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ARTESIAN WATER IN THE FLORIDA PENINSULA

BY

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By V. T. Stringfield

ABSTRACT

Artesian water is the source of most of the large and many of the small water supplies in the Florida peninsula. The areas in which large amounts of artesian water are used include irrigation districts, as in Seminole, Manatee, and Sarasota Counties, and some of the cities, as Jacksonville. Some of the problems of the artesian supplies include (1) decline of head and of yield of wells in areas of large draft from wells, (2) contamination of fresh artesian water by salt water, (3) subsurface leakage in wells, (4) drainage by means of wells.

The principal artesian formations are the Ocala limestone, of Eocene age, and the Tampa limestone and Hawthorn formations, of Miocene age. The older rocks underlying these formations are not important sources of water at present, because they are deeply buried in a large part of the peninsula and in some places contain highly mineralized water. The younger rocks, overlying the artesian formations, constitute the main source of nonartesian ground water. The Ocala and Tampa formations consist essentially of limestone, part of which is porous and contains cavities. They contain large amounts of water and are the source of some of the largest limestone springs in the United States. The Ocala underlies the entire peninsula and crops out in the northwestern part. It has an estimated thickness of about 500 feet, overlies older undifferentiated Eocene rocks, and underlies the Tampa limestone. The Tampa underlies part of the peninsula and crops out in the northwestern part. It has an estimated thickness of about 200 feet. The Hawthorn formation consists of about 500 feet of interbedded marl, limestone, clay, and sand. It rests on the Ocala limestone in some localities and on the Tampa limestone in others. It underlies the entire peninsula except where the Ocala or Tampa is at or near the surface. In the southern part of the peninsula it is overlain by a considerable thickness of younger material. These formations are bent into an anticline that trends northward through the peninsula and plunges toward the south. The crest of the anticline is in the northwestern part, where the Ocala limestone is estimated to be as much as 120 feet above sea level. The structure is favorable for artesian conditions, which are present throughout the peninsula except locally in recharge areas. In part of the area, however, the artesian conditions and the movement of the water are independent of the structure.

The wells that are supplied from the artesian formations range in depth from less than 100 feet to more than 1,000 feet and in yield from a few gallons to several thousand gallons a minute. The areas in which wells will overflow at the surface lie chiefly along the coasts and in the southern part of Florida. The height to which water will rise above the surface of the ground ranges from a fraction of a foot to about 45 feet. In nonflowing wells in the higher areas the water may stand as much as 100 feet below the surface. The height above sea level to which artesian water will rise ranges from a few feet in some areas on or near the coast to 120 feet in the central part of the peninsula. Recorded fluctuations of head range from less than a foot to several feet. Some of the causes of these fluctuations are withdrawal of water from wells either by natural flow or pumpage, rainfall, discharge of surface water into drainage wells, ocean tides, changes in barometric pressure, and fluctuations of river levels.

The contour map representing the piezometric surface, or height above sea level to which water would rise in tightly cased wells, in 1934 indicates the areas of large recharge and of large discharge, the hydraulic gradient, and the direction of movement of the water. The principal areas of recharge are in the central, north-central, and northwestern parts of the peninsula and one area in Georgia that supplies part of the water for northern Florida. They include areas in which the artesian formations are at or near the surface, areas where sink holes extend from the surface to the artesian formations, and areas where drainage wells penetrate the artesian formations. The principal areas of natural discharge of artesian water are in the north-central and northwestern parts of the peninsula. This discharge occurs through large springs and seepages, some of which are submarine. The area of most obvious influence of natural discharge on the piezometric surface is in the north-central part of the peninsula, where the piezometric surface forms a low saddle that slopes to only a few feet above sea level along the coasts. One of the areas of most obvious influence of draft from wells on the piezometric surface is in Jacksonville and vicinity.

Artesian water that contains more than 100 parts per million of chloride is present at moderate depths in parts of the coastal areas and in the valley of the St. Johns River, where the artesian pressure is small, and also in part of southern Florida. In some areas the pressure on the artesian water is great enough to cause the water to discharge into the ocean through submarine springs, and no encroachment of sea water is occurring now, but encroachment may occur if the pressure is lowered sufficiently. Some of the water is contaminated by salt water or mineral salts in the formation and not by the encroachment of sea water.

INTRODUCTION

Previous reports

The geology and ground water of Florida are described in several reports prepared by the State Geological Survey of Florida and the United States Geological Survey. One of the earliest of these is a report by Sellards[1] relating to the artesian water of central Florida. A report by Matson and Sanford,[2] published in 1913, is one of the most comprehensive reports on the ground water of the entire State. In the same year a report by Sellards and Gunter[3] on the artesian water of eastern and southern Florida was published. General information regarding the ground water is included in several later reports published by the Florida Geological Survey.[4] The report by Gunter and Ponton includes maps of the artesian water in part of the area. A detailed report on the artesian water in Sarasota County[5] was published in 1933. A paper prepared by Collins and Howard[6] includes a discussion and analyses of artesian water of the Florida peninsula.

The most complete description of the geology of the peninsula is given in a report by Cooke and Mossom,[7] which includes a geologic map showing the distribution of the geologic formations at or near the surface. A report by Mossom[8] describes the geologic structure of the State.

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1 Sellards, E. H., A preliminary report on the underground water supply of central Florida: Florida Geol. Survey Bull. 1, 1908.

2 Matson, G. C., and Sanford, Samuel, Geology and ground waters of Florida: U. S. Geol. Survey Water-Supply Paper 319, 1913.

3 Sellards, E. H., and Gunter, Herman, The artesian water supply of eastern and southern Florida: Florida Geol. Survey 5th Ann. Rept., pp. 103-290, 1913.

4 Gunter, Herman, and Ponton, G. M., Need for conservation and protection of our water supply with special reference to waters from the Ocala limestone: Florida Geol. Survey 22d Ann. Rept., pp. 43-55, 1931. Thompson, D. G., and Stringfield, V. T., Ground-water resources of Florida: Florida Geol. Survey Press Bull. 13, 1931. Stringfield, V. T., Ground-water investigations in Florida: Florida Geol. Survey Bull. 11, 1933; Ground water in Seminole County, Fla.: Florida State Board Cons., Geol. Dept., Rept. 1, 1934.

5 Stringfield, V. T., Ground-water resources of Sarasota County: Florida Geol. Survey 23d-24th Ann. Rept., pp. 121-194, 1933.

6 Collins, W. D., and Howard, C. S., Chemical character of the water of Florida: U. S. Geol. Survey Water-Supply Paper 596-G, pp. 177-233, 1928.

7 Cooke, C. W., and Mossom, Stuart, Geology of Florida: Florida Geol. Survey 20th Ann. Rept., pp. 29-228, 1929.

8 Mossom, Stuart, A review of the structure and stratigraphy of Florida: Florida Geol. Survey 17th Ann. Rept., pp. 171-219, 1926.

