic.
 2512-51 Sandstone, slightly dolomitic; much glauconite and mica.
 2551-64 Sandstone, as above, with much reddish shale.
 2564-2605 Sandstone, very micaceous and glauconitic; little shale; sand is fine, well-sorted for size.
 2605-80 Sandstone, very argillaceous, dark-gray to red; much glauconite and mica.
 2680-2840 Sandstone, dolomitic; much glauconite and mica.
 2840-89 Sandstone, as above, with some reddish shale.
 2889-3014 Sandstone, angular to rounded, with low sphericity; much glauconite, traces of red shale.

Mt. Simon

- 3014-3294 Sandstone, all very poorly sorted as to size and shape, but well-sorted as to mineral content (quartz); some grains almost pebbles in size.
 3294-3305 Sandstone, some grains very coarse; much red.
 3305-48 Sandstone, as above, with less red color.

PRE-CAMBRIAN?

- 3348-3404 Limestone, very argillaceous and siliceous, very dense and dark-gray, mottled, more shaly toward base.

Well No. 170 (164). Sun Oil Company No. 1 Victor Gibson, SE SE SE, section 17, T. 1 W., R. 4 S., elevation 735 feet, Perry County, Indiana.

MISSISSIPPIAN

Menard

- 67-85 Limestone, very finely dolomitic, pale-gray; some green shale.
 85-90 Some limestone, as above; mainly sandstone, very slightly calcareous, medium-crystalline.

Waltersburg

- 90-100 Limestone, earthy, fine-grained.
 100-10 Shale, very fine grained, fissile, dark-green.
 110-30 Shale, very fine grained, gray, some carbonaceous.
 130-50 Sandstone, medium-grained, white, very porous, some chert-cemented.
 150-60 Siltstone, argillaceous, very fine grained, with pyrite.

Vienna

- 160-78 Shale, dark-gray to green, clastic.
 178-90 Limestone, very fossiliferous, gray, mottled, and some brown.
 190-200 Sandstone, slightly calcareous, very argillaceous, gray to red to green.

Tar Springs

- 200-25 Sandstone, fine-grained, poorly sorted, many heavy minerals, porous to quartz cement.
 225-30 Shale, dark-gray, very fine grained and fissile.

Glen Dean

- 230-43 Limestone, grayish-brown, fossiliferous, crinoidal, with dark-centered oolites.

Hardinsburg

- 243-50 Siltstone, very tight, hard, gray, with carbonaceous and micaceous streaks.
260-75 Sandstone, calcareous, fine-grained, with little porosity.
275-82 Sandstone, medium-grained, well-sorted, and porous.
282-85 Siltstone, slightly argillaceous, gray.
285-90 Shale, gray, fissile.
290-93 Sandstone, calcareous, fine-grained.

Golconda

- 293-300 Limestone, argillaceous, fine-grained, brown.
300-20 Limestone, slightly dolomitic, fossiliferous, crinoidal.
320-28 Limestone, some argillaceous, some oolitic.
328-40 Shale, dark-gray to greenish-gray, fissile, fine-grained.
340-47 Shale, variegated, some siltstone.

Jackson

- 347-50 Siltstone, slightly argillaceous, gray.
350-60 Sandstone, fine-grained, many heavy minerals, tight to slightly porous; occasional shale pebbles enclosed.
360-71 Sandstone, medium-grained, angular to subrounded, friable.

Barlow

- 371-77 Limestone, gray, mottled, fossiliferous and crinoidal.
377-82 Limestone, some fine-grained, brown, some cream, crinoidal.
382-90 Limestone, fine-grained, brown, some slightly mottled and fossiliferous; some green, fissile shale.

Cypress

- 390-95 Shale, green to red to purple.
395-405 Some shale, as above; mainly siltstone, fine-grained.
405-12 Shale, dark greenish-gray, fissile.

Paint Creek

- 412-25 Limestone, tan, densely crystalline, crinoidal, with many bryozoans; some fine-grained, green shale.
425-30 Shale, variegated, fissile.
430-40 Shale, as above; some silt.

Bethel

- 440-50 Siltstone, very tightly cemented, pale-gray, sideritic.
450-58 Shale, dark-gray, fissile, with carbonaceous streaks.

Renault

- 458-63 Limestone, light-gray, very fossiliferous, some mottled.
463-75 Limestone, slightly argillaceous, light-gray, dense.
475-80 Siltstone, argillaceous, gray.
480-88 Shale, dark-gray, enclosing pebbles; trace of coal.
488-510 Limestone, fine-grained, pale-gray, slightly dolomitic, fossiliferous; trace of oolites.
510-14 Limestone, fine-grained, brown, earthy to argillaceous, occasional fragments containing sand, rock fragments, and pyrite.

Ste. Genevieve

- 514-19 Limestone, cream, dense to obscurely oolitic.
519-28 Limestone, very fine and dense; trace of green shale.
528-50 Limestone, very oolitic, light-tan.
550-70 Limestone, more crystalline and fossiliferous than above, rare oolites.
570-78 Limestone, very oolitic, white; occasional chalky oolites.
578-90 Limestone, as above, some dolomitic.

- 590-600 Dolomite, cream, finely crystalline, slightly porous.
 600-10 Limestone, tan to gray, fragmental, enclosing many rounded pebbles of limestone in green shale.
 610-20 Limestone, light-tan, fine-grained, some enclosing rounded pebbles.
 620-30 Limestone, light-tan, to earthy, argillaceous; rare silt.
 630-45 Limestone, pale-gray, fine-grained, slightly clastic.
 645-52 Dolomite, fine-grained and porous.
 652-68 Limestone, very oolitic, friable ("McClosky").
 668-70 Dolomite, very finely sucrose, tan.
 670-81 Limestone, gray-tan, fine-grained; occasional enclosed rounded rock fragment.
 681-90 Limestone, oolitic, tan.

St. Louis

- 690-95 Dolomite, slightly calcareous and argillaceous.
 695-700 Limestone, slightly dolomitic, gray-brown; trace of dull-blue chert.
 700-17 Limestone, light-tan, rubbly, with much chert, cream to gray, mottled.
 717-33 Limestone, cream, rubbly; rare chert.
 733-58 Limestone, very fine grained, light grayish-brown.
 758-95 Dolomite, slightly calcareous, fine-grained, tan; little chert, macro-mottled.
 795-800 Limestone, densely crystalline; more chert, as above.
 800-15 Dolomite, slightly calcareous, very fine grained, tan.
 815-55 Limestone, very fine grained, slightly greenish-tan, argillaceous; much soft, white gypsum.
 855-84 Limestone, slightly dolomitic, fine-grained, brown, with some interbedded very dark brown, argillaceous limestone.
 884-935 Limestone, slightly dolomitic and argillaceous, very dark brown to gray, fine-grained; much gypsum.
 935-45 Limestone, brown, very fine grained, sublithographic; rare brown gypsum.
 945-55 Limestone, very finely dolomitic, brown; much gypsum.
 955-85 Limestone, finely dolomitic and argillaceous, dark-gray; much gypsum.
 985-1005 Limestone, some very finely dolomitic, some argillaceous; interbedded with almost black, calcareous shale; gypsum.
 1005-75 Limestone, slightly dolomitic, with some interbedded very dark, calcareous shale; trace of mottled chert; increasingly argillaceous toward base.
 1075-1110 Shale, calcareous, very dark to almost black.

Salem

- 1110-50 Limestone, brown, very fossiliferous, mottled with gray; many small fossils, including Endothyra baileyi and numerous Paraparchites.

Warsaw

- 1150-70 Limestone, very argillaceous, dark-brown to gray; some geode quartz.
 1170-80 Limestone, finely dolomitic, brown, mottled with dark shale; trace of mottled chert.
 1180-1200 Limestone, slightly dolomitic, very argillaceous, dark-gray.
 1200-10 Limestone, finely dolomitic and argillaceous; much dense, fossiliferous chert, gray, with white and black markings.
 1210-30 Limestone, very fossiliferous, creamy-gray, almost coquina; occasional Endothyra and Paraparchites.
 1230-60 Limestone, gray, very fossiliferous and phosphatic, with some interbedded calcareous shale; much fossiliferous and gray, mottled chert.
 1260-80 Limestone, very fossiliferous, light-gray, crinoidal.
 1280-1320 Limestone, very fossiliferous, crinoidal; trace of chert and glauconite.
 1320-30 Limestone, very fossiliferous, slightly phosphatic.
 1330-90 Limestone, very dolomitic, gray, with much chert, very fossiliferous, mottled, gray; some geode chert.

Borden

- 1390-1480 Limestone, brown, very argillaceous (silt-textured), with much chert, little of it free, mainly disseminated through the limestone.
 1480-1520 Limestone, very siliceous, slightly argillaceous, grayish-brown.

- 1520-45 Shale, calcareous, siliceous, but less so than above.
 1545-1620 Siltstone, slightly argillaceous, very glauconitic, gray, slightly micaceous.
 1620-40 Shale, gray, very fine grained.
- New Albany
 1640-80 Shale, black, carbonaceous, fine-grained; many spores.
 1680-1700 Some shale, as above, some lighter gray.
 1700-20 Shale, black, carbonaceous, with many spores.
 1720-28 Shale, slightly greenish-gray, much pyrite; trace of very dense, phosphatic dolomite.
 1728-53 Shale, black, coarse-grained, much chalcopryrite.
- DEVONIAN**
Beechwood
 1753-56 Dolomite, cream, fine- to medium-crystalline, very dense, slightly vugular; some gray, translucent chert.
 1756-64 Limestone, cream to pale-gray, fine-grained to crystalline; chert, gray, translucent, to mottled.
- Jeffersonville
 1764-90 Limestone, tan, crinoidal to coarsely crystalline; rare chert, tan, with fine, white inclusions.
 1790-1800 Limestone, very fossiliferous, finely crystalline.
 1800-10 Limestone, tan, slightly dolomitic, fine-grained; trace of chert, dull, same color as limestone, slightly dolomitic.
 1810-20 Limestone, finely crystalline; trace of chert, as above.
- Clear Creek (or Geneva)
 1820-40 Limestone, cream, chalky, crystalline, to cream, slightly fossiliferous; trace of oil stain.
 1840-50 Limestone, as above, with some finely dolomitic.
- SILURIAN**
Brownsport
 1850-70 Limestone, dense, fine-grained, crinoidal, interbedded with tan to gray, slightly argillaceous limestone; trace of translucent, gray chert.
 1870-90 Limestone, very crinoidal, interbedded with much greenish-gray shale.
 1890-1900 Limestone, some finely dolomitic; trace argillaceous and little chert.
 1900-25 Limestone, grayish-tan, densely crystalline to crinoidal; trace of chert.
 1925-40 Limestone, slightly dolomitic, brown to slightly grayish-brown.
 1940-95 Limestone, very fine grained, brown to gray, argillaceous, slightly fossiliferous.
 1995-2005 Limestone, as above, with some finely dolomitic, lighter, with rare silt and fine pyrite.
 2005-15 Dolomite, calcareous, very light grayish-tan, fine-grained; trace of fine silt.
 2015-42 Dolomite, pale-gray, medium-crystalline to vugular; some pyrite.
 2042-58 Dolomite, slightly calcareous, creamy-gray to white, crystalline; some pyrite, and much glauconite.
 2058-2120 Shale, greenish-gray, fissile, to slightly calcareous, greasy-textured; trace of silt.
 2120-30 Shale, as above, without silt; trace of red, calcareous shale.
- Lego
 2130-40 Limestone, slightly argillaceous, grayish-green to red; occasional fragments of crystalline and fossiliferous limestone.
 2140-70 Limestone, fine-grained to crystalline, pink and yellow crystals enclosed.
 2170-88 Limestone, very slightly dolomitic, much pink to pale-green crystals in white, crystalline matrix.
- Waldron
 2188-90 Shale, grayish-green, greasy-textured; some limestone.

Laurel

- 2190-2210 Dolomite, cream, finely crystalline to vugular; trace of pink calcite.
2210-25 Dolomite, light-brown, slightly argillaceous, finely crystalline, with trace pink, crinoidal; rare argillaceous fragments (remnants of Osgood).

Brassfield

- 2225-45 Limestone, slightly dolomitic, with pink, yellow, and green crystals in white matrix; rare chert.
2245-55 Limestone, finely dolomitic, cream; much chert, same color as limestone, microspecked.
2255-60 Limestone, very glauconitic, densely crystalline.

ORDOVICIANMaysville(Tate)

- 2260-70 Limestone, gray, crystalline and phosphatic; trace of chert and shale.
2270-75 Shale, slightly dolomitic and silty, gray.

(Fairmount)

- 2275-2340 Limestone, coarsely fossiliferous and phosphatic, interbedded with dark-gray, calcareous shale.
2340-48 Limestone, light-gray to yellow to pink, crystalline; some grayish-green shale.
2348-78 Shale, slightly calcareous, gray to greenish-gray, fine-grained.
2378-2400 Limestone, very fossiliferous and phosphatic, gray; slightly argillaceous.

Garrard

- 2400-10 Limestone, fossiliferous and phosphatic, silty.
2410-45 Shale, slightly calcareous, fine-grained, gray.
2445-50 Shale, as above, with a little silt.
2450-90 Shale, as above, interbedded with limestone, brown, slightly fossiliferous.

Cynthiana-Million

- 2490-2650 Shale, slightly calcareous, gray to slightly brownish-gray; rare silt.
2650-2720 Shale, slightly calcareous, rare silt, very dark gray to slightly brownish-gray.

Lexington

- 2720-60 Shale, slightly calcareous, very dark gray.
2760-2800 Shale, almost black, fine-grained, slightly calcareous.
2800-63 Shale, as above, with some fragmental shale in base.

(Top of Indiana Trenton)

- 2863-82 Limestone, light-brown, densely crystalline, very fossiliferous.

Chazy-Black River

- 2882-2900 Limestone, very fine, lithographic, brown to brownish-gray.
2900-20 Limestone, as above; trace very slightly argillaceous; rare chert.
2920-40 Limestone, very fine grained; trace of dolomite and bentonite.
2940-3280 Limestone, very fine grained, tan, lithographic; rare fragments showing finely crystalline, brown dolomite.
3280-3315 Dolomite, finely sucrose, brown, some slightly calcareous.
3315-65 Limestone, slightly argillaceous, very dark brown, fine-grained.
3365-90 Limestone, very finely dolomitic, gray, slightly argillaceous.

(Joachim of Missouri)

- 3390-3400 Dolomite, slightly calcareous, very fine grained, detrital, with some dark-brown shale.
3400-25 Dolomite, very finely silty, brown, finely crystalline.
3425-57 Dolomite, pale-gray, finely crystalline; trace of green shale; rare sand grains.

(St. Peter)

- 3457-67 Sandstone, fine to medium, angular to rounded and frosted; trace of green shale.

- 3467-70 Dolomite, very finely crystalline, gray, with dense to translucent chert.
 3470-76 Sandstone, slightly dolomitic, very fine, angular to broken grains of rounded and frosted sand.
- (Everton)
 3476-80 Dolomite, very fine grained, dense, and pale-gray.
 3480-92 Dolomite, cream, medium-crystalline; trace of dense, white to translucent chert.
 3492-3500 Dolomite, cream, medium-crystalline; no chert.
 3500-10 Dolomite, cream, medium-crystalline; trace of dense, white chert.
 3510-23 Dolomite, as above; trace of slightly oolitic chert and rare sand grains.
 3523-33 Dolomite, as above; much chert. translucent to dense, white; rare sand.
 3533-34 Dolomite, finely crystalline, cream; trace of chert.

MISSOURI

Well No. 171 (196). Strake Petroleum Company No. 1 Russell, SW SE section 24, T. 19 N., R. 11 E., elevation 271 feet, Pemiscot County, Missouri.

TERTIARY

Eocene

(Holly Springs)

- 607-730 Sandy clay.
 730-45 Pebbles, miscellaneous materials, including black shale.
 745-1030 Clay, gray, with carbonaceous plant remains.
 1030-1135 Sand, coarse-grained, poorly sorted, angular to rounded, polished.

(Porters Creek)

- 1135-1400 Clay, dark-gray.
 1400-1610 Clay, dark-gray, better consolidated than that above, micaceous.
 1610-30 Clay, gray, much glauconite.
 1630-32 Marl, glauconitic, many foraminifera.

CRETACEOUS

Ripley

- 1632-1810 Sand, coarse-grained, poorly sorted, angular to subrounded, glauconitic.
 1810-65 Sand, coarser than above. more rounded.
 1865-90 Sand, fine-grained, angular to subrounded.
 1890-2055 Sand, fine-grained, well-cemented, micaceous, glauconitic.

CAMBRIAN

Elvins

- 2055-90 Dolomite, white, densely crystalline, coarse-grained.
 2090-2160 Dolomite, white, coarsely crystalline, vugular.
 2160-95 Dolomite, white to pale-gray, very coarsely crystalline.
 2195-2230 Dolomite, light-tan, very coarsely crystalline.
 2230-65 Dolomite, tan, coarsely crystalline.
 2265-90 Dolomite, chalky, calcareous; much light clay.

Bonneterre

- 2290-2400 Dolomite, white to cream, medium-crystalline, some pink.
 2400-2560 Dolomite, medium-crystalline, white to pink; some mineralization.
 2560-75 Dolomite, white to brown, crystalline, very slightly argillaceous.
 2575-2610 Dolomite, pale-gray, finely crystalline, trace green and red.
 2610-20 Dolomite, gray, densely crystalline, slightly argillaceous.
 2620-40 Dolomite, white, very coarsely crystalline.
 2640-80 Dolomite, finely crystalline, white to buff to red; basic dike minerals.
 2680-2720 Dolomite, yellow, densely crystalline, very coarse grained.
 2720-80 Dolomite, light and dark-brown, densely crystalline.
 2780-2810 Dolomite, light-cream to gray to red; some basic dike minerals.
 2810-30 Dolomite, and some limestone, finely crystalline, brown; soft, white kaolinite.
 2830-60 Dolomite and limestone; basic dike minerals.
 2860-70 Limestone, gray, medium, to dark, finely crystalline.

2870-2930	Dolomite, gray to pink and yellow, coarsely crystalline.
2930-3070	Dolomite, argillaceous, very dark brown to black; white, veined dolomite.
3070-3130	Shale, slightly dolomitic, coarse-grained; occasional veins.
3130-3585	Limestone, very argillaceous, dark-brown to black, fine-grained to sub-crystalline; occasional trilobites.
3585-3675	Limestone, more argillaceous than above, black, fine-grained.
3675-4060	Shale, calcareous, and some black, argillaceous limestone, fine-grained.
4060-4140	Limestone, slightly argillaceous, very dark brown to black, fine-grained.
4140-4300	Limestone, very argillaceous, dark-gray to black.
4300-4500	Shale, calcareous, black, intra-bedded with dark, argillaceous limestone.
4500-4630	Limestone, finely crystalline, white to light-gray; trace of silt and glauconite; small linguloid brachiopods.
4630-4740	Dolomite, densely crystalline, light-gray, enclosing some fine sand and silt; lower part quartzitic.

OHIO

Well No. 172 (48). Ira Syndicate No. 1 Thomas Tira, in Franklin township, Adams County, Ohio. (Incomplete set of samples)

ORDOVICIAN

Chazy-Black River (top about 1625 feet)

1898-1936	Limestone, very fine grained to finely crystalline, gray-tan.
1936-68	Limestone, fine, lithographic, some greenish and argillaceous; occasional fossils.
1968-80	Limestone, very fine, almost white, lithographic.
1980-2063	Limestone, very light tan, with some finely dolomitic limestone interbedded.
2063-89	Limestone, some very fine, lithographic, brown, and some very dark, calcareous, gray-green shale.

(Glenwood)

2089-2108	Dolomite, calcareous, very fine grained, earthy, tan, with much green, calcareous shale.
2108-35	Dolomite, detrital, fine matrix enclosing larger grains; some slightly argillaceous, green.
2135-46	Sandstone, friable, fine- to medium-grained, with some dolomite cement; trace of chert.

CAMBRIAN

Knox (Potosi?)

2146-62	Dolomite, cream, chalky, and worn-looking; chert, chalky, with large oolites.

Well No. 173 (50). Sun Oil Company No. 1 E. M. Marshall, Chester township, elevation 979 feet, Greene County, Ohio.

ORDOVICIAN

292-307	Limestone, gray, very fossiliferous and phosphatic, some argillaceous.
307-12	Limestone, brownish-gray, very fossiliferous, with some interbedded gray-green, coarsely fissile shale.
312-44	Limestone, gray, very fossiliferous and phosphatic; many bryozoans and <i>Zygospira</i> and <i>Cyclora</i> ; some interbedded calcareous shale.
344-59	Limestone, as above, but much more shale.
359-404	Limestone, densely crystalline, very fossiliferous and phosphatic, with interbedded gray shale.
404-20	Shale, slightly calcareous, gray, and fine-grained.
420-45	Shale, calcareous, fine-grained, and some interbedded limestone.
445-98	Limestone, much more dense and fine than above, slightly fossiliferous and phosphatic, some very argillaceous; slightly silty.
498-526	Shale, calcareous, and very slightly silty, with some interbedded fossiliferous and phosphatic limestone.
526-38	Limestone, as above; less shale.

- 538-65 Limestone and shale, as above, very coarsely phosphatic.
- 565-90 Limestone, as above, with more shale, finely silty.
- 590-626 Shale, light-gray, slightly calcareous, with little fossiliferous limestone.
- 626-32 Limestone, fossiliferous and crystalline, with some interbedded shale.
- 632-88 Shale, slightly calcareous, light-gray, with little interbedded limestone.
- 688-92 Limestone, very coarse, brown, crinoidal.
- 692-95 Shale, slightly calcareous, gray.
- 695-700 Limestone, very coarse, brown, crinoidal.
- 700-825 Shale, slightly calcareous, light-gray; many fossil remains, occasional bryozoans and *Cryptolithus tessalatus* at 780 feet.
- 825-42 Shale, darker brownish-black, fine-grained; some interbedded limestone (Logged some gas and show of oil.)
- 842-65 Shale, medium-gray, interbedded with some dense, brownish-gray, crinoidal limestone.
- 865-82 Shale, as above, with coarsely crinoidal, brown limestone.
- 882-951 Shale, very slightly calcareous, dark-gray.

Lexington

- 951-56 Shale, calcareous, more so than above, with some light dolomite and fossiliferous limestone.
- 956-76 Shale, calcareous, dark, coarse-grained, with some very dark, fossiliferous limestone interbedded.
- 976-1018 Limestone, slightly argillaceous, dark-brown, densely crystalline, few fossils; some interbedded shale.
- 1018-29 Shale, calcareous, very dark gray-brown.
- 1029-55 Limestone, interbedded with shale, very dark brown; many ostracods.
- 1055-84 Limestone, lighter than above and more fossiliferous, with numerous brachiopods; interbedded with some shale.
- 1084-97 Shale, slightly calcareous, very dark, interbedded with dark, crystalline, dense, and more or less fossiliferous limestone.

(Utica lithology)

- 1097-1108 Shale, very slightly calcareous, black, carbonaceous, coarse-grained.

(Ohio "Trenton")

- 1108-10 Contact of shale with limestone, dark-brown, crystalline, dense, fossiliferous, with brachiopods and ostracods.
- 1110-32 Limestone, light-tan, crystalline, fossiliferous, enclosing rare dolomite rhombs; very slightly phosphatic; some brown to gray, mottled chert.
- 1132-38 Limestone, lighter brown, more mottled, with brown to gray chert.

Chazy-Black River

- 1138-50 Limestone, cream to light-brown, lithographic; trace of argillaceous limestone.
- 1150-61 Limestone, very light tan, fine to lithographic; rare dolomite.
- 1161-1282 Limestone, light gray-tan, very fine grained to lithographic; rare fragments slightly argillaceous limestone.
- 1282-1402 Limestone, fine-grained, tan, and some slightly dolomitic and earthy-textured.
- 1402-1568 Limestone, lithographic, light-tan; rare dolomite and occasional fragments slightly argillaceous.
- 1568-81 Limestone, very dolomitic, finely sucrose, tan.

(Glenwood)

- 1581-1611 Limestone, greenish-gray, argillaceous, very fine grained.
- 1611-17 Dolomite, slightly calcareous, clastic (detrital dolomite), with green, slightly calcareous shale.
- 1617-29 Dolomite, as above, detrital; less shale.

CAMBRIAN

Knox

- 1629-36 Dolomite, medium-crystalline, light-tan, sucrose; dense to translucent chert, some dolomoidic; pyrite, and trace of glauconite.

- 1636-42 Dolomite, medium-crystalline, cream, sucrose; trace of pyrite and tan chert.
- 1642-52 Dolomite, medium-crystalline, sucrose, cream; very fine glauconite.
- 1652-72 Dolomite, slightly coarser than above; trace of chert.
- 1672-78 Dolomite, pale-green, finely crystalline, pyritic; rare coarsely crystalline fragments.
- 1678-1713 Dolomite, pale-green, very fine grained and dense; rare chert, and rounded and frosted sand grains.
- 1713-25 Dolomite, cream, with trace pink, medium-crystalline, sucrose; rare sand grains and trace of oolitic chert.

Well No. 174 (51). Ohio Oil Company No. 1 Johns, (Lot 9930) Logan County, Ohio.

DEVONIAN

- 15-20 Shale, black, fine-grained, fissile; some limestone, brown, with large oolites.
- 20-30 Limestone, very slightly dolomitic, oolitic, as above; some shale.

SILURIAN

Tymochtee

- 70-80 Dolomite, very finely crystalline, dense, light-gray, some vugular and oil-stained.
- 80-90 Dolomite, very finely crystalline, gray, to vugular, brown; trace of green shale.
- 90-120 Dolomite, very pale gray, very fine and dense, some vugular and oil-stained, brown.
- 120-60 Dolomite, finely crystalline, grayish-brown, and slightly argillaceous, interbedded with brown, densely crystalline dolomite.
- 160-85 Dolomite, brown, medium-crystalline, enclosing rare sand grains.
- 185-230 Dolomite, as above, with some interbedded dark shale; rare fine sand.

Greenfield

- 230-45 Dolomite, grayish-brown, very finely crystalline, dense, some argillaceous.
- 245-50 Dolomite, finely crystalline, brown to grayish-brown; less shale.
- 250-85 Dolomite, slightly argillaceous, brown, finely crystalline.
- 285-310 Dolomite, light-tan, finely sucrose, some vugular, streaked with asphaltic residue.
- 315-25 Dolomite, as above, with some yellow and finely sandy.

("Guelph")

- 325-75 Dolomite, very pale gray, coarsely crystalline, vugular; occasional small pyrite inclusions.
- 375-400 Dolomite, light-tan, fine- to medium-crystalline, to sucrose, with some earthy, dense chert, the same color.
- 400-15 Dolomite, gray, densely crystalline to very vugular, crinoidal, and slightly mottled.
- 415-30 Dolomite, as above, with some slightly finer and slightly argillaceous.

Brassfield

- 430-45 Dolomite, cream, very vugular and crystalline to dense, much glauconite.

ORDOVICIAN

Richmond

- 445-70 Dolomite, cream, coarsely crystalline to vugular, with trace of gray-green shale; much phosphatic mottling.
- 470-95 Dolomite, tan to gray, mottled, coarsely crystalline, some slightly argillaceous and more gray; trace of pyrite; some oil staining.
- 495-511 Dolomite, very argillaceous, greenish-gray, slightly phosphatic and silty.
- 511-35 Dolomite, very argillaceous, greenish-gray, to fissile, with little silt and phosphate mottling.
- 535-50 As above, with much of it red.
- 550-90 Shale, green, fissile to finely silty, interbedded with dolomite, gray, crystalline, mottled; vugs filled with shale.

Maysville

- 590-620 Limestone, dolomitic, crystalline, gray, and phosphatic, with some fossils and much shale, as above.
620-755 Shale, gray-green, some very slightly calcareous, some silty; interbedded with a little slightly dolomitic, fossiliferous and phosphatic limestone.
755-75 Limestone, brown, dense, very fossiliferous and phosphatic, with some interbedded calcareous, greenish-gray shale.
775-840 Shale, greenish-gray, fissile, to slightly calcareous; little interbedded fossiliferous limestone.
840-910 Limestone, very fossiliferous and phosphatic, interbedded with shale, slightly greenish-gray and calcareous.
910-25 Shale, slightly greenish-gray, with very little limestone, as above.
925-60 Shale, more gray than above; still little phosphatic limestone.

Lexington-Cynthiana-Eden

- 960-90 Shale, slightly calcareous, gray; trace of brown limestone, densely crystalline and very fine.
990-1100 Shale, slightly calcareous, fissile, gray, with little interbedded brown, crystalline limestone.
1100-30 Shale, more fissile than above and lighter gray; less limestone.
(Utica)
1130-70 Shale, very dark gray, fissile, fine, slightly calcareous (almost black).
1170-1255 Shale, very dark, as above; trace of interbedded lighter gray shale.
1255-1480 Shale, almost black, and coarser than above, very slightly calcareous.
1480-87 Shale, as above, with trace of very dark brown limestone.
1487-97 Dolomite, pale-gray, coarsely crystalline, tight and dense; slight oily stain.
1497-1511 Shale, very dark gray-brown to black; trace of dolomite, as above.

("Trenton" of Ohio)

- 1511-17. Limestone, very dark brown, argillaceous, fossiliferous.
1525-40 Limestone, slightly dolomitic, clean brown, crystalline, very fossiliferous and slightly vugular.
1540-50 Limestone, brown, densely crystalline, fossiliferous; little microspecked chert.
1550-60 Limestone, very densely crystalline, brown, fossiliferous; chert, as above

Chazy-Black River

- 1560-65 Limestone, finer than above, tan, some sublithographic; trace of slightly argillaceous, very fine limestone.
1565-85 Limestone, brown, very fine to lithographic; trace of brown micromottled chert.
1585-90 Limestone, very fine, light-cream to tan.
1590-95 Limestone, light-cream to tan, sublithographic; much bentonite.
1595-1600 Limestone, very dolomitic, cream, slightly porous; chert, chalky-tan.
1600-10 Limestone, slightly dolomitic, light gray-tan, fine-grained; trace of micromottled, gray chert.
1610-45 Limestone, very fine grained, tan; some very finely dolomitic; some very finely argillaceous, greenish-brown.
1645-70 Limestone, fine-grained to densely crystalline, brown; rare dolomite.
1670-1785 Limestone, very fine to subcrystalline; rare fragments slightly dolomitic or argillaceous; ostracods occasionally.
1785-1820 Limestone, some finely dolomitic, lighter brown than above.
1820-25 Limestone, more dolomitic (detrital), with trace of pale-green shale.
1825-80 Limestone, brown to gray-brown, slightly dolomitic, fine-grained; rare shale.
1880-1900 Limestone, dolomitic, very fine grained, earthy (some detrital); rare chert.
1900-70 Limestone, slightly darker than above, with some very finely argillaceous, very fine grained.
1970-2000 Limestone, very fine grained, lithographic, to slightly argillaceous; some limestone finely dolomitic; rare ostracods.

(Glenwood)

- 2000-20 Limestone, dolomitic (detrital), light-tan, fine-grained.
2020-45 Limestone, fine to subcrystalline, with much very dark green, fine-grained shale.
2045-67 Limestone and dolomite (detrital), very densely crystalline, with much shale, as above; some pyrite.

CAMBRIAN

- 2067-73 Dolomite, tan, medium-crystalline, slightly vugular, with finely disseminated pyrite and trace of glauconite.
2073-2120 Dolomite, medium to coarsely crystalline, dense to vugular; pyritic; porous.
2120-35 Dolomite, cream to light-tan, coarsely crystalline, porous; some pink and pale-green; rare fine glauconite fragments.
2135-70 Dolomite, slightly finer than above, more dense; vugs lined with more coarsely crystalline dolomite.
2170-2250 Dolomite, medium to coarsely crystalline, slightly sucrose, with fine pyrite enclosed, and rare fine-grained dolomite.
2250-60 Dolomite, light-tan, densely crystalline; fine pyrite, as above; rare green shale.
2260-80 Dolomite, fine to coarsely crystalline, brown, dense to slightly vugular.

Trempealeau?

- 2280-2335 Dolomite, fine- and medium-crystalline, dense, with some very fine, green, interstitial clay (glauconite?).
2335-80 Dolomite, white to cream, densely crystalline to vugular; trace of very fine glauconite silt.
2380-2465 Dolomite, light-brown, medium-crystalline, dense to vugular; trace of very fine quartz and glauconite silt.
2465-2500 Dolomite, cream, finely crystalline, enclosing fine sand (10%); still glauconite and quartz silt, as above.
2500-20 Dolomite, very sandy, fine-grained, brown, streaked with a little brown shale.
2520-35 Dolomite, enclosing many rounded quartz grains, same size as dolomite crystals; glauconite silt.

Franconia

- 2535-40 Dolomite, very slightly sandy, as above, light-tan; much glauconite, in coarser grains than above.
2540-75 Dolomite, about 50% sand, micaceous and very glauconitic (nodules).
2575-80 Dolomite, as above, with some gray shale.
2580-2630 Dolomite, about 50% sand, micaceous, very glauconitic, and with some gray-brown shale.
2630-90 Dolomite, slightly sandy, micaceous, and with much glauconite; much shale, greenish-gray.
2690-2718 Dolomite, very coarsely crystalline, pale-gray to brown, coarsely glauconitic, micaceous.
2718-70 Sandstone, slightly dolomitic, very glauconitic, with some red color; very micaceous and argillaceous; more dolomite toward base.
2770-85 Dolomite and dolomitic sandstone interbedded, brown, medium-grained.
2785-2805 Dolomite, slightly sandy, gray-brown, very glauconitic; trace of dark-gray shale.
2805-30 Dolomite, sandy, 50%, brown to pink, very glauconitic; little shale and mica, as above.
2830-65 Sandstone, slightly dolomitic, fine-grained, very glauconitic, some reddish color; some very argillaceous, gray dolomite.
2865-2920 Sandstone, slightly dolomitic, fine-grained, with much glauconite and some reddish-brown color; some slightly argillaceous.

Dresbach

- 2920-80 Sandstone, dolomite-cemented, poorly sorted, cream; more coarse sand with depth.
2980-3018 Sandstone, dolomite-cemented, more dark and fine-grained than above, with some feldspar (slightly arkosic).

- 3018-85 Sandstone, arkosic, poorly sorted as to minerals and size; rare shale.
 3085-3110 Sandstone, as above, with little dolomite cement.
 3110-3235 Sandstone, poorly sorted, arkosic, medium to coarse, with slight round-
 ing and low sphericity; much red stain.

Well No. 175 (49). Don Roe No. 1 Reiniger, SW NE section 35, Clear Creek township,
 Warren County, Ohio.

ORDOVICIAN

Maysville and Richmond

- 20-27 Limestone, gray, fossiliferous, slightly greenish, argillaceous; fine
 ramose bryozoans.
 27-39 Limestone, some slightly greenish, argillaceous; some phosphatic; all
 fossiliferous.
 39-101 Limestone, very fossiliferous, with coarsely plicate brachiopods; some
 interbedded greenish, argillaceous limestone.
 101-19 Limestone, more argillaceous, greenish-gray, rich in ostracods.
 119-31 Shale, calcareous, very fossiliferous.
 131-37 Shale, as above, with phosphatic, fossiliferous limestone (*Zygospira*,
Cyclora, and bryozoans).
 137-66 As above, with many finer brachiopods; interstitial clay, slightly green-
 ish.
 166-221 Limestone, very fossiliferous, phosphatic; less shale than above, but
 still greenish-gray.
 221-57 Shale, slightly calcareous, slightly silty; some greenish-gray, with some
 fossiliferous, phosphatic limestone.
 257-82 Interbedded shale and fossiliferous limestone, as above; bryozoans are
 very phosphatic.
 282-309 Limestone, gray, densely crystalline, fossiliferous, slightly phosphatic,
 interbedded with shale, some very finely silty.
 309-46 Limestone, fossiliferous, very phosphatic, interbedded with shale, some
 fissile, some very finely silty.
 346-73 Limestone, more coarsely fossiliferous, interbedded with shale, almost
 fissile, green-gray.

Cynthiana-Eden

- 373-97 Shale, slightly calcareous, with some very fine silt.
 397-427 Shale, some fissile; some very finely silty and calcareous, greenish-
 gray, less fossiliferous.
 427-42 Shale, slightly calcareous; some fissile, green-gray, finely silty; occa-
 sional fossiliferous streaks.
 442-63 Interbedded densely crystalline, very fossiliferous limestone, brownish-
 gray, with bryozoans and phosphatic nodules, with shale, as above.
 463-93 Shale, fissile, slightly calcareous, slightly greenish-gray.
 493-619 Shale, gray, fissile, very slightly calcareous, less fossiliferous than above.
 619-67 Shale, as above, some slightly calcareous and very finely silty.
 667-73 As above, plus mats of fossils -- brachiopods, bryozoans, and ostracods;
 pyritic.
 673-88 Shale, as above; cream limestone, crystalline and very fossiliferous.
 688-739 Shale, more calcareous, gray, less fissile.

Lexington

- 739-51 Limestone, brown, crystalline, very fossiliferous (many ostracods), in-
 terbedded with some shale.
 751-75 Limestone, very densely fossiliferous (with ostracods), and coarse, cal-
 careous shale, dark-gray.
 775-87 Some shale, as above; mainly limestone, fine-crystalline, brown, ostra-
 codal, some phosphatic.
 787-802 Shale, calcareous, dark-gray, coarse-grained.
 802-17 More limestone, brown, finely crystalline to argillaceous, some very
 finely phosphatic.
 817-41 Shale, calcareous, coarse, to argillaceous limestone, very dark gray-
 brown.
 841-77 Limestone, argillaceous, very dark brown, with some fine brachiopods;
 many ostracods.

- 877-98 As above, with some very dark brown-gray, calcareous shale.
 898-907 Shale, very dark gray-brown, slightly calcareous, some fossiliferous.
 907-13 Shale, as above, plus light-brown, very coarse crystalline limestone, fossiliferous, slightly dolomitic; some porosity.
 913-19 Limestone, light-brown, densely crystalline and slightly porous, very fossiliferous, including ostracods.
 919-25 Limestone, crystalline to very fine, very finely phosphatic; some light-gray, translucent chert.
 925-31 Limestone, light-tan, fine-crystalline.
 931-35 Some limestone, white, chalky; more tan, translucent, microspecked chert.

Chazy-Black River

- 935-43 Limestone, fine-grained to finely crystalline, tan, some chalky; occasional fossil.
 943-51 Limestone, very fine, tan, lithographic, with chert, same color and texture; bentonite.
 951-60 Limestone, very fine, as above, grayer, with included bentonite.
 960-67 Limestone, brown, lithographic; bentonite cave.
 967-75 Some almost white, lithographic limestone.
 975-80 Bentonite (cave?).
 980-82 Limestone, very fine, lithographic, tan; rare fragment dolomitic.

TENNESSEE

Well No. 176 (103). Carroll Drilling Company No. 1 J. D. Laury, CSL NE SE section 17-A-54, elevation 823 feet, Fentress County, Tennessee.

ORDOVICIAN

Chazy-Black River

- 1377-87 Limestone, very fine grained, sublithographic, gray to brown; occasional fragments argillaceous, leaving dark, porous shale residue.
 1387-1401 Limestone, lighter grayish-brown, cleaner than above.
 1401-25 Limestone, gray to brown, fine-grained, clean, interbedded with a little dark, argillaceous limestone.
 1425-32 Limestone, very argillaceous, leaving 40% residue of porous gray shale.
 1432-1504 Limestone, dark-brown, fine-grained; trace of argillaceous limestone.
 1504-12 Limestone, more argillaceous, leaving about 25% residue of soft, porous shale.
 1512-20 Limestone, lighter brown, fine-grained, cleaner.
 1520-1607 Limestone, dark-brown, fine-grained, clean, with trace of dark, argillaceous limestone.
 1607-25 Limestone, very smooth, lithographic, grayish-brown; very small residue.
 1625-32 Limestone, fine-grained, slightly argillaceous, and a trace very slightly dolomitic, grayish-brown.
 1632-45 Limestone, very slightly dolomitic, grayish-brown; very small insoluble residue.

(Wells Creek)

- 1645-52 Dolomite, creamy-gray, medium-crystalline, dense; some interbedded pale-gray, fine-grained limestone; very small residue of green shale and pyrite.
 1652-60 Limestone, slightly dolomitic, as above; mainly pale-gray, very fine grained; trace of green shale and gray quartzose chert.
 1660-67 Dolomite, finely crystalline, pale-gray, with some pale-gray, fine limestone, as above; trace of gray quartzose chert.