A report of the U. S. Engineer office at Jacksonville[9] contains information regarding the geology and ground water of the central and northern parts of the peninsula. It includes a map described as representing the water table in part of the peninsula. An unpublished report[10] prepared for the water-supply commission of Jacksonville contains a map representing the artesian water in Jacksonville and vicinity and a map with generalized contours described as representing the ground-water table in the peninsula.

Present investigation

In recent years there have been new developments of ground-water supplies in Florida, and the consumption of water in some areas has steadily increased. Similar increases may be expected in the future. The yield of wells has decreased as a result of heavy draft in some localities. In certain areas near the coast the decrease in head has permitted salt water tc enter the wells and contaminate the fresh-water supply to such an extent that it has been necessary to abandon the wells and develop new supplies. In other areas no salt-water encroachment has yet taken place, but with heavy draft from wells it may occur in the future. Among other problems are those that arise from subsurface leakage of water in improperly cased wells and the use of wells for drainage of surface water into the underlying rocks.

In order to facilitate a better understanding and interpretation of hydrologic conditions relating to these local ground-water problems, a general survey of the artesian water in the Florida peninsula was undertaken in 1934, and this report is based chiefly on the results of that work. The investigation was under the direction of O. E. Meinzer, geologist in charge of the division of ground-water work of the United States Geological Survey. The writer was in charge of the field work and spent about 8 months on it. Frank Westendick, assigned to the United States Geological Survey for the investigation, spent about 12 months in the field collecting data over a large part of the area. D. G. Thompson made valuable suggestions regarding the field work. Herman Gunter, State geologist of Florida, gave hearty and valuable cooperation. Many of-

9 Geology and ground water (Appendix B, Waterway from Cumberland Sound, Georgia and Florida, to the Mississippi River), manuscript report of Special Board, U. S. Engineer office, Jacksonville, Fla., Dec. 30, 1933.

10 Pirnie, Malcolm, Investigations to determine the source and sufficiency of the supply of water in the Ocala limestone as a municipal supply for Jacksonville, New York, Hazen & Whipple, 1927.

ficials, owners of wells, and others furnished information that made the progress of the investigation possible.

As a result of the investigation maps were prepared representing the head of the artesian water in the peninsula and the general areal extent of the highly mineralized water. The artesian map shows by contours the height to which water would rise above sea level in tightly cased wells in 1934. These contours indicate the areas of recharge, the areas of large discharge, the hydraulic gradient, and the direction of movement of the artesian water and aid in the explanation of the present distribution of the highly mineralized water.

TOPOGRAPHY

The topography of the Florida peninsula is described in a report by Matson and Sanford,[11] which includes a generalized topographic map. It is also briefly described by Cooke and Mossom[12] in a more recent publication. The United States Geological Survey has published detailed topographic maps of nine quadrangles in the north-central part of the peninsula and of fifteen quadrangles in the northeastern part of Florida and the adjacent part of Georgia.

Although the altitudes range only from sea level to about 300 feet, the topography presents considerable diversity. An upland, much of which is hilly, extends as a central ridge from the northern part of the peninsula to southern Highlands County. West of the central ridge is another irregular hilly area, which lies chiefly in Pasco, Hernando, and Citrus Counties. Much of the upland area contains numerous sink holes or other depressions and lakes that range in diameter from a few feet to several miles. The sink holes formed by the removal of underlying soluble limestone by ground water are typically developed in such areas as Alachua, Marion, and Citrus Counties. Lakes occupying depressions, part of which are probably old sink holes, are abundant in Lake and Polk Counties, which are within an area often referred to as the "lake region." Topography of this type bears an important relation to ground water, because it was formed chiefly by the action of ground water on the soluble underlying limestone and because surface water enters the formation through the sinks and lakes, thus recharging the water-bearing rocks, even though they may not be present at the surface.

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11 Matson, G. C., and Sanford, Samuel, op. cit., pp. 21-65, pl. 1.
12 Cooke, C. W., and Mossom, Stuart, op. cit., pp. 42, 43.

Adjacent to and bordering the upland sections are plains or terraces extending to the coast. As described by Cooke and Mossom,[13] "plains cover more than half of the State of Florida. Most of them are either coastal terraces, which are former sea bottoms, or drained lake basins. Terraces occupy the southern third of the peninsula and extend inland for considerable distances along both the east and the west coast. Most of the terraces on the west side of the peninsula north of Tampa are * * * floored by limestone of Eocene and Miocene age, which are covered by only a thin veneer of Pleistocene or Recent sand. The terraces along the Atlantic coast have been built up by the sea, but farther inland erosion has been dominant. The terraces range in altitude from sea level to 200 feet or more above sea level."

GEOLOGY

General features

The Florida peninsula is underlain by 4,000 feet or more of sedimentary rocks that overlie a basement of metamorphic rocks. The formations exposed at the surface in different parts of the peninsula probably represent about 1,000 to 1,500 feet of the geologic section and include the Ocala limestone, of Eocene age, and younger formations of Miocene, Pliocene, Pleistocene, and Recent age. These formations yield the groundwater supplies. The sedimentary rocks older than the Ocala probably represent formations of Eocene and Cretaceous age but at the present time are not of importance as a source of potable water supplies because they are deeply buried and in much of the area contain highly mineralized water.

According to Cooke and Mossom,[14] "the oldest rocks in Florida of which there is any record are mica schists and quartzite that are reached by a deep well in Marion County but do not occur at the surface anywhere in the State. Although little is known about them by direct examination, it can be inferred that they form part of the great series of metamorphic and igneous rocks that make up the Piedmont Plateau of Alabama, Georgia, and other Eastern States and that underlie the sediments of the Atlantic Coastal Plain wherever the sediments have been cut through by streams or penetrated by wells. Bedrock of this kind may underlie the entire State

13 Cooke, C. W., and Mossom, Stuart, op. cit., p. 43.
14 Idem, p. 44.

of Florida and extend beyond the shore line to the edge of the Floridian Plateau."

Florida forms the emerged part of the Floridian Plateau,[15] a peninsula that separates the deep water of the Gulf of Mexico from the deep water of the Atlantic Ocean. The plateau includes not only the State of Florida but also part of the adjacent ocean floor that is less than 50 fathoms (300 feet) below sea level.