CAMBRIAN

- Knox
 1667-75 Dolomite, brown, coarsely crystalline, dense to sucrose, with some interstitial, white, chalky chert; trace of translucent to dense, white chert.
 1675-83 Some dolomite and chert, as above; mainly dense, light-tan, very fine grained limestone, with quartzose chert.

- 1683-91 Dolomite, finely crystalline, light-tan, some finely sucrose; trace of coarse dolomite; small residue of chert, as above; trace of fracture filling in dolomite.
- 1691-99 Dolomite, fine- to medium-crystalline, tan, dense to slightly vugular; trace of chert, as above.
- 1699-1705 Dolomite, brown, medium-crystalline, dense to slightly sucrose; trace of chert, as above.
- 1705-12 Dolomite, fine-grained, tan; chert, tan and white, quartzose, some finely disseminated.
- 1712-19 Dolomite, tan to brown, densely crystalline, fine-medium grained; rare chert.
- 1719-26 Dolomite, finely crystalline, dense, brown; trace of chert, grayish-brown, dense, with small structureless oolites.
- 1726-35 Dolomite, finely crystalline, tan to brown, dense; trace of chert, gray, dense, some coarsely dolomoldic.
- 1735-45 Dolomite, finely crystalline, light-gray, finely pyritic; green shale.
- 1745-56 Dolomite, vitreous, brown, medium-crystalline; 5% chert, dense, with very irregularly shaped and sized oolites, rare rounded and frosted sand grains.
- 1756-62 Dolomite, pale tannish-gray, finely crystalline, pyritic; rare sand grains; chert, as above; some waxy, green shale.
- 1762-73 Dolomite, finely sucrose, some medium-grained, tan; sand, as above; little dense, white chert, slightly dolomoldic or enclosing sand.
- 1773-80 Dolomite, finely sucrose, grayish-tan; sand, medium to coarsely rounded and frosted; trace of translucent chert and pyrite.
- 1780-87 Dolomite, brown, very finely crystalline, some coarse; small residue of dense chert, very drusy, some very finely porous chert; green shale and pyrite; trace of sand.
- 1787-95 Dolomite, brown, fine, medium, and coarsely crystalline; chert, chalky to quartzose, very oolitic.
- 1795-1802 Dolomite, finely crystalline, some medium, brown; chert, tan, granular, some very fine, thin-walled dolomolds.
- 1802-08 Dolomite, very coarsely crystalline, pale-gray; very small residue of chert, as above, sand grains, and rarely large dolomolds in chalky chert.
- 1808-18 Dolomite, coarse, as above; small residue, with trace of sand and chert enclosing sand grains.
- 1818-31 Dolomite, very fine, light-gray, some brown; very small residue; trace of sand, chert, and shale, as above.
- 1831-40 Dolomite, brown, medium-crystalline, dense to sucrose; very small residue of sand and green shale.
- 1840-49 Dolomite, tan, medium to coarsely crystalline; chert, white to grayish-brown, very oolitic and dolomoldic.
- 1849-56 Dolomite, white, fine- to medium-crystalline, sucrose; very small residue of very fine silt and pyrite; trace of chert, as above.
- 1856-62 Dolomite, pale-gray, medium to very coarsely crystalline; some green shale (like bentonite); trace of coarse dolomolds in shale and chert.
- 1862-70 Dolomite, cream, dense, medium-crystalline to very coarse, with chalky chert, interstitial; small residue of poorly sorted sand and finely porous, shale-textured chert.
- 1870-77 Dolomite, cream, finely crystalline, dense.
- 1877-82 Dolomite, as above; chert, 10%, grayish-tan, translucent, with large brown-centered oolites.
- 1882-93 Dolomite, brown, finely crystalline, with trace cream, coarsely crystalline; chert, as above, but less of it.
- 1893-1904 Dolomite, cream to brown, medium-crystalline; trace of quartzose, grayish-tan chert.
- 1904-12 Dolomite, cream, finely crystalline; trace of translucent, oolitic chert, and fine, lacy dolomolds.
- 1912-22 Dolomite, cream to brown, medium-crystalline.
- 1922-30 Dolomite, as above; chert, very finely disseminated, like very fine silt; some sand.
- 1930-37 Dolomite, very fine, creamy-gray; occasionally fragmental; chert, 25%, finely disseminated, as above; occasional fragments of quartz-cemented sand.

- 1937-43 Dolomite, cream to brown, densely crystalline; residue 10%, poorly sorted sand, some quartz-cemented, and chert, white, gray to brown, translucent, with some fine, lacy dolomoids.
- 1943-48 Dolomite, creamy-gray, finely crystalline, some coarse, brown; residue 10%, very fine white silt and green shale.
- 1948-54 Dolomite, cream, fine- to medium-crystalline; chert, translucent, gray; some fine silt, as above, and sand.
- 1954-75 Dolomite, as above; residue translucent, grayish-white chert, with rare chalky fragment dolomoidic.
- 1975-81 Dolomite, cream, medium-crystalline; occasional chert fragment impregnated with crystalline quartz.
- 1984-2015 Dolomite, very finely broken, white, medium-crystalline; fine silt in residue, with only trace of chert.
- 2025-35 Dolomite, brown, very fine grained, dense; trace of chert, some dense, some finely dolomoidic.
- 2035-44 Dolomite, as above; chert, dense, grayish-white, translucent.
- 2044-53 Dolomite, fine to medium, dense, brown; small residue of fine silt and translucent, white chert.

Well No. 177 (104). Carroll Drilling Company No. 1 Stephens, C SW SW NW section 18-A-54, elevation 919 feet, Fentress County, Tennessee.

ORDOVICIAN

Chazy-Black River

- 1356-68 Limestone, very dark grayish-brown, fine-grained; trace of dolomite and slightly argillaceous limestone.
- 1368-1400 Limestone, sublithographic, brown; rare fragments of shale in residue.
- 1400-10 Limestone, very fine, lithographic, brown.
- 1410-80 Limestone, very fine grained, smooth, brown.
- 1480-1508 Limestone, argillaceous, fine-grained, dark grayish-brown; shale residue 20%.
- 1532-1659 Limestone, very slightly argillaceous, dark grayish-brown, fine-grained.
- 1659-90 Limestone, very fine grained, grayish-brown, slightly argillaceous, as above, but shale residue is light-colored.

(Wells Creek)

- 1690-99 Limestone, very fine grained, light-cream, interbedded with dolomitic limestone, medium-crystalline; trace of grayish-tan, quartzose chert.
- 1699-1704 Limestone, as above, but more of the dolomite, some of it coarsely crystalline; residue quartzose chert, chalky, porous white chert, and coarsely dolomoidic green shale.

CAMBRIAN

Knox

- 1704-11 Mainly chert, translucent, grayish-tan, dense, some dolomoidic; trace of brown, medium-coarsely crystalline dolomite and rare sand grains.
- 1711-21 Dolomite, tan to tannish-gray, fine- to medium-crystalline, dense, with some very fine limestone pellets enclosed; trace of green shale and translucent to quartzose chert, as above.
- 1721-31 Dolomite, very finely crystalline to medium-crystalline, very dense to very slightly sucrose; chert, gray, quartzose, and some chalky, dolomoidic.
- 1731-40 Dolomite, fine- to medium-crystalline, brown; chert, as above.
- 1740-45 Dolomite, finely crystalline, very dense, grayish-brown.
- 1745-52 Dolomite, finely sucrose, grayish-brown; only trace of translucent to quartzose chert.
- 1752-60 Dolomite, more densely crystalline, grayish-brown; 5% chert, dense to quartzose, some very finely dolomoidic.
- 1760-65 Dolomite, grayish-brown, densely crystalline; 5% chert, some translucent, some coated with fine dolomoids.
- 1765-72 Dolomite, as above; trace of chert, some quartzose, as above, some chalky-white, dolomoidic.
- 1772-85 Dolomite, very finely crystalline and coarsely sucrose; very small residue; trace of rounded and frosted sand, pyrite, and green shale.

- 1796-1802 Dolomite, cream, finely crystalline and coarsely sucrose; 15% residue, little dense to chalky chert, mainly rounded and frosted sand.
- 1802-09 As above, mixture of fine and coarsely crystalline, more gray; less sand and chert.
- 1809-16 Dolomite, fine- to medium-crystalline, grayish-brown, dense to earthy; very small residue, silt, rare sand, and shale.
- 1816-22 Dolomite, finely crystalline to finely sucrose; residue as above; logged free oil in mud. Porosity not apparent in sample.
- 1822-31 Dolomite, very dense, tan, medium-crystalline; 15% chert, translucent, with irregular oolites, occasional oolites and druse.
- 1831-42 Dolomite, medium-crystalline, dense, brown; chert, dense, translucent, some chalky, dolomoldic.
- 1842-52 Dolomite, medium-crystalline, sucrose, creamy-gray; trace of chert.
- 1852-57 Dolomite, finely crystalline to coarse, grayish-brown.
- 1857-62 Dolomite, dark-brown, densely crystalline; 50% chert, mainly translucent, with brown-centered oolites, occasionally coated with quartz crystals.
- 1862-68 Dolomite, very fine and dense; chert, as above, some dolomoldic.
- 1868-74 Dolomite, coarsely crystalline, grayish-tan; 5% chert, tan or white, dense to chalky, some dolomoldic, rarely sandy.
- 1874-82 Dolomite, coarse, as above; 30% chert, as above, with occasional large obscure oolites.
- 1882-88 Dolomite, white, very finely sucrose; chert, rare, little very fine, white silt.
- 1888-95 Dolomite, finely silty, as above; some coarsely crystalline, with little very oolitic chert.

Well No. 178 (174). The California Company No. 1 E. W. Beeler, section 4, T. 5 S., R. 29 E., elevation 814 feet, Giles County, Tennessee.

ORDOVICIAN

Chazy-Black River

(Carters)

- 10-20 Limestone, fine-grained, dense, tan, with trace of crystalline dolomite and rare sand grains.
- 20-60 Limestone, fine-grained, dense, tan, as above; less dolomite.
- 60-90 Limestone, tan, lithographic, with ostracods, interbedded with slightly argillaceous, grayish-brown limestone.
- 90-130 Limestone, slightly dolomitic, tan, dense, lithographic to subcrystalline, some pellet limestone; rare chert.
- 130-80 Limestone, very fine grained to subcrystalline, grayish-tan, some slightly argillaceous; trace of replacement silica.
- 180-90 Limestone, as above, with some pellet limestone.
- 190-260 Limestone, very fine grained, tan; rare argillaceous and replacement silica.
- 260-370 Limestone, very slightly argillaceous, densely crystalline to sublithographic.

(Pierce)

- 370-410 Limestone, slightly argillaceous, fine, lithographic; trace of dark, mottled chert.

(Murfreesboro)

- 410-660 Limestone, very slightly argillaceous, fine-grained, grayish-brown.

(Wells Creek)

- 660-80 Dolomite, white, fine- to medium-crystalline, dense; some green shale.
- 680-90 Dolomite, white to cream, fine- to medium-crystalline.
- 690-730 Dolomite, finely crystalline, white to pale greenish-gray.

CAMBRIAN

Cotter

- 730-55 Dolomite, fine- to medium-crystalline, yellow to pink to white; rare chert.
- 755-820 Dolomite, very coarsely crystalline, oil-stained.
- 820-30 Dolomite, very coarsely crystalline; trace of oil.

- 830-80 Dolomite, as above; trace of chert, translucent to dense, white, with rare oolites.
- 880-900 Dolomite, cream, very coarsely crystalline; trace of chert, dull to drusy.

Jefferson City

- 900-30 Dolomite, brown, densely crystalline; trace of white chert, with rare dolomoids.
- 930-60 Dolomite, coarsely crystalline; rare chert, brown and oolitic.
- 960-1010 Dolomite, light-tan, coarsely crystalline; rare chert, tannish-gray, with some structureless oolites and rare dolomoids.
- 1010-75 Dolomite, as above; much limestone, white, fine-grained; rare chert, tan, earthy to oolitic, some quartz druse and dolomoids.
- 1075-1130 Dolomite, medium to coarsely crystalline, tan; much limestone, tan, dense; chert, with obscure oolites and some druse.
- 1130-1200 Dolomite, medium-crystalline to coarsely crystalline, cream; trace of chert, drusy, dolomoidic, quartzose; rare sand grains.
- 1200-50 Dolomite, tan, coarsely crystalline; much limestone; rare sand grains and chert, as above.
- 1250-90 Limestone, fine-grained to crystalline, cream; little dolomite; rare sand grains; trace of chert, dense, white to brown, oolitic.

Roubidoux

- 1290-1320 Dolomite, more coarsely crystalline, light-tan; trace of chert, tan, coarsely dolomoidic.
- 1320-70 Dolomite, medium-crystalline; rare sand grains and tan, earthy chert.
- 1370-1400 Dolomite, medium-crystalline, cream; trace of chert and silt.
- 1400-30 Dolomite, more finely crystalline, light-tan; rare chert, earthy, tan, to dolomoidic; trace of silt and sand.

Van Buren-Gasconade

- 1430-50 Dolomite, brown, medium-crystalline; rare sand and brown, finely porous silica.
- 1450-1620 Dolomite, light-brown to cream, medium-crystalline; rare silt and trace of dolomoidic chert.
- 1620-45 Limestone, tan, subcrystalline; trace of very soft, porous, brown shale.
- 1645-80 Limestone, very fine grained, sublithographic; dolomite, medium-crystalline, cream; trace of translucent to dull chert, some druse and botryoidal masses.
- 1680-1720 Dolomite, cream, medium-crystalline; limestone, brown, very fine grained; chert, cream, dense, to gray, translucent, with some secondary quartz growth.
- 1720-30 Dolomite, brown, medium-crystalline; rare chert, as above.
- 1730-70 Dolomite, as above, with much limestone, fine-grained, brown; trace of chert, brown and gray, dense to dolomoidic.
- 1770-1840 Dolomite, fine- to medium-crystalline; trace of chert, tan to gray, translucent, dolomoidic, and drusy.
- 1840-60 Dolomite, as above, with some fine silt and sand enclosed.
- 1860-1900 Dolomite, creamy-gray, finely crystalline; rare sand; trace of chert, cream, dense, with some dolomoidic.
- 1900-10 Dolomite, very finely crystalline, pale-gray; trace of very fine silt and translucent chert.
- 1910-20 Limestone, pale-gray, very fine grained; trace of mottled, brown, slightly drusy chert and soft shale.
- 1920-40 Much chert, pale-gray, chalky to translucent to quartzose, some crystalline quartz.

Potosi-Eminence

- 1940-50 Dolomite, very dense, gray, crystalline; rare chert.
- 1950-60 Dolomite, light-tan, crystalline, fine-grained; chert, 40%, dense to chalky, streaked with crystalline quartz.
- 1960-70 Dolomite, brown to gray, very freshly crystalline; trace of chert, as above.
- 1970-2000 Dolomite, cream, fine- to medium-crystalline, with very poorly sorted sand enclosed; some sand in chert.

- 2000-20 Dolomite, cream, medium-crystalline; chert, dense, white, dolomoldic, and some druse.
- 2020-60 Dolomite, cream, finely crystalline, with a little white limestone; chert, chalky to earthy; rare silt.
- 2060-2100 Dolomite, fine- to medium-crystalline, pale-gray; little chert, oolitic to dolomoldic, some druse, some sand enclosed.
- 2100-20 Dolomite, fine- to medium-crystalline, cream; chert, blue-gray; trace of gray, argillaceous dolomite.
- 2120-40 Limestone, fine-grained, white; rare chert, bluish-gray, translucent; some shale, as above, dolomoldic.
- 2140-2220 Dolomite, fine- to medium-crystalline, gray; 10% chert, dense; dolomoldic gray shale in residue.
- 2220-40 Limestone, fine-grained, yellow; chert, gray, translucent; trace of dark shale.
- 2240-80 Dolomite, very coarsely crystalline, interbedded with very fine grained limestone; much chert, dense, white to chalky, some dolomoldic.
- 2280-2320 Limestone, fine-grained, yellowish-tan; trace of dense chert.
- 2320-2400 Dolomite, brown, medium-crystalline; chert, dolomoldic and drusy; occasional oolitic chert.
- 2400-80 Limestone, fine-grained to lithographic; chert, gray, translucent; trace of shale.
- 2480-2500 Dolomite, very coarsely crystalline, interbedded with limestone; chert, translucent, as above, but less of it; trace of druse.

Elvins

- 2500-40 Limestone, dolomitic, lithographic; trace of gray, translucent chert and some druse.
- 2540-70 Dolomite and limestone, as above; much chert, gray, translucent to drusy.
- 2570-90 Dolomite, medium-crystalline, some limestone; much translucent, banded chert.
- 2590-2650 Limestone, slightly dolomitic; little chert, as above.
- 2650-2740 Limestone, chalky-white to pale-green; rare chert.
- 2740-60 Dolomite, cream, medium-crystalline to sucrose; some gray shale.
- 2760-90 Limestone, chalky-white, fine-grained; rare dolomite and shale.
- 2790-2850 Limestone, very fine grained, tan; chert (to 20%), very finely granular.
- 2850-90 Limestone, as above; chert, with many fine oolites, some in clusters.
- 2890-2950 Limestone, cream, coarsely dolomitic; chert, mottled, dense, gray, with some irregular oolites.

Copper Ridge

- 2950-3030 Dolomite, yellowish-tan, coarsely crystalline to dense; little chert, dark-brown, dolomoldic to granular.
- 3030-3120 Dolomite, brown, medium-crystalline to very coarsely crystalline; trace of chert, brown, dense, with occasional obscure oolites.
- 3120-40 Mainly chert, light-tan, with rare structureless oolites and some druse.
- 3140-60 Dolomite, brown, medium-crystalline; trace of dense chert.
- 3160-70 Dolomite, cream, very coarsely crystalline; much chert, light-tan, in irregular-shaped fragments, pseudo-oolites.
- 3170-3210 Dolomite, cream to tan, medium-crystalline, sucrose; trace of dense chert.
- 3210-40 Dolomite, dark-brown, medium-crystalline; rare chert, earthy to slightly dolomoldic.
- 3240-60 Dolomite, dark-brown, medium-crystalline; little brown chert, with pellets.
- 3260-3500 Dolomite, brown, medium-crystalline; little chert, dense to translucent, brown; rare dolomolds.

Bibb (?)

- 3500-3640 Dolomite, very dense, fine-grained, slightly argillaceous; little chert, brownish-gray and slightly dolomoldic.
- 3640-3980 Dolomite, light-tan to brownish-gray, dense, and very fine grained; some argillaceous dolomite, leaving dolomoldic shale residue; rare chert.
- 3980-4170 Dolomite, brown, medium-crystalline to very fine; rare chert, some quartzose, some pellet chert.
- 4170-4380 Dolomite, fine- to medium-crystalline, dark-brown; rare chert, drusy, quartzose, and some pellet chert.

Ketona (?)

- 4380-4430 Dolomite, very fine grained and dense; no chert.
4430-80 Dolomite, very fine grained and dense; rare chert, slightly dolomitic to quartzose and pellet.
4480-4660 Dolomite, very finely crystalline, dense, brown; rare chert, quartzose, brown, pellet, some shells as though they had coated dolomite oolites.
4660-4720 Dolomite, finely crystalline, brown to gray, very slightly argillaceous.
4720-4800 Dolomite, brown, fine- to medium-crystalline; occasional structureless oolites.
4800-5070 Dolomite, white to cream, very coarsely crystalline, vugular and clean; rare green, waxy shale.
5070-5250 Dolomite, brown, medium-crystalline, very porous and vugular; no chert.
5250-5310 Dolomite, brown, fine- to medium-crystalline, oolitic, some vugular.
5310-60 Limestone, slightly argillaceous, fine, gray to brown.
5360-90 Limestone, fine-grained, with glauconite pellets; some argillaceous limestone.
5390-5460 Limestone, slightly dolomitic, fine-grained, brown, with dolomite oolites.
5460-5550 Limestone, dolomitic, brown, fine-grained; rare quartzose chert.
5550-70 Limestone, very fine grained, as above, with trace of silt and quartzose chert.
5570-5630 Limestone, with to 50% poorly sorted sand enclosed; trace of glauconite.
5630-40 Limestone, finely crystalline, slightly dolomitic; trace of sand, as above.
5640-5740 Granite wash, arkosic sandstone, with much limestone cement.

PRE-CAMBRIAN

- 5750-60 Coarse granite.

Well No. 179 (1445). Whitney, Nancey, and Vivadelli No. 1 J. B. Donaldson, SE SW NE section 10-16S-8E, Hardeman County, Tennessee.

CRETACEOUS

Ripley

- 807-65 Sand, very poorly sorted, fine to very coarse grained, polished, sub-rounded, friable; trace of glauconite and mica.
865-95 Clay, grayish-brown, with many carbonaceous films, some micaceous.
895-915 Sand, very poorly sorted, grains coarser and more highly rounded than in sand above, sphericity low, some polish.
915-20 Chert pebbles, mainly from black Mississippian cherts, slightly polished and rounded.
920-50 Sand, very poorly sorted, larger grains than above, well-rounded and polished; little gray clay.
950-70 Clay, fine-grained, gray.
970-75 Sand, very poorly sorted to coarse-grained, rounded and polished.

Tuscaloosa

- 975-1002 Chert pebbles, coarse and black (derived from lower Mississippian).

CAMBRIAN

Jefferson City

- 1002-20 Dolomite, very fine grained, light grayish-tan, dense; trace of very fine quartz silt.
1020-85 Dolomite, finely crystalline, dense, darker grayish-tan, with very fine quartz silt enclosed.
1085-1100 As above, with some finely disseminated pyrite.
1110-25 Dolomite, very slightly coarser grained than above, light-tan; trace of dense chert, the same color as the dolomite.
1125-50 Dolomite, finely crystalline, very dense, cream, finely silty.
1150-70 Dolomite, finely crystalline, dense, pale-gray; occasional fragments enclosing larger dolomite rhombs.
1170-85 As above.
1185-1210 Dolomite, finely crystalline, slightly grayish-brown, dense; different in color from that above, and no silt.
1210-20 Dolomite, finely crystalline, as above; trace of chert, dense, cream-colored, mottled; rare rounded and frosted sand grains enclosed in dolomite.

1220-35	Dolomite, cream, finely crystalline, dense, very slightly silty.
1235-38	Dolomite, as above, and some coarse-grained, pale-gray, with pink, crystalline inclusions.
1238-78	Dolomite, light-brown, finely crystalline, slightly clastic, dense; rare fragments of dense, chalky chert, same color as dolomite.
1278-1302	Dolomite, very finely crystalline, light-brown, vitreous.
1302-40	Dolomite, cream, fine-grained, dense, very finely silty.
1340-80	Dolomite, cream; very fine grained, chalky; more silt than above.
1380-1420	Dolomite, clastic, very fine, enclosing larger rhombs of dolomite; some sand and silt.
1420-30	Dolomite, as above, with more sand in contact with brown, medium-crystalline dolomite.
1430-40	Dolomite, brown, clastic, silty; trace of argillaceous dolomite.
1440-55	Dolomite, as above, with more sand and a trace of quartzose chert.
1455-70	Dolomite, light-cream, medium-coarsely crystalline, dense; rare rounded and frosted sand grains.
1470-80	Dolomite, pale-gray, medium-grained, sucrose.
1480-90	Dolomite, cream, medium-coarse crystalline, dense to very finely crystalline, gray.
<u>Roubidoux</u>	
1490-1506	Sandstone, slightly dolomitic, composed of rounded and frosted sand grains, with secondary crystalline growth.
1506-15	Limestone, very fine grained, light grayish-tan, studded with rounded and frosted sand grains.
1515-35	Limestone, dolomitic and very slightly argillaceous, brown to gray; trace of mottled, gray and brown chert.
1535-45	Dolomite, pale-gray to cream, medium-crystalline, slightly sucrose.
1545-55	Dolomite, as above, enclosing rare sand grains.
1555-74	Dolomite, as above, with more sand; some porosity and salt water.
<u>Gasconade</u>	
1574-85	Dolomite, pale grayish-tan, sucrose; trace of bentonite-like shale and quartzose chert.
1585-90	Dolomite, finer grained, pale-gray.
1590-1610	Limestone, slightly dolomitic, brown, fine-grained, dense, microspecked.
1625-40	Limestone, finely dolomitic, grayish-tan, fine-grained, with some bentonite-like shale, finely pyritic.
1640-70	Limestone, slightly dolomitic, grayish-tan, fine-grained.
1670-80	Limestone, very fine grained, lithographic, pale grayish-brown.
1680-90	Limestone, fine-grained, cream; much bentonite.
1690-1705	Dolomitic limestone, tan, densely crystalline; 25% chert, brown and gray mottled, dense to translucent.
1710-15	Dolomite, slightly calcareous, more gray than above; trace of silt.
1715-20	Limestone, sublithographic, light-tan; trace of green shale.
1720-54	Limestone, finely dolomitic, fragmental; trace of silt and finely disseminated pyrite.
1754-64	Limestone, clastic, sublithographic, tan, densely fossiliferous.
1764-85	Limestone, very dolomitic, fine-grained, with trace of silt.
1785-95	Limestone, fine-grained, lithographic, tan, very dense, and slightly fossiliferous.
1795-1805	Limestone, dolomitic, fine-grained, cream; trace of silt.
1805-20	Limestone, less dolomitic than above.
1820-95	Limestone, very fine grained, with occasional fine limestone pellets, light-tan to gray.
1895-1905	Limestone, as above, with trace of slightly argillaceous, gray limestone.
1905-18	Limestone, very finely crystalline, dense, light-brown, with some dense chert, same color as limestone.
1918-28	Limestone, very densely crystalline, with bright-brown chert.
1928-42	Limestone, very vitreous, with quartzose chert, same color.
1942-52	Limestone, finely argillaceous, gray, sublithographic.
1952-72	Limestone, very dolomitic, finely crystalline, very dense, hard.
1972-82	Dolomite, fine-medium crystalline, slightly grayish-tan, lighter than above.
1982-2004	Limestone, slightly dolomitic, brown, vitreous; trace of argillaceous limestone.
2004-18	Limestone, brown, dense, and some greenish-brown, argillaceous limestone.

- 2018-25 Dolomite, finely crystalline, light-tan; trace of limestone, as above, enclosing some clay pellets.
- 2025-53 Limestone, clastic, enclosing limestone and shale pellets, brown and gray.
- 2053-63 Limestone, and much dolomite, very fine grained, grayish-tan, dense.
- 2063-68 Limestone, as above.
- 2068-71 Dolomite, finely crystalline, light-tan.
- 2071-85 Limestone, dense, fine-grained, brown, with trace of argillaceous limestone.
- 2085-2100 Limestone, very slightly dolomitic, and some very slightly argillaceous, grayish-brown.
- 2100-22 Limestone, very finely crystalline, dense, brown (texture of very fine grained dolomite).
- 2122-37 Limestone, very finely dolomitic, chalky, light-tan; some finely disseminated pyrite.
- 2137-53 Limestone, very finely crystalline, dense, light-tan; trace of surficial oily stain. (No evidence of oil under mineral light.)
- 2153-63 Limestone, as above, and much dolomite, very fine grained, dense, light-brown.
- 2163-98 Limestone, dolomitic, fine-grained, dolomite rhombs enclosed in finely crystalline limestone.
- 2198-2218 Dolomite, calcareous, brown to pale-gray, finely crystalline.
- 2218-37 Limestone, clastic, fine pellets and fragments enclosed in fine-grained matrix; some limestone, fine-grained, but rough-textured.
- 2237-50 Limestone, clastic and fragmental, as above, with some very finely crystalline, light-tan dolomite.

Well No. 180 (186). R. Gear No. 1 Dyer Brothers, NW NW NW section 12, T. 8 S., R 2 E., elevation 270 feet, Lauderdale County, Tennessee.

TERTIARY

Eocene

- 620-1010 Sandstone, poorly sorted, angular to subrounded and polished.
- 1010-20 Sand, as above; clay, red and gray, with occasional foraminifera.
- 1020-50 Sand, fine to very coarse, polished; some light-gray, sandy clay.

(Holly Springs)

- 1258-1375 Sand, medium to coarse, angular to rounded.
- 1375-1440 Sand, very coarse, polished; some light-gray clay.

(Porters Creek)

- 1550-60 Clay, dark-gray, fine-grained.
- 1590-1600 Clay, as above.
- 1610-20 Clay, as above.
- 1620-40 Sand, medium, angular to subrounded; some clay.
- 1640-80 Sand and clay, as above; some marl, with foraminifera, glauconite.
- 1680-90 Clay, dark-gray.
- 1690-1720 Clay and glauconitic sand.
- 1720-30 Dark-gray clay.
- 1730-80 Sand and micaceous clay and glauconite.
- 1780-1810 Limestone, very glauconitic, some glauconite oxidized.
- 1810-30 Limestone, sandy, glauconitic.

CRETACEOUS

Ripley

- 1830-1910 Sand, yellow, with oxidized glauconite, occasional foraminifera.
- 1910-80 Sand, white, medium-grained, angular.
- 1980-2380 Sand, white to yellow; less glauconite than above.
- 2380-2510 Sand, white, medium-grained, glauconitic.

ORDOVICIAN

Smithville-Black Rock

- 2510-30 Limestone, fine-grained, grayish-brown.
- 2530-40 Limestone, as above; trace of gray, translucent chert.
- 2540-2680 Limestone, finely crystalline, grayish-brown.

2680-3060	Limestone, finely crystalline, slightly silty.
3060-80	Limestone, as above, enclosing coarse sand grains.
3080-3140	Limestone, very dark gray, fine-grained, argillaceous, cut with calcite veins.
3140-50	Limestone, sublithographic, grayish-brown.
3150-60	Limestone, as above, enclosing poorly sorted sand.
3160-70	Limestone, finely dolomitic, grayish-brown.
3170-3200	Limestone, argillaceous, very dark gray.
3200-20	Limestone, as above; chert, golden-brown, translucent, enclosing sand.

Well No. 181 (173). B. H. Putnam, et al No. 1 C. L. Brooks, section 2, T. 12 S., R. 27 E elevation 831 feet, commenced 4-21-48, Maury County, Tennessee.

ORDOVICIAN

Cynthiana

25-50	Limestone, gray, very fossiliferous, phosphatic, with some interbedded calcareous shale; trace of replacement chert.

Lexington (Tennessee Cannon)

50-70	Limestone, more dense than above; some interbedded dark, calcareous shale.
70-97	Limestone, some more crystalline and phosphatic than above; little interbedded shale; chert, very fossiliferous, dark-gray, mottled.
97-168	Limestone, very densely crystalline, gray, fossiliferous; trace of chert and shale.

(Hermitage-Bigby of Tennessee)

168-210	Shale, finely silty and calcareous, very dark gray.
210-16	Limestone, finely phosphatic, fossiliferous.
216-26	Limestone, very dense, fine-grained, brown, slightly phosphatic; chert, dense, dark-brown to translucent.
226-60	Limestone, argillaceous to slightly silty; rare chert, brown.

Chazy-Black River (Upper Carters of Tennessee)

260-81	Limestone, fine-grained to subcrystalline, slightly fossiliferous to finely dolomitic; occasional limestone pellets; rare chert.

(Lower Carters)

281-318	Limestone, very slightly dolomitic, very fine grained, brown, dense; rare chert.
318-65	Limestone, fine, gray, to slightly argillaceous, some fossiliferous and very slightly phosphatic.
365-415	Limestone, very fine, as above, with some tan, fossiliferous, and dense.
415-57	Limestone, cream, fine-grained, with tiny limestone pellets; rare finely crystalline dolomite and replacement chert.

(Unit C of Tennessee)

457-546	Limestone, slightly grayish-brown to brown, very fine grained; rare dolomite and chert.

(Pierce)

546-56	Limestone, slightly argillaceous, grayish-tan, very fine grained.
556-71	Limestone, some as above; much greenish-gray, argillaceous limestone and green shale.

(Murfreesboro)

571-78	Limestone, finely dolomitic, dense to finely crystalline, brown.
578-616	Limestone, densely crystalline, tan, fossiliferous; rare argillaceous fragments and replacement chert.
616-51	Limestone, cream, lithographic; rare fragments slightly argillaceous.
651-952	Limestone, very fine grained, brown to slightly grayish-brown, argillaceous.

(Wells Creek)

- 952-80 Dolomite, slightly calcareous, fine- to medium-crystalline, with finely disseminated green clay.
- 980-1009 Dolomite, slightly calcareous, some greenish, silty, and argillaceous; trace of poorly sorted sand.
- 1009-23 Dolomite, as above; much more sand (to 50%), silt to coarse rounded and frosted.

CAMBRIAN

Jefferson City

- 1023-45 Dolomite, pinkish-tan, densely crystalline to medium-grained.
- 1045-55 Limestone, slightly dolomitic, densely crystalline, white to pale-green.
- 1055-60 Limestone, very finely crystalline to dense; rare gray, quartzose chert.
- 1060-84 Limestone, very slightly dolomitic, fine-grained, some pellet limestone; trace of green shale and translucent, gray chert.
- 1084-1102 Limestone, white to cream, lithographic, some pellet limestone.
- 1102-08 Dolomite, calcareous, light-brown, finely crystalline.
- 1108-20 Limestone, slightly dolomitic, light-tan, fine-grained; trace of green shale.
- 1120-37 Dolomite, calcareous, very coarsely crystalline, vugular to dense, trace of oil stain.
- 1137-42 Dolomite, finely crystalline, pale-green.
- 1142-46 Limestone, very fine grained, chalky-white.
- 1146-64 Dolomite, slightly calcareous, pale-gray to tan; trace of chalky-white chert.
- 1164-85 Limestone, slightly dolomitic, white to pale-gray, some pellet limestone; trace of chert, as above.
- 1185-92 Dolomite, slightly calcareous, cream, coarsely crystalline, to brown, finer grained; trace of chert.
- 1192-1213 Dolomite, calcareous, medium-crystalline; trace of chert.
- 1213-20 Limestone, enclosing large dolomite rhombs, and dolomite, very slightly calcareous, finely crystalline, pale-gray to green; rare chert.

Well No. 182 (1444). Freeman-Sport No. 1 Roberts, SW SW SE NW section 15, T. 13 S., R. 57 E., elevation 810 feet, completed 10-8-49, Meigs County, Tennessee.

ORDOVICIAN

Cathey's (Cynthiana)

- 20-70 Limestone, dark-brown to grayish-brown, very fine grained, dense; some very slightly argillaceous; some fossiliferous, with numerous ostracods.

Lexington

(Cannon)

- 70-87 Limestone, as above, more argillaceous and darker brown.
- 87-110 Limestone, densely crystalline to fossiliferous, brown; some very argillaceous, as above.
- 110-40 Limestone, grayish-brown, fine-grained, very fossiliferous, with traces of phosphate.
- 140-60 Limestone, dense, dark-brown, fine-grained, very fossiliferous.
- 160-82 Limestone, more earthy and argillaceous, fine-grained; some fossiliferous.

(Hermitage)

- 182-200 Limestone, gray, fossiliferous and phosphatic, interbedded with calcareous shale.
- 200-08 Limestone, argillaceous, very dark gray; some fossiliferous.
- 208-30 Limestone, dark-gray, and some gray, very fossiliferous and phosphatic; many bryozoans.
- 230-45 Shale, as above, with much gray, coarsely crystalline, fossiliferous and phosphatic limestone.

(Curdsville)

- 245-51 Limestone, gray, fossiliferous and phosphatic, with some green, bentonitic shale.

Chazy-Black River (Carters)

- 251-77 Shale, very calcareous, fine-grained, dark-red and green, bentonitic.
277-94 Shale, as above, with some argillaceous limestone and some grass-green chert.
294-302 Limestone, brown, lithographic, with a little bentonite, the bentonite including reddish-gold and black mica.
302-30 Limestone, brown, lithographic, with some very slightly argillaceous and granular.

(Lebanon)

- 330-64 Limestone, very fine grained, slightly argillaceous (caving bentonite).
364-74 Limestone, brown, lithographic, with large black ostracods.
374-404 Limestone, more argillaceous, increasingly so with depth, and some phosphatic and fossiliferous limestone.
404-27 Limestone, very argillaceous, interbedded with fossiliferous and very dense limestone.

(Ridley)

- 427-39 Limestone, very fine grained, slightly argillaceous; much calcareous shale, slightly green to gray-brown.
439-53 Limestone, very fine grained, brown, fossiliferous; some argillaceous, as above.
453-77 Limestone, very fossiliferous, more green than above.
477-514 Limestone, lithographic; some argillaceous, brown.
514-60 Limestone, lithographic, brown to slightly mottled brown with gray, very slightly argillaceous.

(Pierce)

- 560-67 Limestone, slightly more fossiliferous than above, with some white, crystalline calcite. (Logged gas)
567-70 Limestone, more lithographic and brown. (Logged gas and oil show)

(Murfreesboro)

- 570-609 Limestone, lithographic, brown, with some slightly argillaceous, dark-gray.
609-30 Limestone, fine-grained, gray-brown, slightly rubbly, slightly fossiliferous.
630-46 Limestone, fine-grained, some slightly argillaceous; occasional fossiliferous layers.
646-56 Limestone, as above, with occasional fragments enclosing dolomite rhombs.
656-730 Limestone, very fine grained, brown, and some very slightly argillaceous.
730-822 Limestone, dark, slightly argillaceous, interbedded with light-tan, lithographic limestone.
822-30 Limestone, brown, lithographic.
830-46 Limestone, light-brown, lithographic, with trace of very dark brown to black chert.
846-76 Limestone, brown-gray, lithographic.
876-915 Shale, calcareous, very dark gray to slightly greenish-gray and dark-red. (Lithologically like that at 251 feet.)
915-27 Limestone, tan, lithographic, with little interbedded green, argillaceous limestone.
927-50 Limestone, tan, lithographic, with some slightly argillaceous; oily stain on fracture faces.
950-60 Limestone, some very fossiliferous and less fine-grained than above.
960-70 Limestone, light gray-tan, fossiliferous, crystalline; some slightly phosphatic.
970-80 Limestone, very fine grained, dark gray-brown, slightly argillaceous, with black, oily stains on fracture surfaces.

(Reverse fault? Repeated section 876 at 1169.)

- 980-1038 Limestone, brown, lithographic, stylolitic in base.
1038-88 Limestone, as above, but slightly more argillaceous; ostracods near the top.
1088-95 Limestone, as above, with some shale, slightly calcareous, dark-gray.

- 1095-1171 Limestone, very fine and lithographic; some slightly argillaceous, dark-brown.
- 1171-89 Shale, calcareous, dark gray-green and gray-red. (Same lithology as at 251 feet and 876 feet.)
- 1189-1240 Limestone, very argillaceous, dark-gray to red.
- 1240-58 Limestone, very argillaceous, fine-grained, gray-brown.
- 1258-78 Limestone, brown, lithographic.
- 1278-1309 Limestone, argillaceous, fine-grained, dark-gray.
- 1309-74 Limestone, slightly argillaceous, red-brown, fine-grained.
- 1374-1422 Limestone, as above, but more argillaceous, more red.
- 1422-32 Limestone, lithographic, with a little red, as above.
- 1432-44 As above, with much dark-red limestone.
- 1444-92 Limestone, very fine, lithographic to "bird's-eye," light gray-tan; occasional ostracods.
- 1492-1537 Limestone, slightly dolomitic and argillaceous, gray to brown.
- 1537-48 Limestone, very slightly argillaceous, fine-grained.
- 1548-70 Limestone, slightly dolomitic and argillaceous, dark-gray; residue shows trace of very fine grained silt.
- 1570-82 Limestone, very fine grained, light gray-tan, with trace of argillaceous limestone.
- 1582-1608 Limestone, fine-grained to finely crystalline; some argillaceous, gray to red; trace of tan to orange, translucent chert.
- 1608-26 Limestone, light gray-tan, very fine grained and dense; trace of chert, as above; leaves residue of very finely disseminated white clay.
- 1626-50 Limestone, very fine and dense, pale gray-tan; leaves large residue of very finely disseminated siliceous clay, white.
- 1650-61 Limestone, very dolomitic, medium-gray to slightly greenish, argillaceous; leaves very finely siliceous clay residue.
- 1661-72 Dolomite, medium-crystalline, very dense and vitreous, pale yellow-gray; residue as above.
- 1672-81 Dolomite, finely crystalline, very dense and vitreous, light gray-brown.
- 1681-88 Dolomite, coarsely crystalline, sucrose, light-tan, clean.
- 1688-95 Dolomite, finely crystalline, very dense and vitreous, brown; trace of chert, translucent, gray and tan, mottled.