The outline of the plateau is shown in figure 10. Beyond a depth of 50 fathoms the ocean floor slopes abruptly to depths of more than 400 fathoms in the Straits of Florida and the Atlantic Ocean and more than 2,000 fathoms in the Gulf of Mexico. The edge of the plateau in the Gulf lies

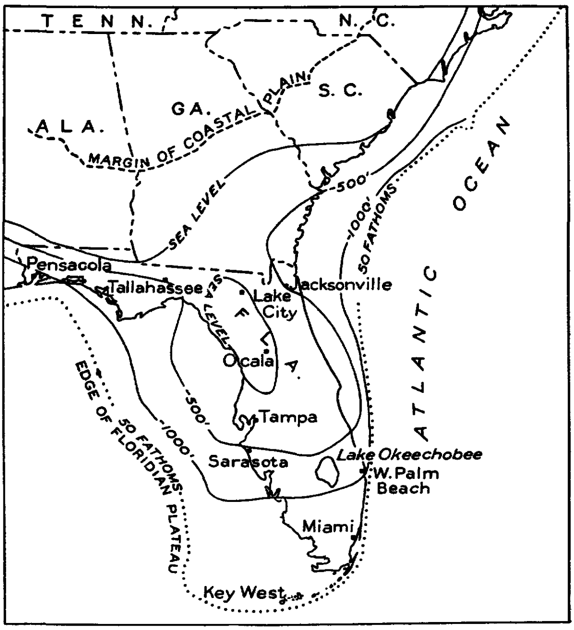
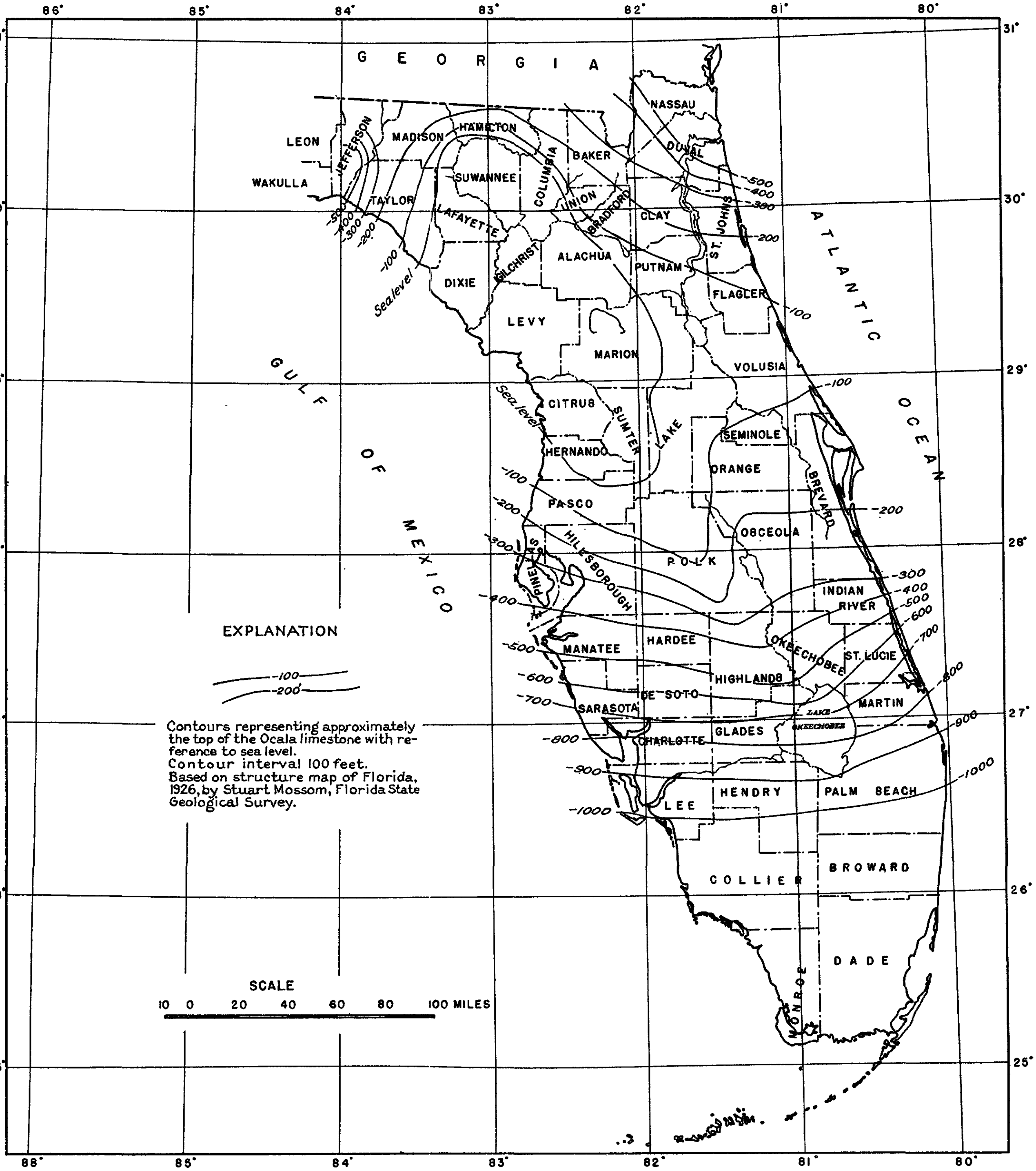


Figure 10.- Sketch map of Florida and adjacent States showing outline of Floridian Plateau and structure by contour lines on top of the Eocene formation. (From State geologic map of Florida.)

from somewhat less than 75 miles to more than 100 miles west of the present coast of the Florida peninsula. Along the south and east coast of the peninsula from Key West to Palm Beach the edge of the Plateau is less than 20 miles from the coast. Along the northern part of the peninsula it is about 60 to 80 miles east of the coast.

15 Cooke, C. W., and Mossom, Stuart, op. cit., p. 39. Vaughan, T. W., A contribution to the geologic history of the Floridian Plateau: Carnegie Inst. Washington Pub. 133, pp. 99-185, 1910.



STRUCTURE MAP OF THE FLORIDA PENINSULA.

The sedimentary rocks that overlie the basement rocks of the plateau are arched into a broad anticline or elongated dome that trends northwestward and plunges toward the southeast in the southern part of the Florida peninsula. The general features of this anticline are shown in plate 6, and a report by Mossom[16] contains a map and a description of it.

The crest of the fold is in the northwestern part of the peninsula, where the Ocala limestone lies at or near the surface. On some parts of the crest the Ocala is as much as 120 feet above sea level. It dips under the younger formations exposed on the flanks of the fold. This fold affords structural features favorable for artesian conditions. The formations on its flanks dip at low angles toward the Atlantic Ocean and the Gulf of Mexico. They crop out on the floor of the ocean or gulf some distance offshore, and some of them probably crop out on the edge of the Floridian Plateau.

Geologic formations and their water-bearing properties

The following table represents the formations that underlie the Florida Peninsula. The Ocala limestone and overlying younger formations are exposed at the surface in parts of the peninsula. The formations underlying the Ocala do not crop out and are known only through cuttings and records of wells that penetrate them.

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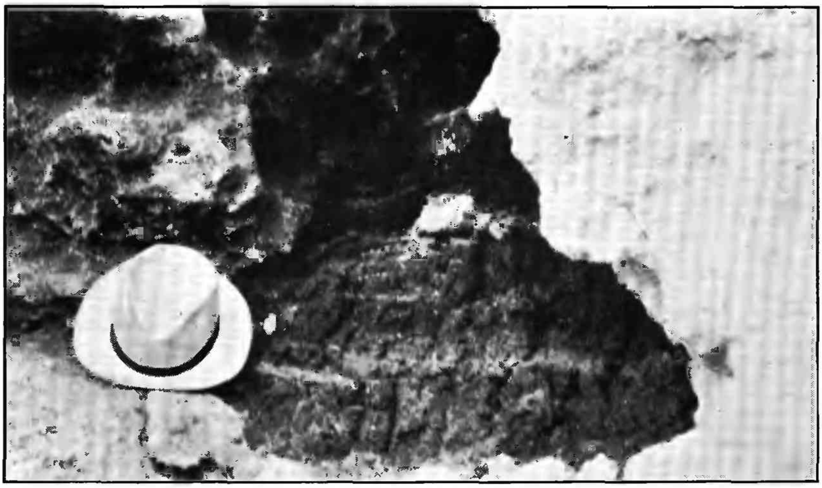
16 Mossom, Stuart, op. cit., pp. 174-269.