Fault

- 1695-1704 Dolomite, some finely crystalline, dense, pale-gray; mainly coarsely crystalline, brown, hematitic, and enclosing rounded and frosted sand grains; some fine-grained green shale, minutely interbedded with hematite.
- 1704-09 Dolomite, very finely crystalline, dense, pale-gray to slightly pink; residue shows very finely disseminated white silica.
- 1709-18 Dolomite, as above, with more red color; residue as above, with rare rounded and frosted sand grains.

Fault

- 1718-28 Dolomite, finely crystalline, brown to red, with very finely disseminated fine-grained silt (slightly coarser than silica above), occasional sand grains; much orange, translucent chert and smooth, green shale on slickensided surfaces.
- 1728-37 Dolomite, finely crystalline, pale-cream to pink; fine silt residue, as above.
- 1737-47 Dolomite, finely crystalline, very dense and vitreous, gray and brown to red; little silt, as above; much translucent, orange and bright-green chert.
- 1747-52 Dolomite, same texture as above, but all gray-brown; little translucent, brown chert.
- 1752-61 Dolomite, very finely sucrose, pale-gray to pink.

Fault

- 1761-70 Limestone, fine-grained, gray-tan, with very finely disseminated white clay (see 1608 feet); some red chert and green, waxy shale.
- 1770-80 Dolomite, fine-medium crystalline, dense, gray to red.

- 1780-86 Dolomite, pale-gray, texture as above; much limestone, pale gray-tan, fine-grained (lithology same as 1608 feet).
- 1786-94 Dolomite, red, fine-grained and finely silty; some limestone, as above.
- 1794-1804 Dolomite, as above, less color; trace of red and green, waxy shale, and trace of dolomitic sandstone with rounded and frosted grains.
- 1804-10 Dolomite, pale-gray, and pink-mottled, very slightly silty.
- 1810-20 Dolomite, fine-medium crystalline, dense, pale-gray to red, mottled, silty; residue is aggregates of red and white silt.
- 1820-27 Dolomite, as above, but more coarsely crystalline.
- 1827-39 Dolomite, very coarsely crystalline, light-brown; trace of translucent chert in fragmented clusters.
- 1839-48 Dolomite, fine-medium crystalline, red, silty, with tan to orange, translucent chert.
- 1848-59 Dolomite, medium-grained, red and gray, as above; chert, very fine pellet clusters in translucent matrix.
- 1859-69 Dolomite, finely crystalline, pale-gray to pink; trace of chert.
- 1869-79 Dolomite, medium-crystalline, little gray, mainly red and silty.
- 1879-88 Dolomite, medium-coarsely crystalline, pale creamy-gray, enclosing rounded and frosted sand grains.
- 1888-97 Limestone, chalky-white to pale-gray, lithographic; trace of dense chert.
- 1897-1906 Dolomite, coarsely crystalline, cream, shows some fracturing; chert, pale-gray, translucent, and some mottled and pseudo-oolitic.
- 1906-15 Dolomite, as above; chert, 20%, irregularly sized pellets in pale-gray, translucent matrix.
- 1915-41 Dolomite, medium-crystalline; chert and dolomite, both varicolored, tan to pale-green and red.
- 1941-50 Dolomite, finely crystalline, pale-gray to dark-red; little chert, as above.
- 1950-60 Dolomite, coarsely crystalline, pale-gray, with traces of pink; little chert.
- 1960-71 Some dolomite, as above; mainly limestone, fine, lithographic, to medium gray, slightly argillaceous limestone.
- 1971-81 Some limestone, as above; mainly dolomite, coarsely crystalline, gray to red, silty, with finely disseminated silica.
- 1981-90 (= 2006 S.L.M.) Dolomite, finely crystalline, gray to dark-red; residue is finely disseminated skeletal silica.
- 2006-11 Dolomite, medium-crystalline, mainly red, with much skeletal silica, as above.
- 2011-18 Chert, chalky-white, with occasional large dolomolds.

Fault

- 2018-30 Chert, as above, and some red, medium-crystalline dolomite, as above.
- 2030-42 Dolomite, as above, but slightly coarser; some limestone, very fine, gray.
- 2042-51 Chert, chalky-white, with occasional large dolomolds.

Well No. 183 (102). Sergeant York No. 2 Clint Huff, section 14-A-54, elevation 919 feet, Pickett County, Tennessee.

MISSISSIPPIAN

Fort Payne

- 306-08 Shale, calcareous, greenish-gray; some crinoidal limestone; much translucent chert.
- 308-29 Mainly chert, translucent, light-gray; some crinoidal limestone and green shale.
- 329-33 Limestone, dolomitic, brown; little chert, as above.

New Albany Top reported at 333 feet.

ORDOVICIAN

Garrard

- 430-35 Limestone, argillaceous, very dark brown, with some interbedded crystalline limestone.
- 435-50 Limestone, gray, crystalline and phosphatic, with interbedded very argillaceous, very dark gray limestone.
- 455-65 Shale, calcareous, slightly silty, very dark gray to black.
- 465-75 Shale, as above, with more silt, and some interbedded fossiliferous, gray limestone.

- 475-90 Limestone, as above, with less shale.
 490-500 Shale, calcareous, slightly silty, very dark to black, with some very dark, fossiliferous limestone.

Cynthiana-Million

- 500-30 Limestone, light and very dark brown, fine-grained; some very dark brown calcareous shale.
 535-50 Limestone, more gray and phosphatic than above, fossiliferous, dense; some shale, as above.
 550-70 Limestone, gray to brown, fossiliferous, dense, some phosphatic; much calcareous shale.
 570-90 Limestone, dense to crystalline, brown, argillaceous, to gray, phosphatic.
 590-620 Limestone, fossiliferous and phosphatic, grayish-brown, with some interbedded calcareous shale.
 620-50 Limestone, argillaceous, dense, fine-grained, tan to brown; ostracods.
 650-70 Limestone, slightly more gray than above and more argillaceous; trace of chert.
 670-700 Limestone, light- and dark-brown, very fine grained; some calcareous shale and trace of chert.
 700-20 Limestone, very dark brown to gray-brown, dense, phosphatic; trace of chert.

Lexington

- 720-40 Limestone, sublithographic, dark-brown, with some interbedded calcareous shale; trace of replacement chert.
 740-865 Limestone, dense, brown, sublithographic, to very slightly argillaceous; trace of translucent replacement silica; occasional ostracods.
 865-80 Limestone, fossiliferous and finely phosphatic, some brown; more interbedded shale; some chert.
 880-95 Limestone, finely phosphatic, as above, argillaceous, and very slightly silty.
 895-925 Limestone, very dark and argillaceous, phosphatic and fossiliferous, with some bentonite.

Chazy-Black River

- 925-40 Limestone, brown, densely crystalline to sublithographic; trace of bentonite and dark-brown chert.
 940-60 Limestone, fine-grained, lithographic, with some finely calcareous, green shale.
 960-80 Limestone, lithographic, with trace of dark-brown chert.
 980-1000 Limestone, dolomitic, fine, brown to earthy; trace of shale and chert.
 1000-29 Limestone, fine-grained to fossiliferous, brown; trace of brown shale and replacement chert.
 1029-50 Limestone, slightly dolomitic, fine-grained, with little chert, as above.
 1050-90 Limestone, argillaceous, grayish-brown, fine-grained.
 1090-1100 Limestone, fine-grained, brown, with trace of chert, same color.
 1100-1205 Limestone, very fine, brown, lithographic, with occasional fragments darker and slightly argillaceous.
 1205-70 Limestone, very fine grained, brown, with trace of very black shale and black chert. (Pierce of Tennessee)
 1270-95 Limestone, slightly argillaceous, light grayish-brown.
 1300-50 Limestone, argillaceous, very dark brown to black, fine-grained.
 1350-1415 Limestone, very fine grained, brown; rare fragments showing little brown dolomite.
 1415-1555 Limestone, slightly argillaceous, brown to almost black (Murfreesboro lithology).
 1555-1680 Limestone, light to dark, some of it very argillaceous; all very fine grained.

CAMBRIAN

Knox

- 1680-85 Dolomite, tan, fine- to medium-crystalline, dense; trace of translucent, quartzose to drusy chert.
 1685-95 Dolomite, as above, with more chert (to 50%); trace of oily stain.
 1695-1700 Dolomite, as above; less chert, but with Potosi-type druse.

Well No. 184 (105). Stanolind Oil and Gas Company No. 1 Hyder, southeast of Cookeville, completed in 1943, Putnam County, Tennessee.

MISSISSIPPIAN

St. Louis

- 8-36 Limestone, tan, dense, finely dolomitic, some slightly argillaceous; trace of chert.
 36-43 Dolomite, very finely crystalline, dense, slightly greenish and tan.
 43-56 Limestone, slightly dolomitic, tan; much chert, gray and tan, mottled.

Warsaw

- 56-64 Siltstone, argillaceous and slightly calcareous, dark-gray.
 64-95 Limestone, dark-gray, fragmental, phosphatic, crinoidal.
 95-110 Limestone, lighter gray, fossiliferous, enclosing much sand (Garrett Mill).
 110-25 Limestone, tan, crinoidal and fossiliferous, enclosing little sand, as above.

Fort Payne

- 125-60 Limestone, argillaceous, dark-brown, with much very dark, mottled chert.
 160-85 Limestone, gray, crinoidal, with much light-gray, mottled chert.
 185-210 Shale, slightly calcareous, dark-brown.
 210-55 Limestone, light-gray, with much light-gray chert.
 255-325 As above, with some of it dolomitic; trace of green shale at base.

New Albany

- 325-55 Shale, black, carbonaceous; rare conodonts.

ORDOVICIAN

Cynthiana-Million (Catheys, and part of Cannon)

- 355-60 Limestone, some crystalline, fossiliferous, and mottled, some very argillaceous.
 360-70 Shale, dark, calcareous, with some limestone, as above; trace of chert.
 370-400 Shale, calcareous, very dark, slightly fossiliferous.
 400-45 Limestone, fossiliferous, gray, interbedded with dark, granular and calcareous shale.
 445-500 Limestone, crystalline, phosphatic and fossiliferous, with some interbedded calcareous shale.
 500-30 Limestone, gray, crystalline, as above, interbedded with brown, densely crystalline limestone.
 530-615 Limestone, very dense, fine-grained, dark-brown, with little argillaceous limestone interbedded.
 615-50 Limestone, as above, with more argillaceous; some ostracods.

Lexington

- 650-90 Limestone, sublithographic, brown.
 690-805 Limestone, fine-grained, brown, with little interbedded slightly argillaceous limestone.
 805-15 Limestone, as above, with more of the argillaceous limestone.
 815-25 Limestone, very phosphatic and gray, fossiliferous.
 825-50 Limestone, with much calcareous shale, very dark; some brown bentonite.
 850-55 Limestone, very phosphatic, gray, crystalline.

Chazy-Black River

- 855-60 Limestone, with much bentonite and some dark-brown chert.
 860-980 Limestone, fine-grained to lithographic, brown; rare chert.
 980-1000 Limestone, as above, with some dark-brown chert.
 1000-1110 Limestone, smooth, brown, lithographic, with occasional stringers of finely crystalline, brown dolomite.
 1110-25 Limestone, fine, brown, with trace of mottled brown chert.
 1125-50 Limestone, fine, brown; no chert.
 1150-1405 Limestone, brown, fine-grained, with occasional stringers of dolomite.
 1405-1600 Limestone, brown, as above, with trace of dolomite and rarely some argillaceous limestone.
 1600-48 Limestone, gray-tan, very fine grained, some quite dolomitic and argillaceous.

(Wells Creek)

- 1648-75 Limestone, light-tan, lithographic, with some dolomite, usually as isolated rhombs enclosed in the limestone matrix.
1675-1700 Dolomite, detrital, white, with rare sand grains enclosed.

CAMBRIAN

Knox

- 1700-35 Dolomite, tan, densely crystalline; chert, mottled, white, and quartzose; some green shale.
1735-40 Dolomite, tan to cream, very finely crystalline; chert, white, milky, with rare oolites.
1740-1815 Dolomite, cream to light-tan, densely crystalline; rare translucent chert.
1815-45 Dolomite, cream to white, very fine crystalline; some very coarsely crystalline; little chert; rare rounded and frosted sand grains and green shale.
1845-50 Dolomite, white to tan, finely crystalline, some coarse; chert, with brown-centered oolites.
1850-75 Dolomite, white, finely crystalline to sucrose; rare chert.
1875-80 Dolomite, medium-crystalline, with much chert, milky-white; trace of oolites and druse, with rare rounded and frosted sand grains.
1880-1900 Dolomite, cream, finely crystalline; rare gray chert.
1900-10 Dolomite, tan, coarsely crystalline, and with some fine, lithographic limestone; trace of translucent tan chert.
1910-25 Dolomite, white, fine-grained; no chert.
1925-30 Dolomite, coarsely crystalline, with some fine, white, lithographic limestone.
1930-40 Dolomite, white, finely crystalline.
1940-50 Limestone, fine-grained, cream; white to milky chert.
1950-60 Limestone, cream, fine-grained.
1960-2015 Dolomite, very coarsely crystalline, white; chert, white to milky; rare rounded and frosted sand grains.
2015-48 Limestone, white to cream, lithographic.
2048-50 Dolomite, light-tan, coarsely crystalline.
2050-58 Limestone, white, lithographic.
2058-60 Dolomite, very coarsely crystalline.
2060-65 Limestone; medium-crystalline dolomite; chert, with very fine pyrite enclosed.
2065-90 Dolomite, coarsely crystalline to medium-sucrose; no chert.
2090-2105 Dolomite, cream, finely crystalline; trace of white chert.
2105-30 Dolomite, finely broken, porous, white; trace of green shale.

WEST VIRGINIA

Well No. 185 (213). United Fuel Gas No. 42-6181 F. D. Caldwell, Lincoln district, elevation 688 feet, Wayne County, West Virginia.

DEVONIAN

Huntersville

- 3103-18 Limestone, very siliceous, dark-brown; looks like finely crystalline limestone, but actually 50% finely disseminated silica.
3118-30 Limestone, as above; some free chert, highly spiculose.
3130-53 Limestone, brown, siliceous, as above; some limestone, lighter brown, slightly dolomitic, with brown, translucent chert.
3153-74 Dolomite, cream, medium-crystalline, sucrose; much chert (50%), cream, translucent, spiculose, dolomoidic.
3174-85 Limestone, dolomitic, brown; less chert than above; trace of glauconite.

Oriskany

- 3185-3203 Limestone, dolomitic, light-tan, enclosing fine sand grains; chert, 40%, microspecked, spiculose.

Helderberg

- 3203-34 Limestone, dark-brown, fine-grained, very siliceous, some slightly argillaceous; much translucent brown chert; trace of glauconite.

- 3234-57 Limestone, sublithographic, brown, very slightly dolomitic, interbedded with dark, argillaceous, siliceous, pyritic limestone.
 3257-75 Limestone, sublithographic, brown, slightly dolomitic; trace of chert.

SILURIAN-DEVONIAN

Salina

- 3275-87 Limestone, very dolomitic, dark-brown, dense; selenite.
 3287-3350 Dolomite, very finely sucrose, dark-brown; selenite.
 3350-65 Dolomite, as above; anhydrite and gypsum; some brown, translucent chert.
 3365-3476 Dolomite, brown, finely crystalline; much anhydrite; trace of dark-brown chert.
 3476-3600 Dolomite, very dark brown to grayish-brown, very finely crystalline.
 3600-60 Dolomite, bright-brown, finely crystalline, dense.
 3660-70 Dolomite, as above; anhydrite.

SILURIAN

Lockport

- 3670-90 Dolomite, finely crystalline, brown to gray; grayish-green shale and pyrite.
 3690-3700 Dolomite, dark-brown to black, slightly argillaceous.
 3700-12 Limestone, argillaceous, almost black, slightly mottled.
 3712-46 Dolomite, slightly calcareous, argillaceous, very dark gray to black, enclosing some fine sand.
 3746-62 Dolomite, argillaceous, gray to brown, mottled, enclosing fine sand.
 3762-78 Dolomite, gray, with some brown, medium-crystalline, vugular; trace of chert.
 "Big Six"
 3778-90 Sandstone, fine-grained, with occasional rounded quartz pebbles; numerous heavy minerals.
 3790-97 Sandstone, fine-grained, with pebbles, as above, quartz-cemented.
 3797-3819 Dolomite, very fine, dense; trace of fine sand; much sandy shale.

Clinton

- 3819-84 Shale, gray and dark-red, coarse-grained; trace of quartzitic dolomite.
 3884-3938 Shale, very dark red to gray; rare green shale.
 3938-80 Shale, grayish-green, and some dark-red.
 3980-4013 Shale, grayish-green and red; trace of quartz-cemented siltstone.
 4013-19 Shale, as above; trace of hematite.
 4019-40 Shale, as above; trace of dolomite, coarsely crystalline, gray to yellow; glauconite.
 4040-4109 Shale, dark-red to green, fine-grained.
 4109-25 Shale, as above; trace of dolomite, dense, crystalline, to coarse-grained; iron stain.
 4125-60 Shale, as above; trace of dolomite; much oolitic hematite. (Brassfield)
 4160-80 Shale, slightly grayish-green, fine-grained.

Albion

- 4180-4200 Sandstone, very fine grained, poorly sorted, quartz-cemented; occasional large rounded and frosted grains.
 4200-14 Sandstone, as above, with numerous heavy minerals.
 4214-31 Some sandstone, as above; mainly shale, fine-grained, gray.
 4231-38 Quartzite, pale-gray.
 4238-70 Shale, gray, fine-grained.

ORDOVICIAN

Queenston

- 4270-89 Shale, slightly dolomitic and siliceous, fine-grained, gray.
 4289-4305 Siltstone and very fine sand, gray, argillaceous; much pyrite.
 4305-33 Siltstone, very fine grained, slightly argillaceous, pale-green to red.
 4333-71 Shale, slightly silty, coarse-grained, very dark red.

Maysville

- 4371-4403 Shale, slightly calcareous, interbedded with gray, phosphatic, fossiliferous limestone.
4403-13 Shale, gray to green, slightly siliceous; little interbedded fossiliferous limestone.
4413-58 Shale, slightly calcareous, grayish-green, trace red.
4458-80 Shale, calcareous, more silty than above; rare limestone.
4480-4510 Shale, calcareous, slightly silty, gray; phosphatic, gray limestone.
4517-69 Shale, slightly calcareous, gray, with interbedded fossiliferous, argillaceous limestone.
4569-4600 Shale, calcareous; limestone, argillaceous, very fine grained, brownish-gray.
4600-29 Shale, calcareous, gray, greenish-gray, and red; limestone, fine-grained, ostracodal.
4629-66 Limestone, crystalline, fossiliferous, slightly phosphatic; interbedded gray shale.
4666-4712 Limestone, fine-grained, finely phosphatic, with interbedded gray shale.

Garrard

- 4712-4934 Limestone, densely fossiliferous, gray, silty, with interbedded shale.
4934-50 Shale, calcareous, silty, gray.
4950-70 Siltstone, argillaceous, slightly calcareous, gray.
4970-90 Limestone, very argillaceous, slightly silty, gray.
4990-5040 Siltstone, slightly calcareous, very argillaceous, gray.

Cynthiana-Million

- 5040-55 Limestone, argillaceous, very dark gray, slightly fossiliferous.
5055-5141 Limestone, fossiliferous, grayish-brown, dense; interbedded silty shale.
5141-68 Limestone, densely crystalline, fossiliferous, brownish-gray, phosphatic; little interbedded silty shale.
5168-5264 Limestone, very dense, fine-grained, gray to slightly brown, argillaceous, slightly silty.
5264-5340 Limestone, very argillaceous and slightly silty, brownish-gray.
5350-5412 Limestone, argillaceous, fine-grained to densely crystalline, brown.

Lexington

- 5412-75 Limestone, brown to grayish-brown, dense to subcrystalline, slightly fossiliferous.
5475-97 Limestone, more argillaceous than above, gray.
5497-5535 Limestone, gray, very fossiliferous, phosphatic; some shale; trace of silt.
5535-80 Shale, calcareous, gray.
5580-5600 Shale, as above; trace of chert.
5600-86 Limestone, slightly argillaceous, grayish-brown, fine-grained to fossiliferous.

Chazy-Black River

- 5686-95 Limestone, very fine grained, bentonitic, grayish-brown; trace of brown chert.
5695-5904 Limestone, sublithographic, brown, some very slightly bentonitic.
5904-14 Limestone, slightly more argillaceous than above, very slightly dolomitic, fine-grained.
5914-6171 Limestone, very slightly argillaceous, brown to grayish-brown, sublithographic.
6171-6220 Limestone, very fine, lithographic, cream to light-tan.
6220-6356 Limestone, slightly argillaceous, dark-gray to brown; limestone pellets at 6260.
6356-93 Limestone, as above, some very slightly dolomitic.
6393-6428 Limestone, very fine grained, grayish-tan.