Geologic formations in the Florida peninsula

Age	Formation	Estimated thickness (feet)	Character
Recent and Pleistocene.		0 - 200?	Undifferentiated sand and soils. Yield water to shallow wells.
Pleistocene.	Melbourne bone bed.	0 - 10	Chiefly sand with characteristic vertebrate fauna.
	Fort Thompson formation (contemporaneous with Miami oolite).	0 - 10	Sand, marl, and limestone Yield water to shallow wells.
	Anastasia formation. / Miami oolite. / Key Largo limestone.	0 - 30?	Coquina and limestone. Yield water to shallow wells.
Pliocene(?).	Charlton formation.	0 - 20	Limestone and clay.
Pliocene.	Citronelle formation (exact stratigraphic position uncertain).	0 - 250?	Sand, gravel, and clay. Yields water to shallow wells.
	Caloosahatchee marl (contemporaneous with Alachua formation and Bone Valley gravel).	0 - 100	Sand, shell, and marl. Yields water to shallow wells. Some of the water is highly mineralized.
	Alachua formation. Bone Valley gravel.	0 - 50	Sand, clay, and phosphate.
Miocene.	Choctawhatchee formation.	0 - 50?	Clay and marl.
	Hawthorn formation (of Alum Bluff group).	0 - 500	Interbedded sand, clay, marl, and limestone. Important source of water, part of which is under artesian pressure. Locally in some areas near the coast the water is highly mineralized.
	Tampa limestone.	0 - 250	Limestone. Important source of water, much of which is under artesian pressure. Locally in some areas near the coast the water is highly mineralized.
Oligocene.	May be represented by a small thickness of limestone (of Vicksburg group) exposed on the Suwannee River and included in the base of the Tampa limestone.	0 - 70?	Limestone.
Eocene.	Ocala limestone.	500±	Limestone. Important source of water, a large part of which is under artesian pressure. Some of the water is highly mineralized.
	Older Eocene.		Deeply buried.
Eocene and Cretaceous.			Undifferentiated sedimentary rocks deeply buried; contain mineralized water.
Paleozoic or older.			Mica schist and quartzite. Metamorphic basement rocks, deeply buried.

A. EXPOSURE OF ABOUT 120 FEET OF OCALA LIMESTONE.
Showing vertical solution channels or natural wells in Crystal River rock quarry, Citrus County.



B. EXPOSURE OF OCALA LIMESTONE FILLED WITH STRATIFIED CLAYEY MATERIAL.
In a quarry south of Ocala, Marion County.

A. OCALA LIMESTONE SHOWING OLD ERODED SURFACE ABOUT 5½ MILES NORTH OF OCALA, MARION COUNTY.

B. OCALA LIMESTONE IN QUARRY ABOUT 5½ MILES NORTH OF OCALA, MARION COUNTY.

Eocene rocks

Undifferentiated sediments

According to the correlation of the cuttings from a well of the Ocala Oil Corporation in sec. 10, T. 16 S., R. 20 E., south of York, in Marion County, by Gunter and Ponton,[17] the Eocene rocks are represented in that well by about 3,260 feet of material consisting chiefly of limestone, with some gypsum, lignite, and clay, and the underlying Cretaceous rocks by about 840 feet of material, chiefly limestone and chalk, with some shale. The upper part of the Eocene rocks is assigned to the Ocala limestone, which is the oldest formation exposed at the surface in the State. In a correlation of the cuttings and the following well log[18] Cooke and Mossom placed the contact of the Ocala limestone and the underlying undifferentiated Eocene sediments at a depth of 570 feet.

Cuttings from a well of the Ocala Oil Corporation, south of York

	Feet
Eocene: Ocala limestone, in part:	
White limestone	300-570
Undifferentiated Eocene and Upper Cretaceous (?):	
Brownish porous limestone and vitreous flint	570-585
Brownish finely granular limestone resembling brown sugar	585-660
Dark-brown carbonaceous clay	674-700
Brown sugary limestone	700-880
Black carbonaceous clay	880-920
Brown granular limestone	922-1,000
White chalky limestone	1,000-1,165
Brown granular limestone	1,165-1,280
Compact brownish limestone	1,280-1,400
Light-brown granular limestone	1,400-1,600
White limestone containing many small Foraminifera	1,600-1,850
White calcareous clay	1,850-2,200
White limestone containing small Foraminifera (2 samples)	2,200-2,350
White anhydrite	2,350-2,370
White limestone containing small Foraminifera	2,370-2,400
Soft white chalky limestone	2,400-2,450
Light-brown limestone (3 samples at 100-foot intervals)	2,450-2,700
White calcareous mud	2,700-3,600
Gray shale	3,600-4,000
Probably Paleozoic or older:	
Red mud	4,000-4,100
Mica schist	4,100-4,200
Mica schist and granular quartz (3 samples at 100-foot intervals)	4,200-4,500
White quartzite (11 samples)	4,500-6,180

Only a few of the deeper wells drilled for water in the peninsula extend into the undifferentiated sedimentary rocks. The upper part is probably comparable to the lower part of the overlying Ocala limestone.

17 Gunter, Herman, and Ponton, G. M., Need for conservation and protection of our water supply with special reference to the waters from the Ocala limestone: Florida Geol. Survey 21st-22d Ann. Repts., for 1929-30, p. 49, 1931.
18 Cooke, C. W., and Mossom, Stuart, op. cit., pp. 44-45.

Ocala limestone

The name "Ocala limestone" was first used by Dall[19] in 1892 for the †Nummulitic limestone[20] exposed at the surface and in quarries in the vicinity of Ocala, in Marion County. The name is now applied to all Eocene rocks exposed in Florida.[21]

The Ocala limestone underlies all of the Florida peninsula and lies at or near the surface in the northwestern part of the peninsula adjacent to the Gulf of Mexico. That area includes all or parts of Sumter, Hernando, Citrus, Marion, Levy, Alachua, Dixie, Gilchrist, Lafayette, and Suwannee Counties. In the northeastern part of the peninsula the Ocala is about 500 feet below the surface; in the southern part, 1,000 feet or more. The general position of the top of the formation with reference to sea level is indicated in plate 6.