(Murfreesboro)

- 6428-6613 Limestone, argillaceous, very dark gray to brown.
6613-6709 Limestone, very finely dolomitic and argillaceous, dark grayish-brown.
6709-29 Limestone, very argillaceous, almost black.

- 6729-38 Limestone, very dolomitic, fine-grained, detrital, gray.
 6738-56 Limestone, finely argillaceous and dolomitic, black.
 6756-70 Limestone, grayish-brown, with fine-grained, calcareous shale breaks.
 6770-6862 Limestone, argillaceous, very finely dolomitic, dark-brown.
 6862-96 Limestone, very argillaceous, fine-grained, black.
 6896-6914 Limestone, dolomitic, slightly argillaceous, grayish-brown.
 6914-70 Limestone, slightly argillaceous and dolomitic, almost black.
 6970-7008 Limestone, slightly dolomitic; some clay pellets enclosed.
 7008-85 Limestone, very argillaceous, slightly dolomitic, grayish-brown to black.

(St. Peter)

- 7085-99 Limestone, dark, argillaceous, as above, with occasional rounded and frosted sand grains enclosed.
 7099-7101 Sandstone, fine-grained, rounded and frosted, quartz-cemented.
 7101-06 Limestone, argillaceous, fine-grained, grayish-brown.
 7106-16 Sandstone, poorly sorted, fine-grained, limestone-cemented.
 7116-22 Sandstone, some quartz-cemented, poorly sorted.
 7122-33 Limestone, very argillaceous, black, fine-grained.
 7133-64 Sandstone, fine-grained, angular to rounded, friable.

CAMBRIAN

Knox

- 7164-76 Dolomite, pale-gray, medium- to coarse-crystalline, porous.
 7176-89 Dolomite, pale-gray, very slightly crystalline; trace of translucent chert and green shale.
 7189-99 Dolomite, pale-gray, medium-crystalline, vitreous.
 7199-7227 Dolomite, fine- to medium-crystalline, sucrose, pale-gray; trace of interstitial chert.
 7227-35 Dolomite, gray, densely crystalline, medium-grained, slightly glauconitic; trace of finely disseminated silica.
 7235-50 Dolomite, cream, medium-crystalline; trace of angular to subrounded sand.
 7250-60 Dolomite, as above; trace of quartzose chert.
 7260-73 Dolomite, gray, densely crystalline; trace of dense chert.
 7273-83 Dolomite, light-tan, medium-crystalline; trace of fine silt.
 7283-92 Dolomite, medium-crystalline, gray; trace of gray, mottled chert, dolomitic.
 7292-7302 Dolomite, tan, medium-crystalline; trace of angular quartz and green shale.
 7302-05 Dolomite, tan, mottled with gray; trace of dense, translucent chert.
 7305-15 Dolomite, pale creamy-gray, medium-crystalline, dense to slightly vugular.
 7315-38 Dolomite, pale-gray, medium-crystalline, dense.
 7338-47 Dolomite, very finely crystalline, vitreous; trace of gray, quartzose chert; glauconite.
 7347-75 Dolomite, medium-crystalline, pale-gray; trace of chert, with occasional dolomolds and fine silt.
 7375-84 Dolomite, as above; trace of medium, rounded and frosted quartz grains.
 7384-97 Dolomite, very argillaceous, dark-brown.
 7397-7418 Dolomite, grayish-tan, finely crystalline, dense; very finely disseminated silica; trace of rounded and frosted sand.
 7418-28 Dolomite, light-brown, finely crystalline; trace of silt and dense, white chert.
 7428-35 Dolomite, very dark brown, slightly argillaceous, fine-grained.
 7435-45 Dolomite, pale grayish-tan, very dense, finely crystalline; 25% chert, white, dolomitic, drusy to earthy, brown.
 7445-66 Dolomite, dark-brown, slightly argillaceous; trace of silt.
 7466-95 Dolomite, creamy-gray, finely crystalline, dense; rare sand grains.
 7495-7500 Dolomite, as above; trace of tan chert.

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36	Clay Co., Ky., No. 19	150	Barren Co., Ky., No. 4
37	Knox Co., Ky., No. 110	151	Barren Co., Ky., No. 5
38	Laurel Co., Ky., No. 112	155	Allen Co., Ky., No. 1
39	Laurel Co., Ky., No. 111	158	Warren Co., Ky., No. 157
42	Jackson Co., Ky., No. 104	160	Grayson Co., Ky., No. 100
45	Bourbon Co., Ky., No. 10	162	Meade Co., Ky., No. 128
46	Mason Co., Ky., No. 125	164	Perry Co., Ind., No. 170
48	Adams Co., Ohio, No. 172	168	Webster Co., Ky., No. 165
49	Warren Co., Ohio, No. 175	170	Trigg Co., Ky., No. 156
50	Greene Co., Ohio, No. 173	173	Maury Co., Tenn., No. 181
51	Logan Co., Ohio, No. 174	174	Giles Co., Tenn., No. 178
56	Kenton Co., Ky., No. 108	177	Marshall Co., Ky., No. 124
57	Boone Co., Ky., No. 9	178	Graves Co., Ky., No. 99
60	Fayette Co., Ky., No. 82	186	Lauderdale Co., Tenn., No. 180
62	Fayette Co., Ky., No. 81	194	Mississippi Co., Ark., No. 167
63	Jessamine Co., Ky., No. 106	196	Pemiscot Co., Mo., No. 171
65	Garrard Co., Ky., No. 97	203	Estill Co., Ky., No. 73
67	Lincoln Co., Ky., No. 120	205	Clinton Co., Ky., No. 37
68	Lincoln Co., Ky., No. 118	208	Rockcastle Co., Ky., No. 140
69	Lincoln Co., Ky., No. 113	213	Wayne Co., W. Va., No. 185
71	Pulaski Co., Ky., No. 139	214	Menifee Co., Ky., No. 129
72	Pulaski Co., Ky., No. 138	257	Monroe Co., Ky., No. 132
76	Wayne Co., Ky., No. 164	295	Rockcastle Co., Ky., No. 142
86	Clinton Co., Ky., No. 62	297	Rockcastle Co., Ky., No. 143
92	Clinton Co., Ky., No. 35	321	Knox Co., Ky., No. 109
102	Pickett Co., Tenn., No. 183	337	Carter Co., Ky., No. 13
103	Fentress Co., Tenn., No. 176	340	Rowan Co., Ky., No. 145
104	Fentress Co., Tenn., No. 177	415	Harrison Co., Ind., No. 168
105	Putnam Co., Tenn., No. 184	603	Estill Co., Ky., No. 75

Author's No.	Sample Description Number

743	-Powell Co., Ky., No. 136
777	-Bullitt Co., Ky., No. 12
780	-Casey Co., Ky., No. 16
797	-Clinton Co., Ky., No. 59
798	-Clinton Co., Ky., No. 58
799	-Clinton Co., Ky., No. 29
962	-Clinton Co., Ky., No. 34
963	-Clinton Co., Ky., No. 23
964	-Clinton Co., Ky., No. 60
965	-Clinton Co., Ky., No. 57
966	-Clinton Co., Ky., No. 63
968	-Clinton Co., Ky., No. 61
970	-Clinton Co., Ky., No. 55
971	-Clinton Co., Ky., No. 56
972	-Clinton Co., Ky., No. 24
974	-Clinton Co., Ky., No. 25
976	-Clinton Co., Ky., No. 64
977	-Clinton Co., Ky., No. 27
978	-Clinton Co., Ky., No. 36
979	-Clinton Co., Ky., No. 26
980	-Clinton Co., Ky., No. 31
987	-Clinton Co., Ky., No. 32
989	-Clinton Co., Ky., No. 22
990	-Clinton Co., Ky., No. 21
991	-Clinton Co., Ky., No. 33
992	-Clinton Co., Ky., No. 30
995	-Clinton Co., Ky., No. 44
997	-Clinton Co., Ky., No. 39
998	-Clinton Co., Ky., No. 51
999	-Clinton Co., Ky., No. 50
1000	-Clinton Co., Ky., No. 48
1001	-Clinton Co., Ky., No. 38
1003	-Clinton Co., Ky., No. 45
1004	-Clinton Co., Ky., No. 47
1005	-Clinton Co., Ky., No. 46
1006	-Clinton Co., Ky., No. 43
1007	-Clinton Co., Ky., No. 49
1008	-Clinton Co., Ky., No. 41
1009	-Clinton Co., Ky., No. 53
1010	-Clinton Co., Ky., No. 52
1011	-Clinton Co., Ky., No. 54
1012	-Clinton Co., Ky., No. 40
1013	-Clinton Co., Ky., No. 42
1020	-Cumberland Co., Ky., No. 65
1022	-Cumberland Co., Ky., No. 66
1023	-Cumberland Co., Ky., No. 67
1024	-Cumberland Co., Ky., No. 70
1025	-Cumberland Co., Ky., No. 69
1026	-Cumberland Co., Ky., No. 71
1027	-Cumberland Co., Ky., No. 68
1029	-Clinton Co., Ky., No. 20

Author's No.	Sample Description Number

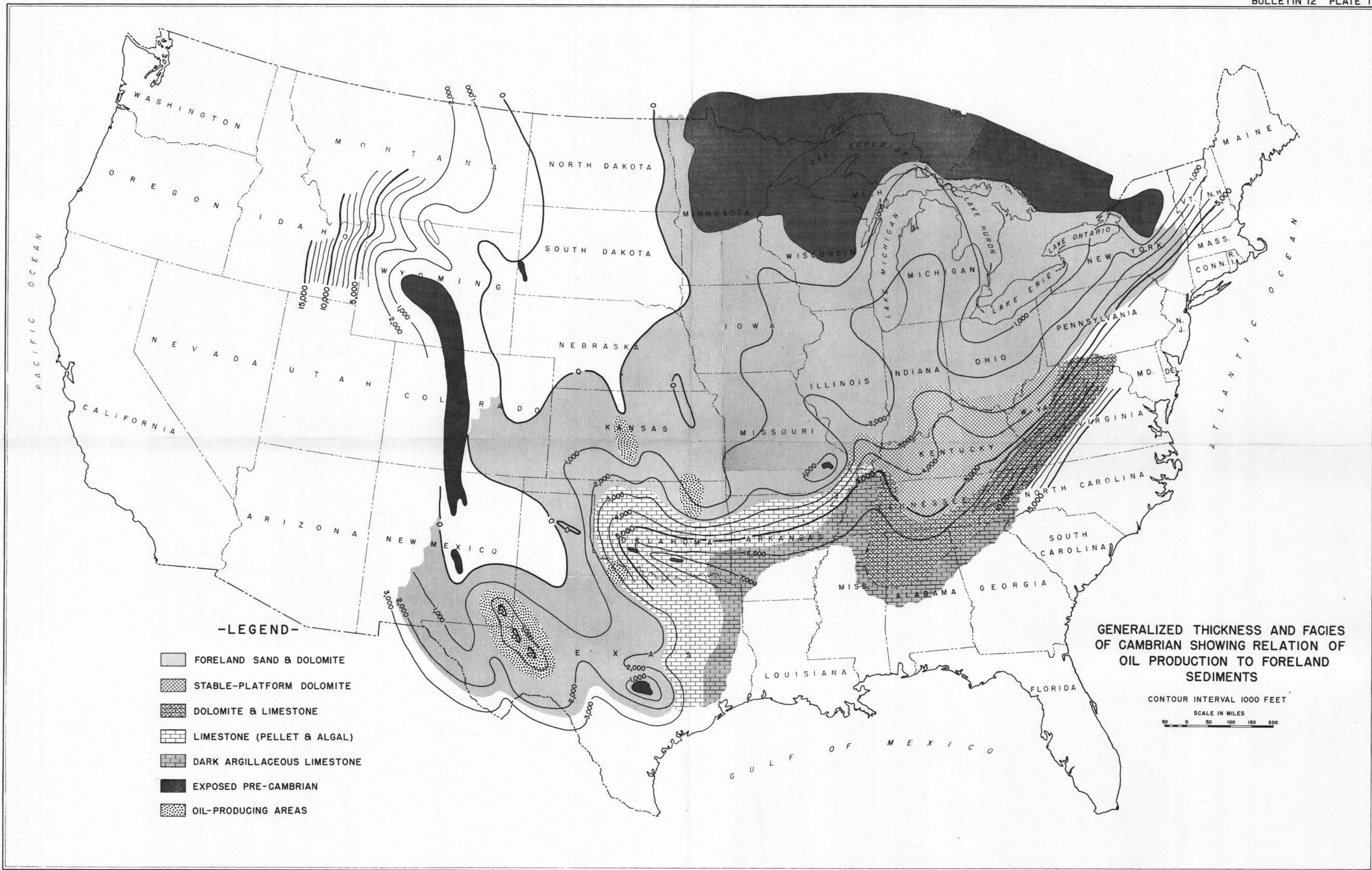
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1041	-Garrard Co., Ky., No. 95
1042	-Garrard Co., Ky., No. 91
1043	-Garrard Co., Ky., No. 86
1044	-Garrard Co., Ky., No. 89
1045	-Garrard Co., Ky., No. 88
1046	-Garrard Co., Ky., No. 94
1047	-Garrard Co., Ky., No. 85
1048	-Garrard Co., Ky., No. 98
1049	-Garrard Co., Ky., No. 87
1050	-Garrard Co., Ky., No. 96
1051	-Garrard Co., Ky., No. 90
1054	-Grayson Co., Ky., No. 101
1056	-Grayson Co., Ky., No. 102
1170	-Lincoln Co., Ky., No. 119
1175	-Lincoln Co., Ky., No. 117
1177	-Lincoln Co., Ky., No. 114
1182	-Lincoln Co., Ky., No. 116
1197	-McCreary Co., Ky., No. 126
1233	-Metcalfe Co., Ky., No. 130
1256	-Pulaski Co., Ky., No. 137
1275	-Russell Co., Ky., No. 151
1276	-Russell Co., Ky., No. 149
1277	-Russell Co., Ky., No. 150
1278	-Russell Co., Ky., No. 152
1282	-Rockcastle Co., Ky., No. 141
1342	-Wayne Co., Ky., No. 162
1343	-Wayne Co., Ky., No. 163
1344	-Wayne Co., Ky., No. 159
1349	-Wayne Co., Ky., No. 161
1350	-Wayne Co., Ky., No. 158
1351	-Wayne Co., Ky., No. 160
1385	-McLean Co., Ky., No. 127
1397	-Lincoln Co., Ky., No. 115
1437	-Bath Co., Ky., No. 7
1439	-Bath Co., Ky., No. 8
1443	-Clinton Co., Ky., No. 28
1444	-Meigs Co., Tenn., No. 182
1445	-Hardeman Co., Tenn., No. 179
1446	-Johnson Co., Ky., No. 107

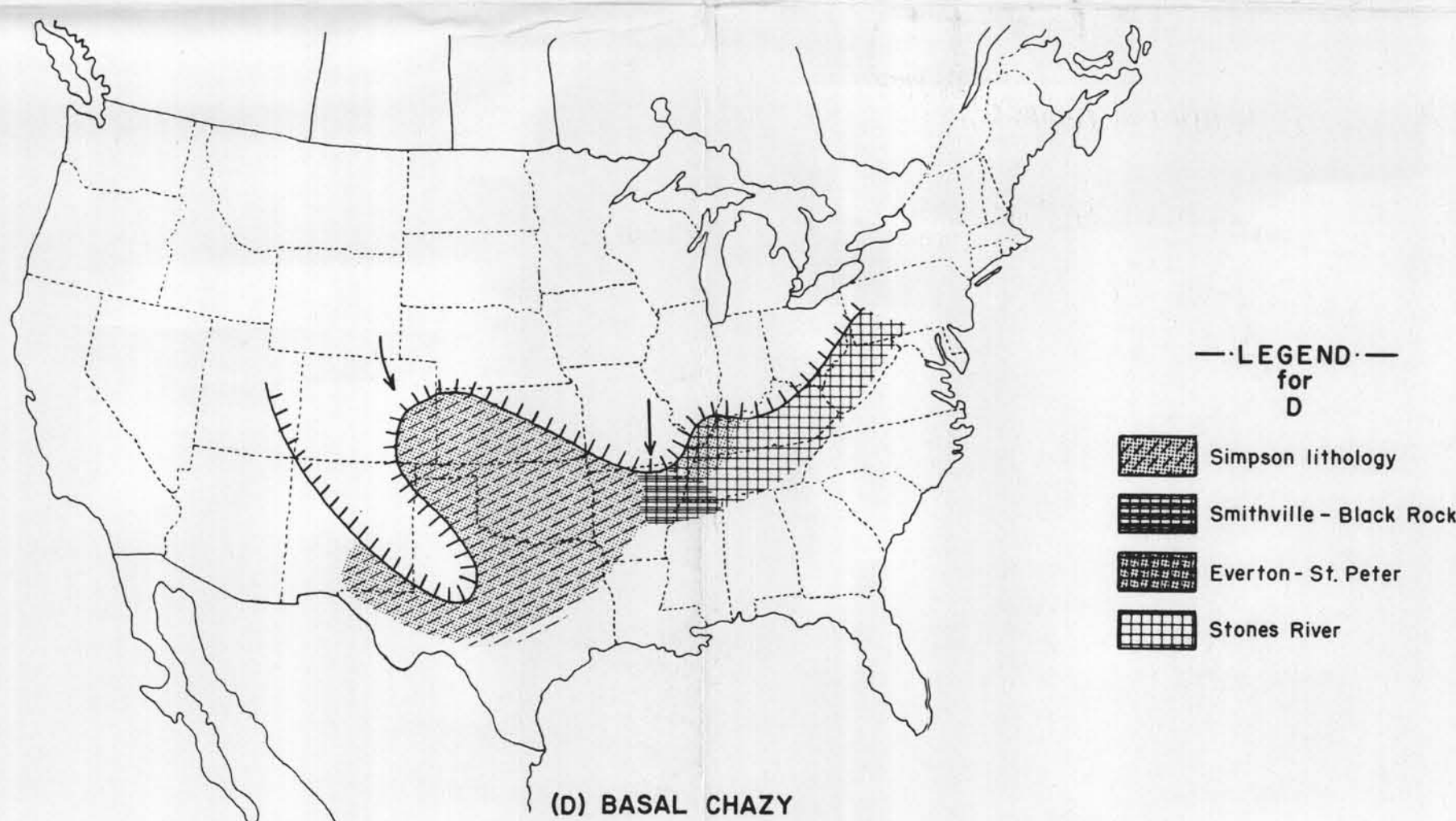
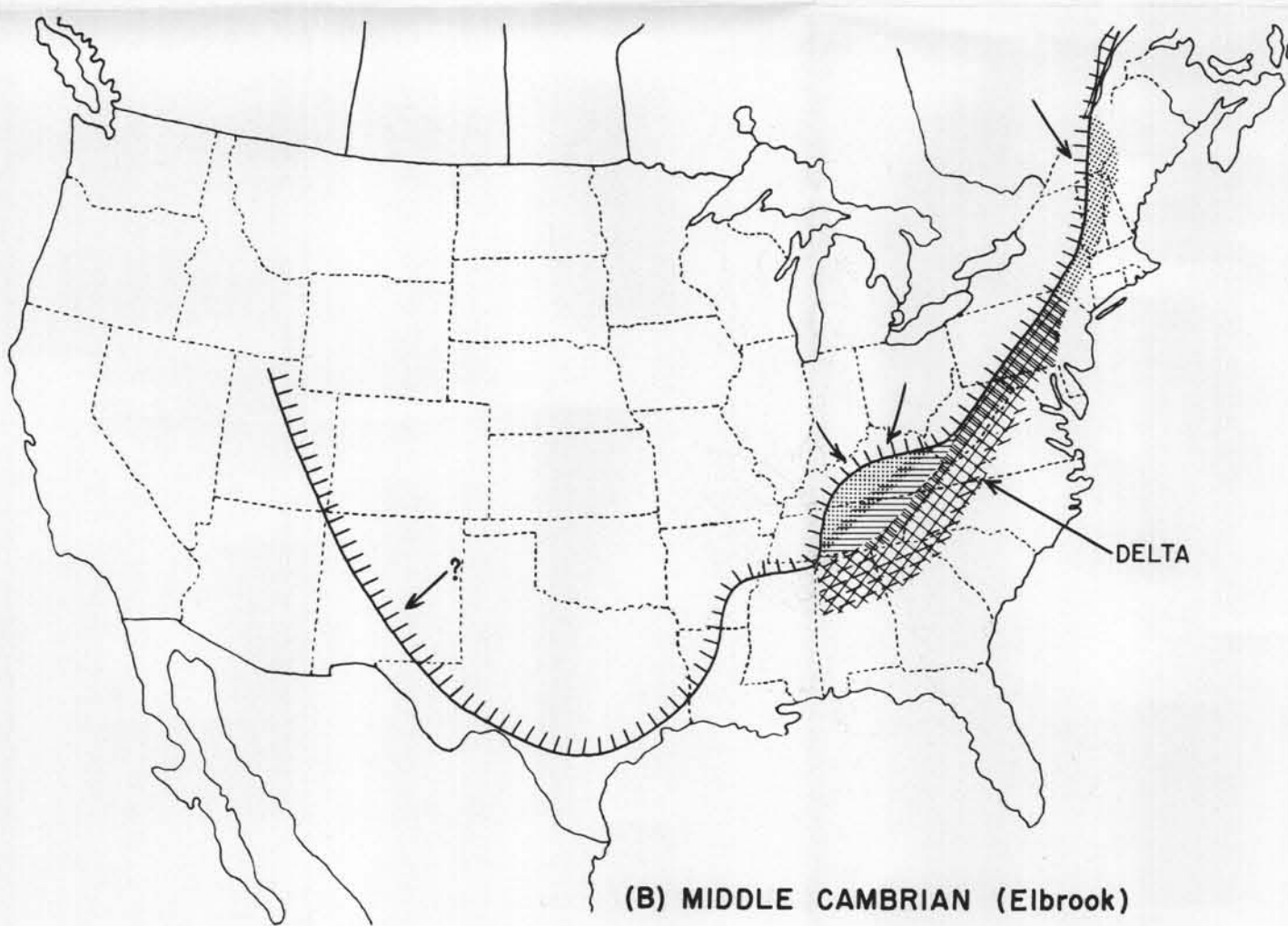
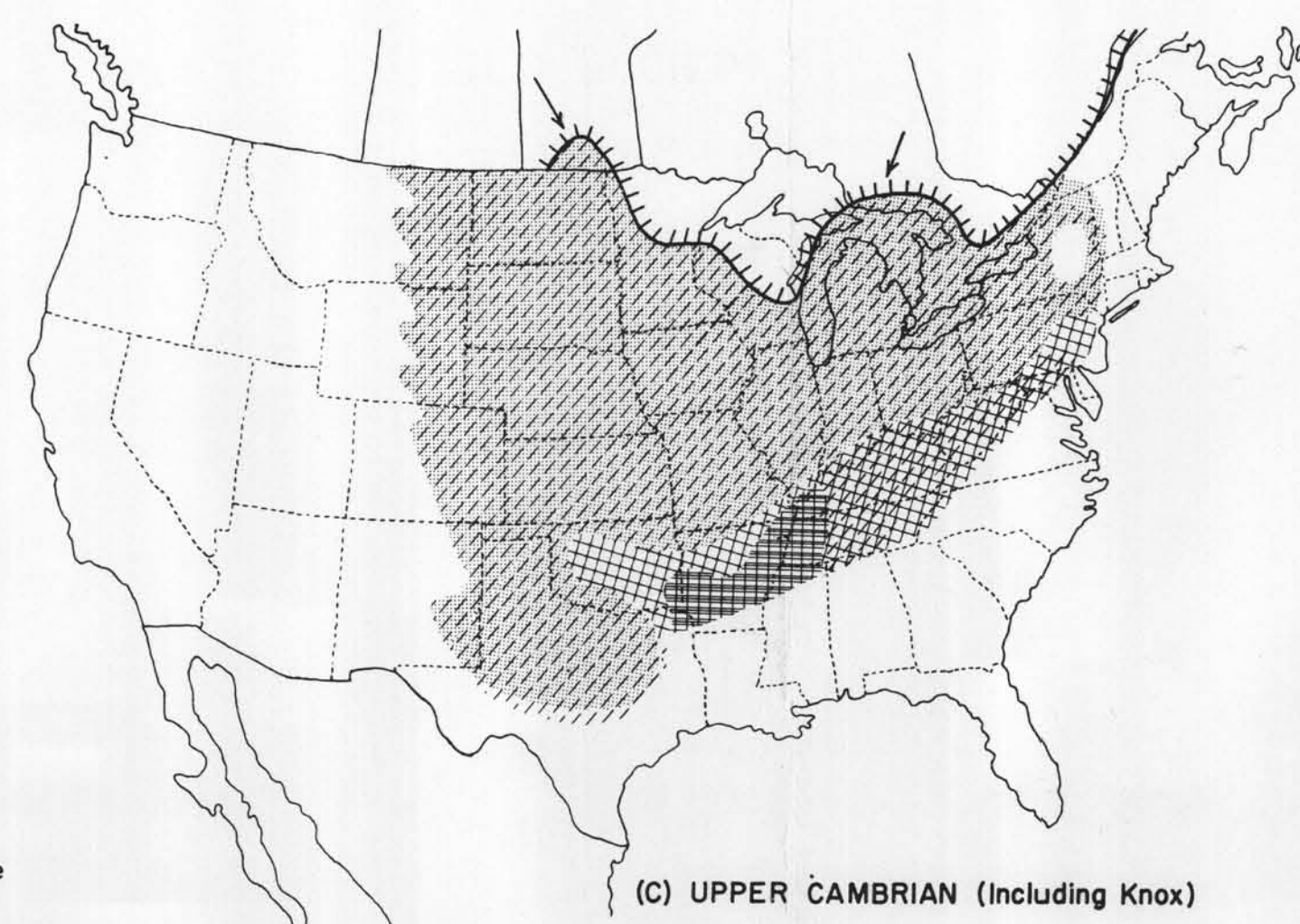
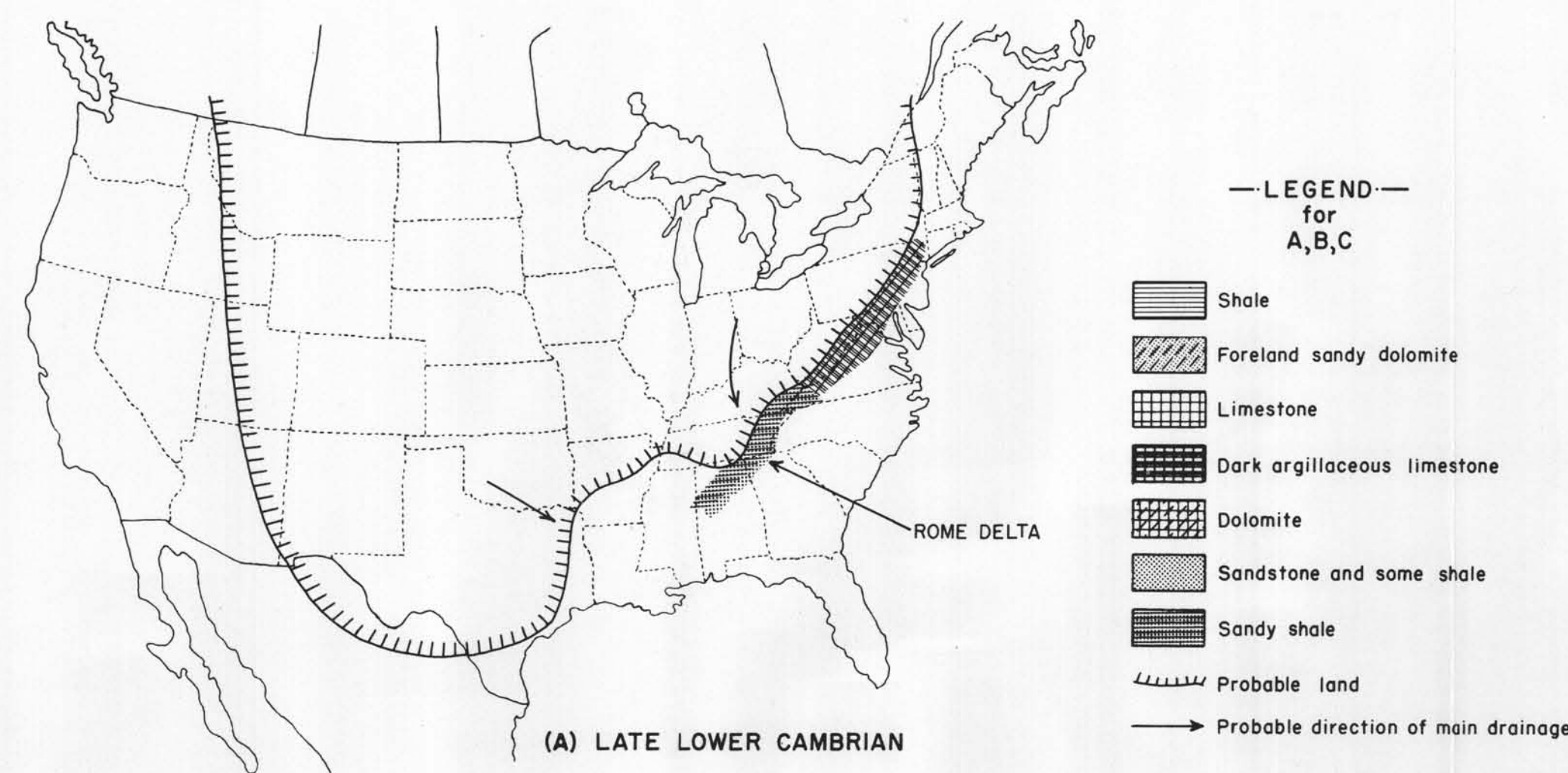
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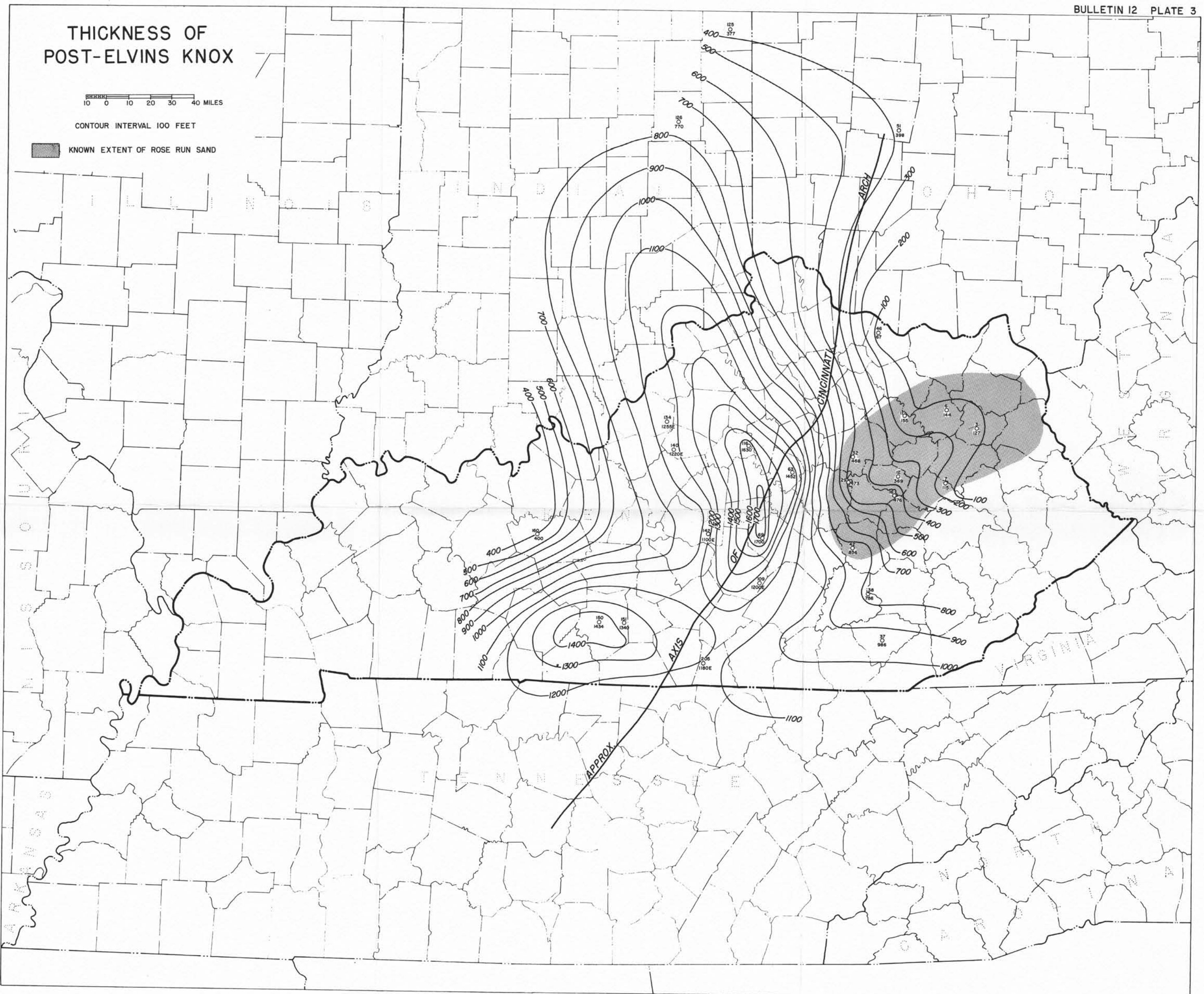
MAPS SHOWING LAND-SEA RELATIONSHIPS AND GENERALIZED FACIES