The formation consists essentially of limestone and is reported[22] to have a thickness of at least 500 feet in the northern part of the peninsula and possibly is much thicker in the southern part. Predominantly the limestone is fairly soft and porous, some of it consisting entirely of remains of small fossil organisms. Part of the limestone, however, is dense and compact. Bedding planes are absent in exposed sections. In areas where the formation crops out the limestone ranges in color from white to yellow and brown. Circulation of water through parts of the formation has formed cavities and caverns, especially where it is at or near the surface. In these areas sink holes are numerous, and also cylindrical holes or natural wells, ranging from a fraction of a foot to more than 5 feet in diameter and from a few feet to more than 50 feet in depth (pl. 7, A), that lead downward from the surface and connect with underground passages that represent former water levels in the rocks. Some of the passages are now interconnected with the present ground-water level. Solution channels formerly occupied by ground water but now filled with sand and clay are exposed in some of the limestone quarries in Marion County. An exposure of a small channel filled with clayey material is shown in plate 7, B. One of the largest channels ob-

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19 Dall, W. H., and Harris, G. D., Correlation papers - Neocene: U. S. Geol. Survey Bull. 84, pp. 103-104, 1892.

20 A dagger (†) preceding a geologic name indicates that the name has been abandoned or rejected for use in classification in publications of the U. S. Geological Survey. Quotation marks, formerly used to indicate abandoned or rejected names, are now used only in the ordinary sense.

21 Cooke, C. W., and Mossom, Stuart, op. cit., p. 47.

22 Idem, p. 48.

served, about 12 feet wide and 6 feet high, in Marion County, is filled chiefly with white quartz sand and some gray clay. It has a fairly flat floor and an arched roof. According to reports by drillers, many of the wells penetrating the Ocala limestone in the central part of Florida encounter cavities as much as 20 feet high, but in the southern part of the peninsula, where the limestone is deeply buried, no cavities have been reported. Recently exposed surfaces of the Ocala show an old erosion surface at the top of the formation. (See pl. 8, A.) Records of wells indicate that old stream channels have cut into the formation to depths of more than 100 feet below the present sea level. Also, some sink holes, formerly several hundred feet deep but now filled with sand, are present.

Secondary deposition of silica, as layers or irregular masses of chert, has accompanied the leaching and solution of the limestone at many places. Such replacement is usually most extensive near the surface, but chert has been encountered at considerable depths in wells. The chert and silicified limestone are usually noticed by well drillers because they are much harder than other parts of the formation.

In different parts of the peninsula the Ocala limestone is overlain unconformably by the Tampa limestone, the Hawthorn formation, or younger material. In the northeastern part of the peninsula it is overlain directly by the Hawthorn formation. Older unexposed Eocene rocks underlie the Ocala.

The lithology of the Ocala and the underlying Eocene rocks is similar, and it is therefore necessary to distinguish the two units on the basis of a study of fossils collected from the well cuttings. No diagnostic fossils have been reported near the contact, and the lower limit of the Ocala has therefore not been definitely determined.

The Ocala limestone is one of the chief water-bearing formations of the peninsula because of its wide extent and its capacity to yield large quantities of water to wells. In parts of the formation the water occurs in caverns or cavities. Much of the limestone is so porous that water percolates freely through it. The chert and silicified limestone are relatively impervious and do not yield water to wells, but water is commonly encountered immediately beneath these rocks. The capacity of the Ocala formation to yield water to wells is less in the southern part of the peninsula than in the central part. Some of the wells in Sarasota County that penetrate the Ocala limestone yield little or no water from that formation.[23] The Ocala contains water under artesian pressure that is confined by relatively impervious rocks of overlying formations and also by relatively impervious limestone and chert within the Ocala itself. It supplies water for many of the wells in the peninsula (see table at end of the report) and is the source of water for many of the public supplies. The public water supply for the city of Jacksonville, one of the largest supplies in the State, is obtained from wells penetrating the Ocala. The formation is the source of some of the large springs, such as Silver Springs, in Marion County. In the southern part of the peninsula, however, the formation supplies few wells because of its great depth below the surface, its relatively small yield of water, and the saline water present in that part of the formation.

The fresh water of the Ocala enters the formation in areas where it is exposed at or near the surface in the central part of the peninsula and in other places where it is overlain by permeable material that permits downward percolation of the water.

Oligocene rocks

Vicksburg group

In Florida, rocks of Oligocene age are referred to the Vicksburg group, which in the northwestern part of the State is represented by the Marianna limestone, the Byram marl, and the Flint River formation.[24] The Flint River formation is believed to correspond to the upper part of the Byram marl.[25] The Glendon limestone, which in southern Alabama and Mississippi underlies the Byram marl, was formerly supposed to be present in northern Florida also,[26] but more recent work by Cooke has led him to doubt the presence of the Glendon in Florida,[27] and the beds in southwestern Georgia and northern Florida that were formerly called "Glendon" have recently been named by him "Flint River formation." At present no representative of the Vicksburg group is known to occur in the Florida peninsula, but it is considered probable by Cooke that the limestone exposed on the Suwannee River and now treated as the basal bed of the Tampa limestone may in reality be of Vicksburg age.

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23 Stringfield, V. T., Exploration of artesian wells in Sarasota County: Florida Geol. Survey 23d-24th Ann. Rept., pp. 199-227, 1933.

24 Cooke, C. W., Notes on the Vicksburg group: Am. Assoc. Petroleum Geologists Bull., vol. 19, No. 8, p. 1170, 1935.

25 Idem, p. 1171.

26 Cooke, C. W., and Mossom, Stuart, op. cit., pp. 68, 72.

27 Cooke, C. W., op. cit., pp. 1170-1171.

Miocene rocks

The Miocene rocks in the Florida peninsula are represented by the Tampa limestone and the Hawthorn formation. The Hawthorn belongs to the Alum Bluff group and is probably contemporaneous with the Chipola formation, the lowest formation of the Alum Bluff group of western Florida.

Tampa limestone

The name "Tampa limestone" was used by Dall[28] in 1892, in describing rocks exposed at Ballast Point, near Tampa. A more recent conception of the formation includes Dall's Tampa limestone and, as mapped by Cooke and Mossom,[29] not only the Tampa of early workers but most of the Chattachoochee and part of the Hawthorn formation of Matson and Clapp.

The Tampa limestone lies at or near the surface in an area that includes all or parts of Hillsborough, Pinellas, Pasco, Hernando, Sumter, and Citrus Counties, also in the northwestern part of the peninsula and in erosion remnants in a few areas where the Ocala limestone is near the surface. Well records indicate that the Tampa limestone is absent in the eastern and northeastern parts of the peninsula. The position of the Tampa limestone with reference to sea level may be estimated approximately by referring to plate 6, which represents by contours the position of the top of the Ocala limestone.

According to Cooke and Mossom[30] the Tampa limestone is apparently not more than 100 feet thick in the vicinity of Tampa, although Matson and Clapp[31] report the maximum thickness in that vicinity as more than 130 feet. Cooke states that the Tampa is about 100 feet thick near Live Oak, in Suwannee County. Records of wells near Lake City, in Columbia County, indicate that the Tampa in that county is less than 100 feet thick and is locally absent. Wells in the northwestern part of Hillsborough County and in southern Florida penetrate locally as much as 250 feet of limestone that may be assigned to the Tampa.