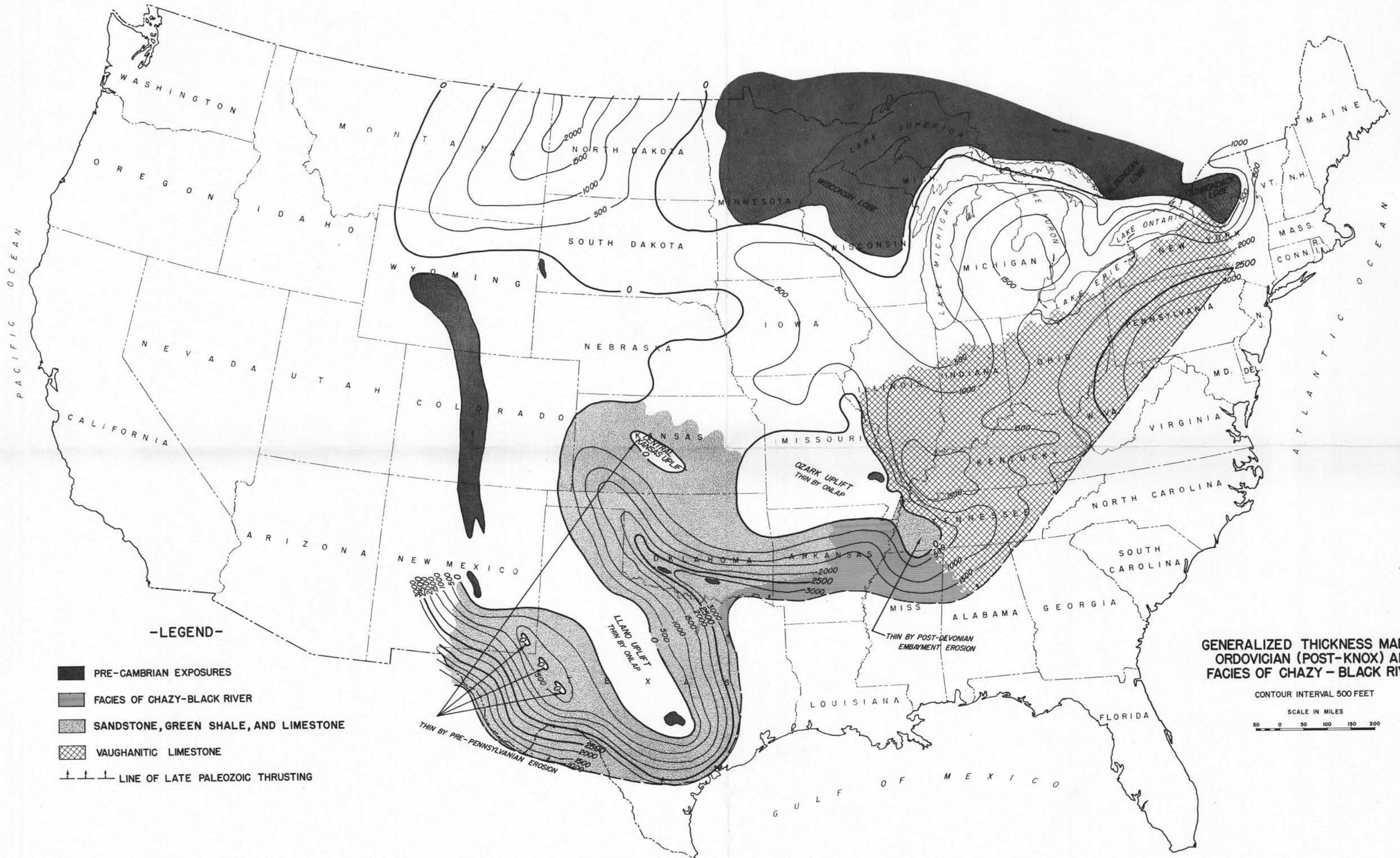
THICKNESS OF POST-ELVINS KNOX

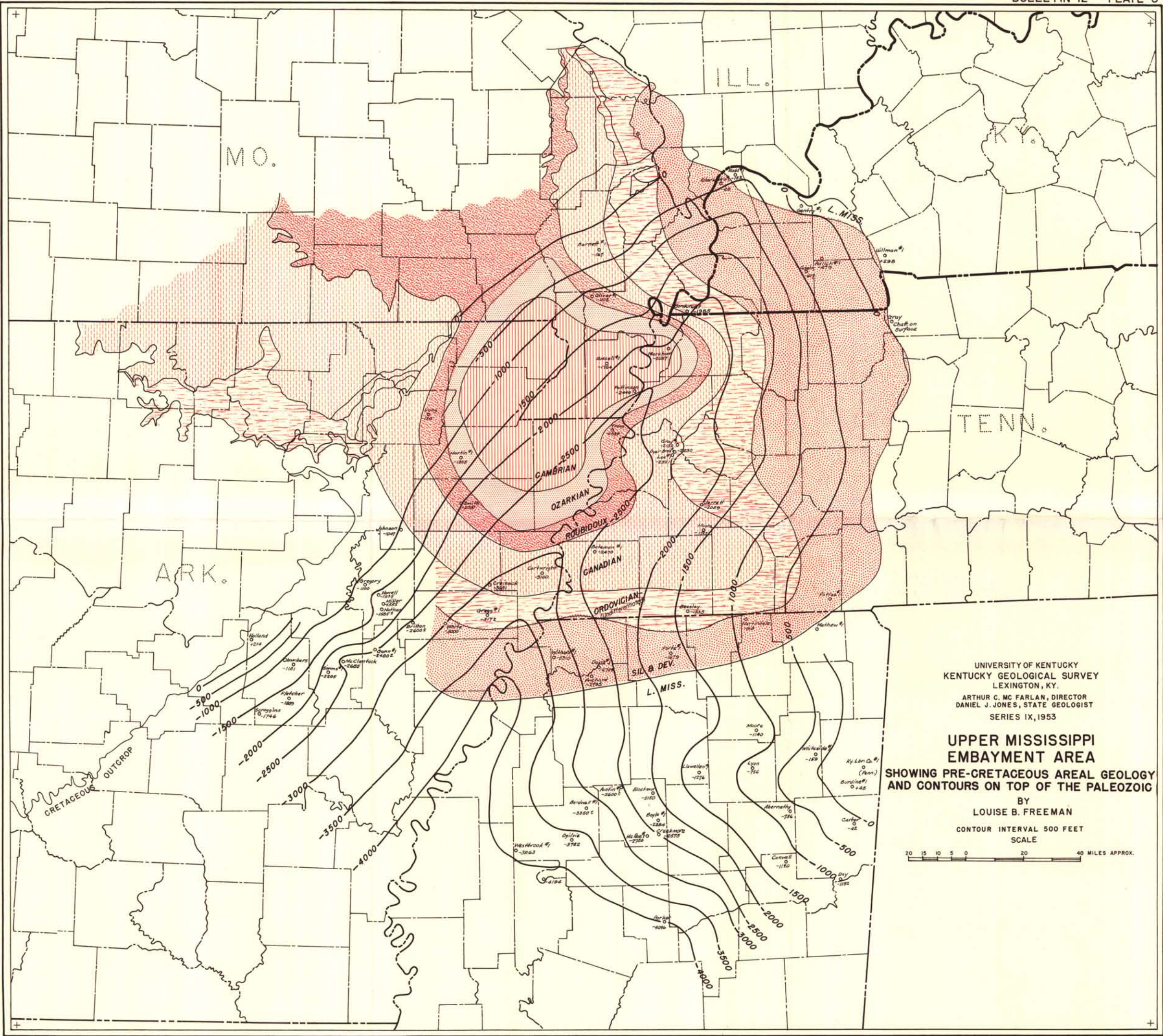
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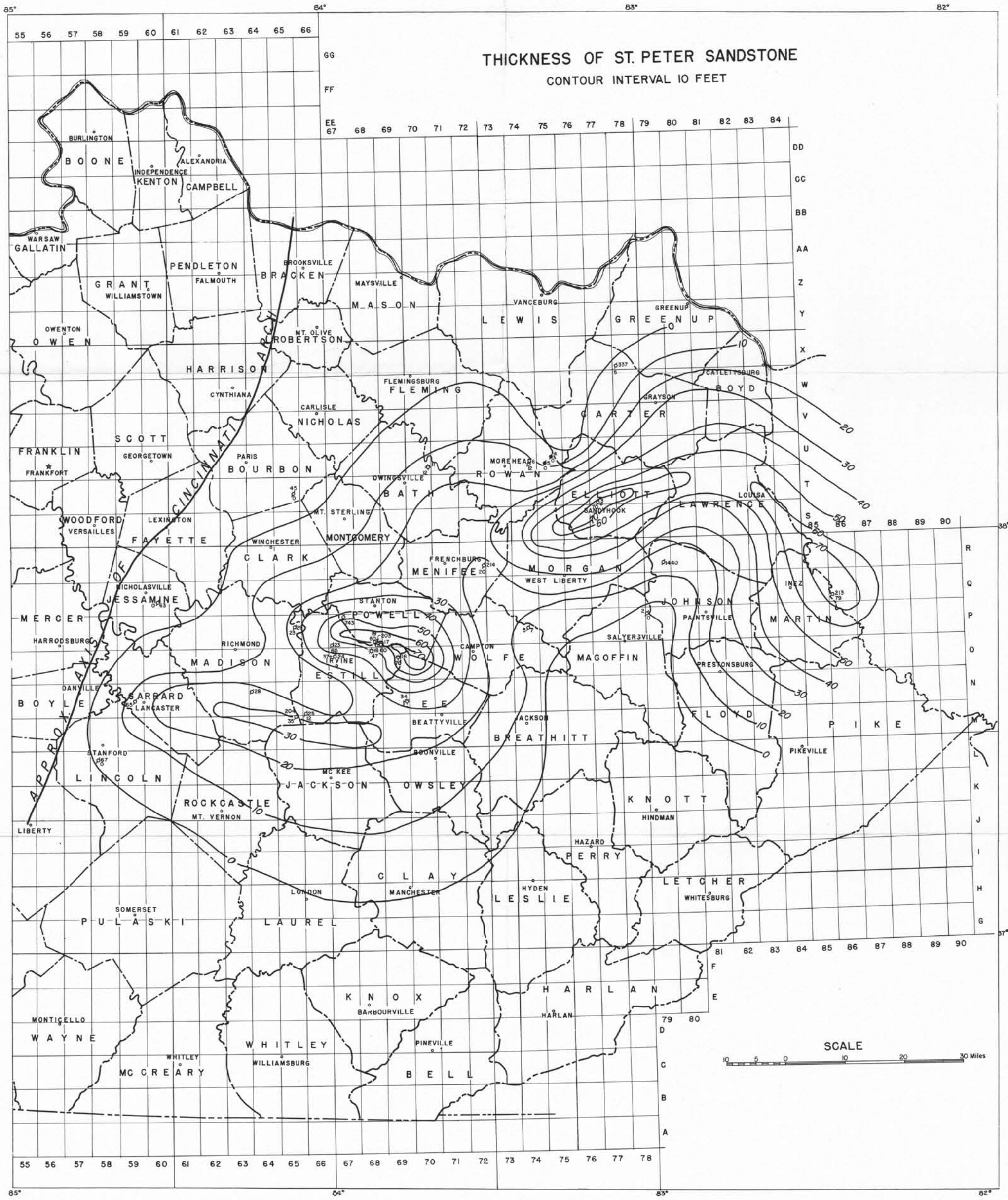
CONTOUR INTERVAL 100 FEET

KNOWN EXTENT OF ROSE RUN SAND





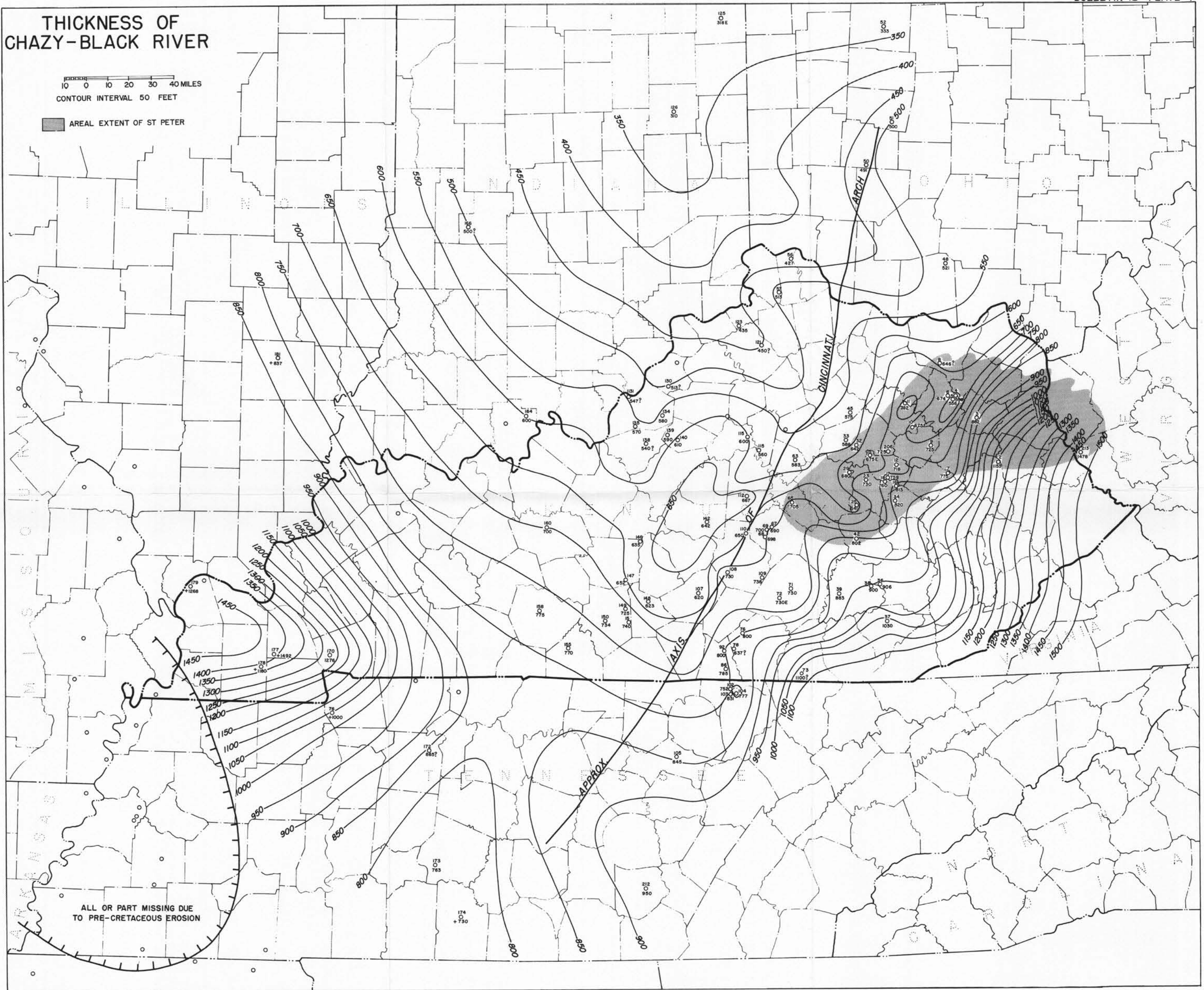




THICKNESS OF CHAZY-BLACK RIVER

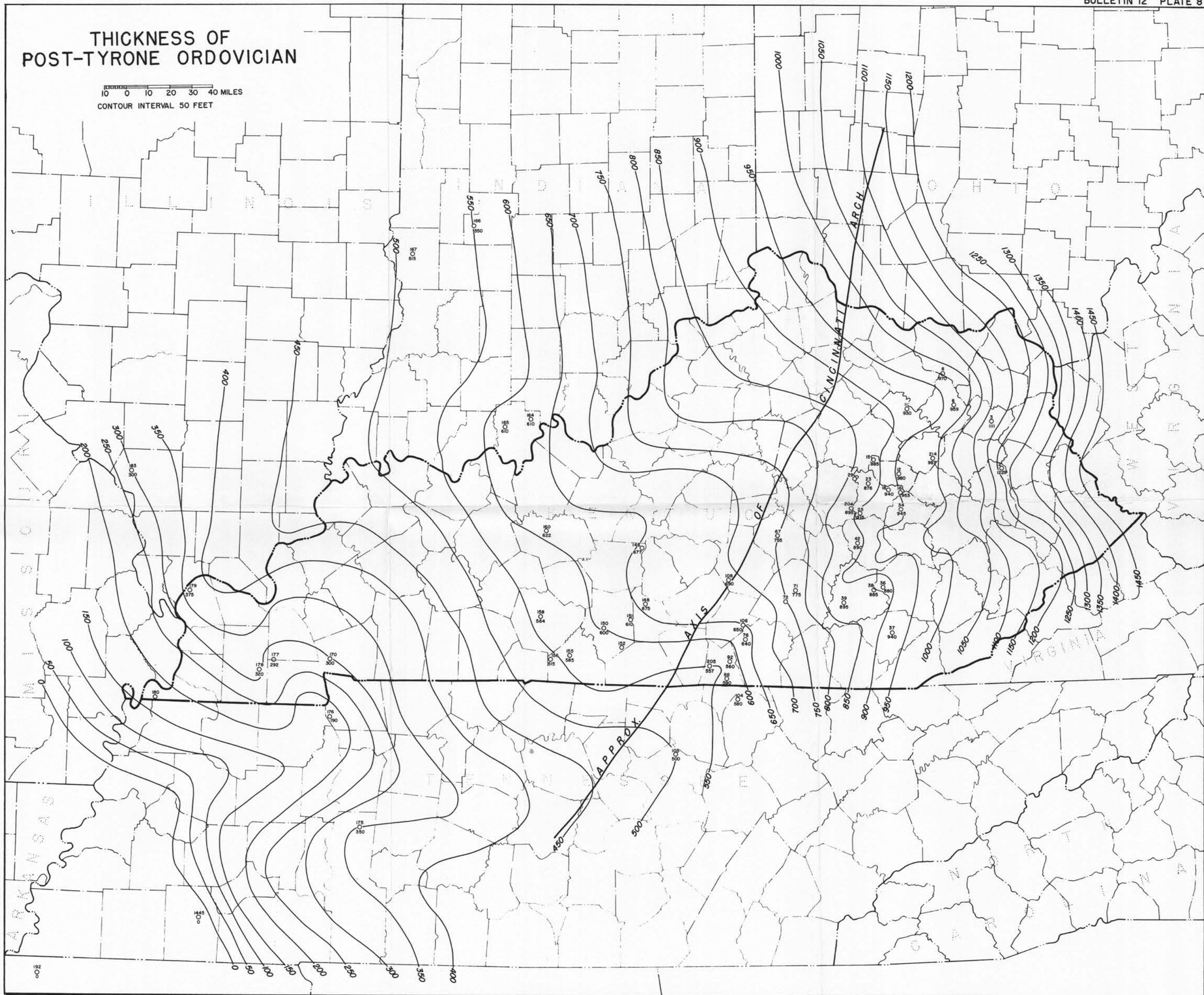
10 0 10 20 30 40 MILES
CONTOUR INTERVAL 50 FEET

AREAL EXTENT OF ST PETER

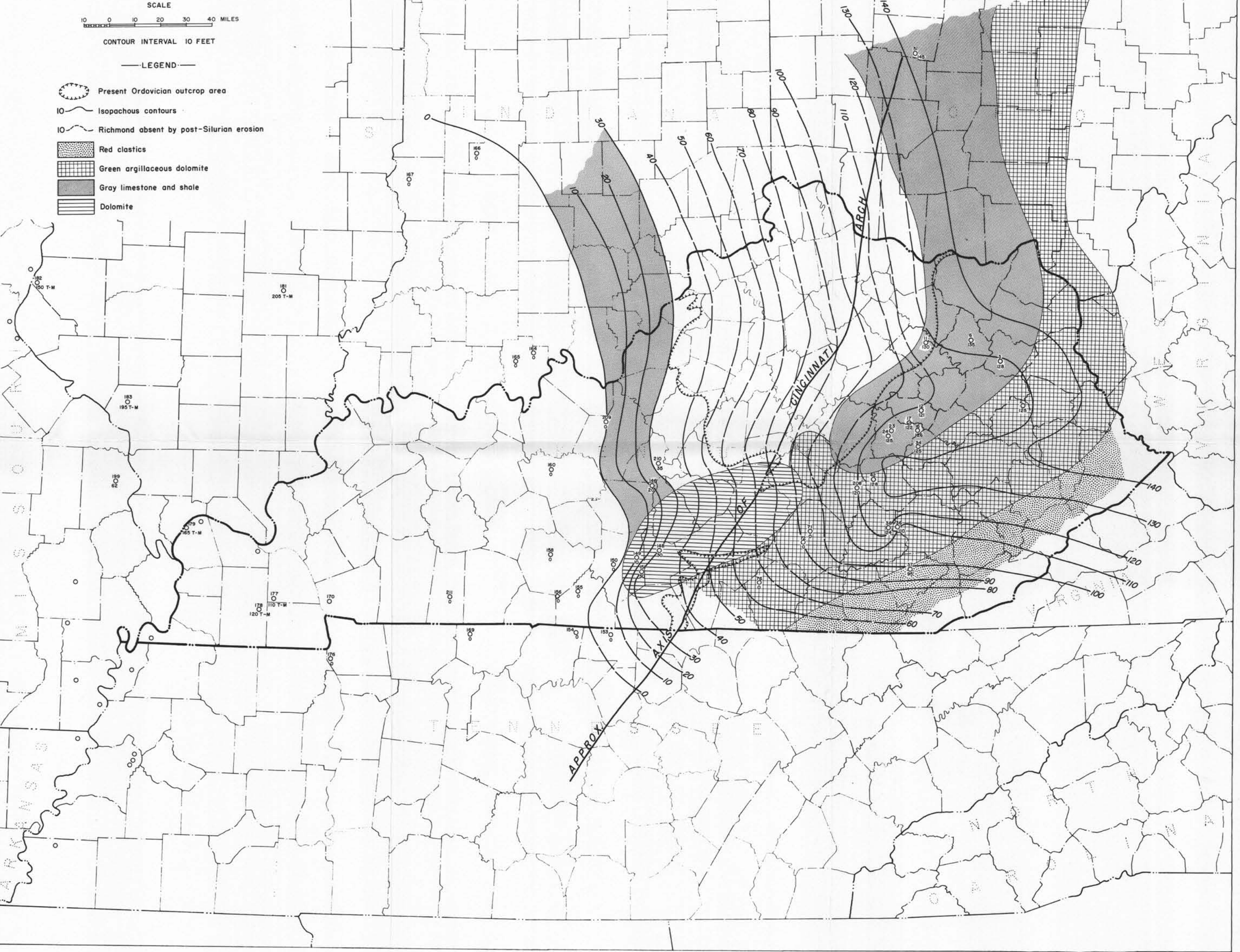


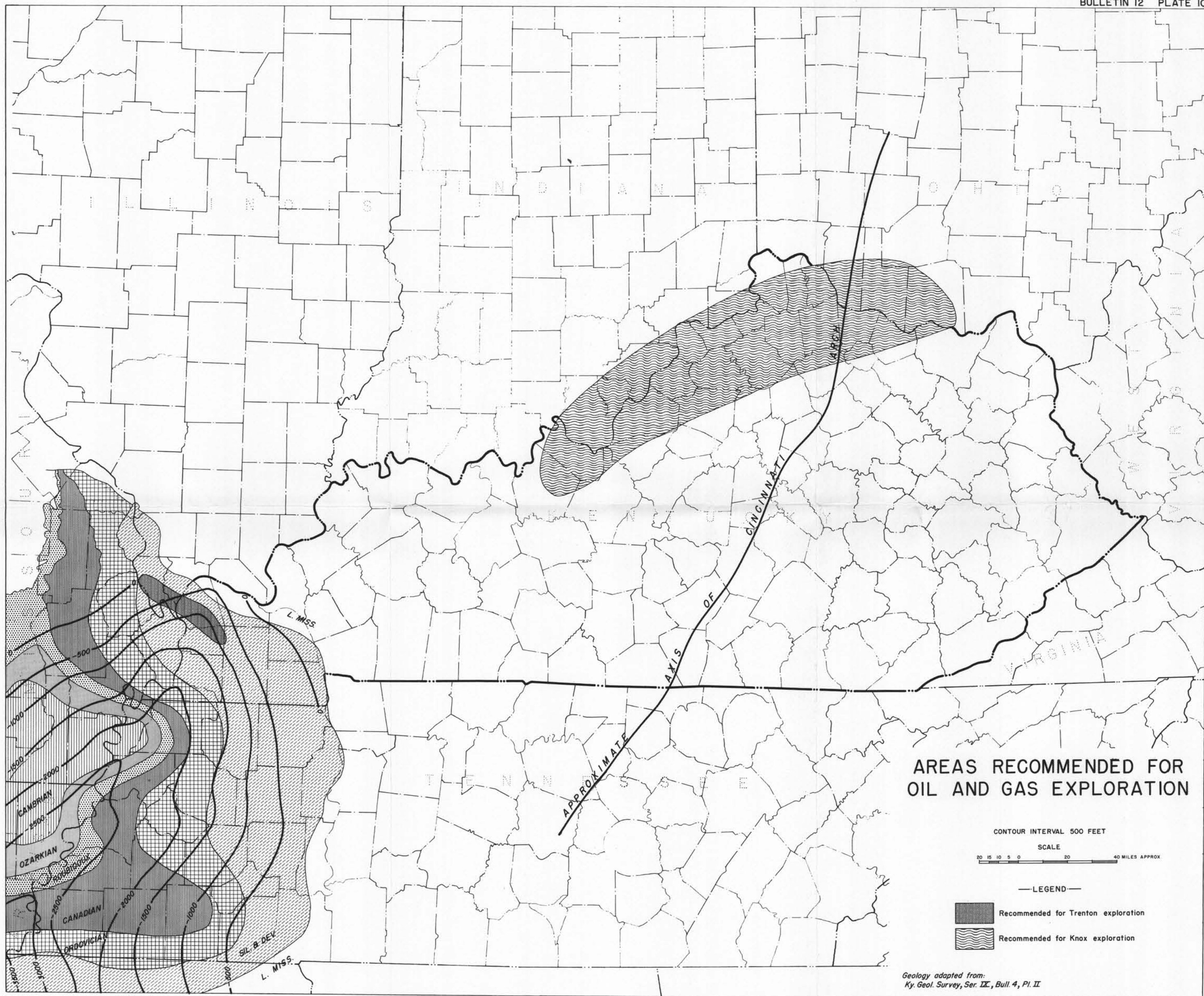
THICKNESS OF POST-TYRONE ORDOVICIAN

10 0 10 20 30 40 MILES
CONTOUR INTERVAL 50 FEET



THICKNESS AND FACIES OF RICHMOND SERIES IN KENTUCKY





AREAS RECOMMENDED FOR OIL AND GAS EXPLORATION

CONTOUR INTERVAL 500 FEET
SCALE
20 15 10 5 0 20 40 MILES APPROX

- LEGEND—
- Recommended for Trenton exploration
 - Recommended for Knox exploration

Geology adapted from:
Ky. Geol. Survey, Ser. IX, Bull. 4, Pl. II