The Tampa formation consists essentially of limestone that ranges in color from white to brown. In general the limestone is harder, more compact, and less porous than the Ocala. The texture and hardness are variable, however, and some parts of it consist of loose masses of fossil organisms and other parts are chalky, dense, compact, silicified,

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28 Dall, W. H., and Harris, G. D., Correlation papers - Neocene: U. S. Geol. Survey Bull. 84, p. 117, 1892.
29 Cooke, C. W., and Mossom, Stuart, op. cit., p. 79.
30 Idem.
31 Matson, G. C., and Clapp, F. G., Florida Geol. Survey 2d Ann. Rept., p. 87, 1909.

and cherty. Unlike the Ocala, the Tampa limestone is bedded. (See pl. 9, A.) In some localities the circulation of ground water through the limestone has formed cavities and more or less vertical cylindrical holes or natural wells similar to those developed in the Ocala limestone. (See pl. 7, A.) The formation is overlain by the Hawthorn formation and is underlain by the Ocala limestone.

The Tampa limestone is an important water-bearing formation of the peninsula, chiefly in the western and southwestern parts, as in Hillsborough and Pasco Counties. In parts of the formation water occurs in caverns and cavities and along joints and bedding planes. Some of the limestone permits free percolation of water through it, but the dense cherty and silicified limestone is relatively impervious. The formation contains water under artesian pressure, confined by relatively impervious material within the formation and the overlying rocks. Generally water can be obtained throughout the formation, but in the southern part of the peninsula some of the limestone yields little or no water. In Hillsborough, Pinellas, and Pasco Counties the formation yields large quantities of water to wells and is the source of water for domestic and public supplies, including the supply for the city of St. Petersburg. It is also the source of some of the large springs, such as Sulphur Spring, near Tampa.

Fresh water enters the formation in areas where it is exposed at or near the surface.

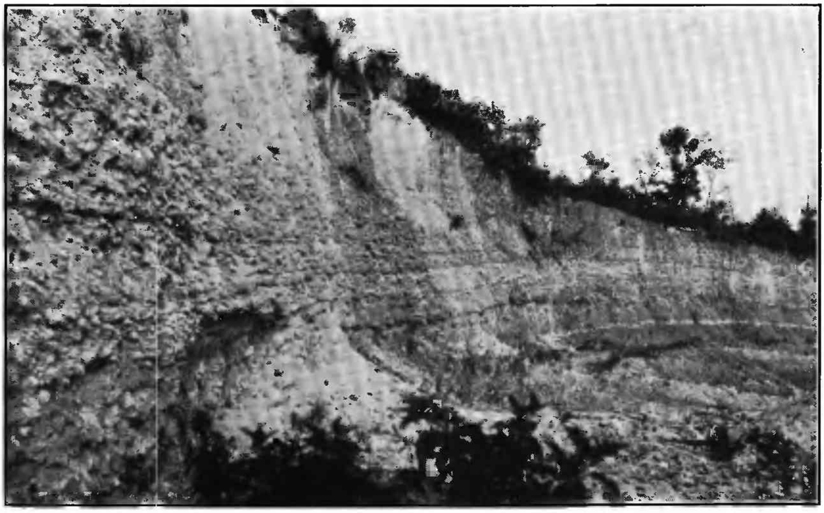
Hawthorn formation

In western Florida the Alum Bluff group comprises the Chipola formation, the Oak Grove sand, and the Shoal River formation. In the peninsula, however, it is represented only by the Hawthorn formation, which is considered to be contemporaneous with the Chipola or lower formation of the group as developed in western Florida.

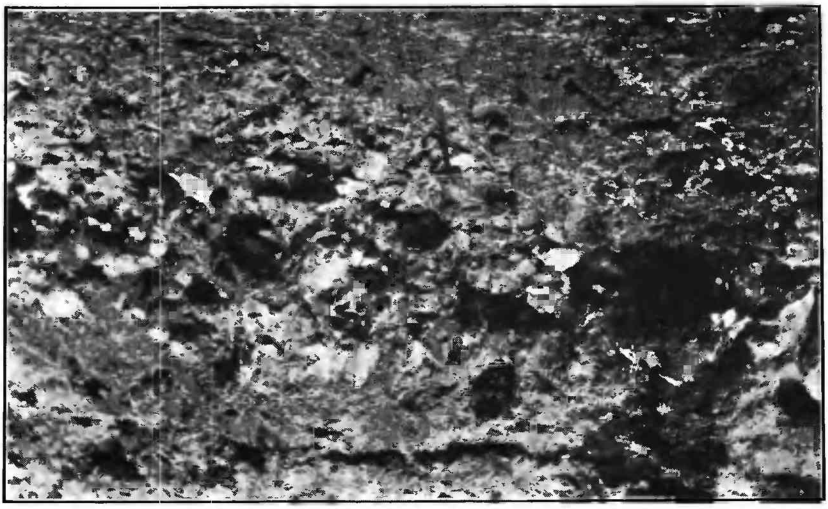
The Hawthorn formation was named by Dall [32] in 1892 after the town of Hawthorn. As now defined, [33] "the Hawthorn formation includes the original Hawthorn 'beds' of Dall, but excludes the Cassidulus-bearing limestone and chert, which Matson and Clapp placed in the Hawthorn formation but which is known to be Tampa. With it are tentatively in-

32 Dall, W. H., and Harris G. D., Correlation papers - Neocene: U. S. Geol. Survey Bull. 84, pp. 107-111, 1892.

33 Cooke, C. W., and Mossom, Stuart, op. cit., p. 115.



A. TAMPA LIMESTONE SHOWING BEDDING IN PORTLAND-CEMENT QUARRY ABOUT 11 MILES WEST OF BROOKSVILLE, HERNANDO COUNTY.



B. TAMPA LIMESTONE SHOWING WEATHERED LIMESTONE AND POCKETS OF CLAY IN PORTLAND-CEMENT QUARRY ABOUT 11 MILES WEST OF BROOKSVILLE, HERNANDO COUNTY.

cluded Dall's 'Jacksonville limestone'[34] and 'Manatee River marl,'[35] which it has been impracticable to map separately, although their faunas seem to be younger than those of the typical Hawthorn. Dall's 'Sopchoppy limestone,'[36] of Chipola age, is also placed in the Hawthorn formation."

As mapped by Cooke and Mossom,[37] the Hawthorn formation is present at or near the surface in a large area that is in part adjacent to the outcrop of the Ocala and Tampa limestones and that extends from the northern part of the peninsula to De Soto and Sarasota Counties, in the southern part. It is one of the most extensive formations of Florida and is present throughout the peninsula except where it has been removed by erosion and the Ocala or Tampa limestones are present at or near the surface.

Records of wells in the peninsula indicate that the maximum thickness of the Hawthorn formation is about 500 feet in the northeastern and southern parts of the peninsula. The formation consists essentially of several hundred feet of interbedded clay, sand, limestone, and sandy phosphatic limestone and marl. Some parts of the formation contain fuller's earth. According to Cooke and Mossom,[38] the largest known exposure is at Devil's Mill Hopper, a sink about 6 miles northwest of Gainesville, in Alachua County, that cuts through at least 115 feet of Hawthorn beds to the Ocala limestone, which doubtless lies not far below water level in the sink. The section at this place, as described and measured by Cooke,[39] is as follows:

Section of Hawthorn formation at Devil's Mill Hopper

		Feet
10.	Covered; debris of calcareous sandstone	25
9.	Gray or cream-colored calcareous sandstone or sandy limestone containing round phosphatic grains, poorly preserved mollusks and echinoids; lower part more sandy and paler than upper; this bed has slumped several feet	15
8.	Concealed; partly encrusted with travertine	27
7.	Green sandy clay; upper part encrusted with travertine 1 inch to more than 4 inches thick and enclosing land shells	9
6.	Hard silicified green clay or fuller's earth	5
5.	Greenish-gray sand and fuller's earth	15
4.	Covered	7
3.	Hard cream-colored or yellow phosphatic fossiliferous limestone at base, passing upward into sandy phosphatic limestone; probably a fallen block of bed 9	11

34 Dall, W. H., and Harris, G. D., op. cit., pp. 124-125.
35 Idem, pp. 125-126.
36 Idem, pp. 119-120.
37 Cooke, C. W., and Mossom, Stuart, op. cit., p. 116, pl. 2.
38 Idem, p. 116.
39 Idem, p. 129.

Section of Hawthorn formation at Devil's Mill Hopper - Cont'd.

		Feet
2.	Soft calcareous sand with brown phosphatic pebbles and molds of fossils; seen below waterfall on west side.........	2
1.	White calcareous sandstone with phosphatic nodules; to water level..	5

The Hawthorn formation overlies the Tampa limestone or, at many places in the peninsula, as in the eastern and northeastern parts, where the Tampa is absent, it lies directly and unconformably upon the Ocala limestone. It is overlain by the Choctawhatchee and younger formations. The Hawthorn includes permeable water-bearing beds of sand, limestone, and marl, above and below which are less permeable beds. In some localities the water-bearing beds contain solution channels that yield water to wells and springs. In general the lower part of the formation yields the most water, but usually wells supplied by water from the Hawthorn have only moderate yields, and where large supplies are required the wells are drilled into the underlying limestones. With proper development, however, large supplies of water can be obtained from the formation. Much of the water in the Hawthorn is under artesian pressure, and the pressure head in the lower part of the formation appears to be comparable with that in the underlying limestone.

Fresh water enters the formation where it is exposed at or near the surface and in areas where it is overlain by permeable material.

Choctawhatchee formation

The Choctawhatchee formation as described by Cooke[40] consists of beds of greenish or gray sandy and clayey micaceous shell marl and brown clay. Shell marl referable to this formation was penetrated between depths of 65 and 100 feet in a well at Kissimmee, in Osceola County. On the Caloosahatchee River in Lee County Cooke and Mossom[41] mapped a small area as Choctawhatchee formation because the soft limestone that underlies it contains a fauna of that age.

Except in certain local areas, such as Osceola County, the Choctawhatchee formation is not considered an important water-bearing formation in the peninsula because of its slight areal extent.

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40 Cooke, C. W., and Mossom, Stuart, op. cit., pp. 138, 149.
41 Idem, p. 140, pl. 2.

Pliocene, Pleistocene, and Recent rocks

The formations of Pliocene, Pleistocene, and Recent age in the peninsula are listed in the table on page 122. The character and distribution of these formations are described by Cooke.[42] In general they are surficial deposits overlying the older formations. The greatest thickness of these sedimentary deposits is in the southern part of the peninsula. They supply water to many shallow wells for domestic use and also to some wells for use as public supplies, such as those for Miami and other cities in the coastal areas and southern Florida, where the deeper waters are highly mineralized.

ARTESIAN WATER

General conditions

Part of the water absorbed by the soil or surficial rocks percolates downward until it reaches a level where the rocks or soil are saturated with ground water. This saturated zone constitutes the body of ground water that yields water to wells, and its upper surface is known as the water table. The water table is not, as its name suggests, an even surface, because in general it is gently undulating, being highest beneath the hills and sloping toward nearby streams, lakes, or the ocean. The rainfall is large and makes large contributions to the ground water, and the water table is generally near the surface. In much of the southern part of the peninsula, where the topographic relief is small and surface drainage is relatively sluggish, the water table is only a few feet in depth. Under the higher land, as in Pasco and Hernando Counties, and elsewhere in the central and west-central part of the peninsula, where the relief is relatively large, the water table lies deeper.

In some areas water percolates downward, encounters relatively impervious material, and is prevented from reaching the main body of ground water. The water table thus formed is above and in part independent of the main zone of saturation and is known as a "perched water table." Where the static water level of nonflowing artesian wells is slightly above the main water table, as in some parts of Florida, care must be exercised to avoid interpreting the artesian water as representing a perched water table or the normal water table.

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42 Cooke, C. W., and Mossom, Stuart, op. cit., pp. 150-227, pl. 2.

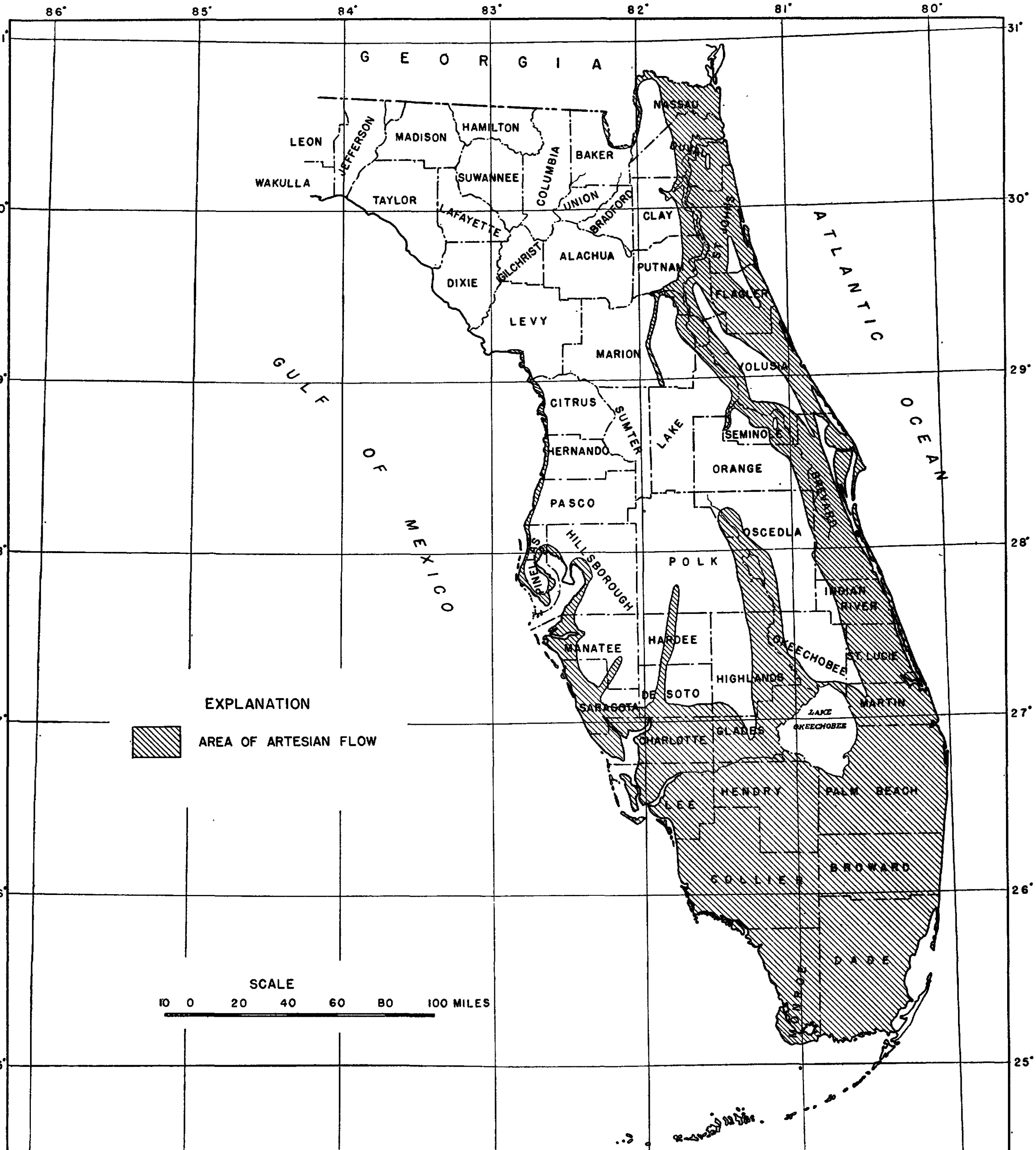
Under water-table conditions -- that is, where the water is not under artesian pressure -- many small water supplies are obtained throughout the peninsula. In the coastal areas and the southern part, where the artesian water is too highly mineralized to be considered desirable for consumption, large nonartesian water supplies have been and may be developed in the future.

Many of the small water supplies and most of the large supplies in the peninsula are obtained from artesian water. Where permeable rock strata are confined by relatively impermeable overlying and underlying strata, the water in the permeable strata is generally under hydrostatic pressure, and a well penetrating these strata is an artesian well, even though the water may rise in the well only a short distance above the permeable rocks. Water from the surface enters the permeable rocks in areas of relatively high altitude where the impermeable material is not present. From such intake or recharge areas the water after it reaches the permeable rocks gradually moves laterally under the confining beds, in response to pressure produced by the recharge.

The Ocala limestone, the Tampa limestone, and the Hawthorn formation are the chief artesian water-bearing formations of the peninsula. The Hawthorn formation also contains relatively impervious beds that prevent or retard upward percolation from water-bearing zones of lower parts of the Hawthorn and from the underlying Tampa and Ocala limestones. The Tampa and Ocala also contain relatively impervious rocks, such as chert and silicified limestone, that prevent or retard upward percolation from lower water-bearing zones, and therefore artesian water is present in these formations in some areas where they are at or near the surface and the Hawthorn formation is absent. Artesian water is present throughout the peninsula except in parts of the recharge areas. The large rock fold shown in plate 6 provides the principal structural conditions for artesian water, but the recharge areas and the direction of movement of the artesian water are in part independent of the structure. (Compare pl. 12 and pl. 6.)

Areas of artesian flow

The general areas in which the artesian water is under sufficient pressure to rise to the surface and produce flowing wells are represented in plate 10. They include three principal areas -- the Atlantic coast, southern Florida, and the Gulf coast. The map indicates the limits of



MAP OF FLORIDA PENINSULA REPRESENTING AREAS OF ARTESIAN FLOW.

the areas of flow only approximately, and more detailed work is necessary to determine the exact limits. Within the areas of flow there are relatively high districts in which wells will not flow; on the other hand, in parts of the peninsula shown as nonflowing areas flows may be obtained in some of the relatively low districts where the pressure head is relatively high.

Atlantic coast area.- The Atlantic coast area extends along the east coast of Florida from north to south. In the northern part it includes much of Nassau and Duval Counties and extends westward along the valley of the St. Marys River into Baker County. It includes the valleys of the St. Johns River and some of its tributaries, such as Black Creek and the Oklawaha and Wekiva Rivers. The area of flow along Black Creek and its tributaries extends into western Clay County. The area of flow along the Oklawaha River extends into the east-central part of Marion County. At the headwaters of the Oklawaha River, on the borders of some of the large lakes in Lake County, the artesian water in wells is near the surface of the ground. Flowing wells are obtained in the lowland bordering the southeast, south, and west sides of Lake Apopka, but on the north and northeast sides of the lake the pressure head is somewhat less and there are no flowing wells.

Southern Florida area.- The southern Florida area merges into the Atlantic coast and Gulf coast areas and covers all of the southern part of the peninsula. It extends along the Kissimmee River Valley into northern Osceola County and along the Peace Creek Valley to the southern part of Polk County. In the southern part of the peninsula there are a few relatively high areas, such as that west of Immokalee, in northern Collier County, where wells will not flow. So far as known, wells on the Florida Keys are nonflowing, although the altitude of the surface is only a few feet above sea level.

Gulf coast area.- The Gulf coast area is chiefly a narrow strip along the Gulf of Mexico. It extends inland along the valley of the Miakka River in Sarasota and Manatee Counties and the larger valleys in Manatee and Hillsborough Counties. In Pasco, Hernando, and Citrus Counties flows may be expected only where the land surface is near sea level.

Artesian head

The artesian head, sometimes called "pressure head" or merely "head", is the height with reference to some datum to which water will rise in a tightly cased well penetrating an artesian formation. The imaginary surface that represents the level to which water will rise in artesian wells is known as the "piezometric" or "pressure-indicating" surface. The piezometric surface may be represented by contours, or lines that pass through points where the head is at equal altitude above a given datum. (See pl. 12.) In order to determine the shape of the piezometric surface and the fluctuations of head, measurements were made of the water levels or pressure in observation wells at times when they were not discharging.

On wells with large pressure the head was determined by means of a pressure gage that indicated the height to which water would rise above the gage. On wells where the water would rise less than 5 feet above the surface the static level was determined by measuring the height to which the water rose in a garden hose attached to the well. Where the water level stood below the top of the well casing the depth to water was measured with a steel tape. Continuous records of the fluctuations of water levels in a few wells were obtained by automatic recorders. (See pl. 11.)

The observed water levels and artesian head are shown in the table at the end of this report and are discussed below. The observed water levels range from a few feet above sea level in some areas near the coast to more than 100 feet above sea level in the central part of the peninsula.

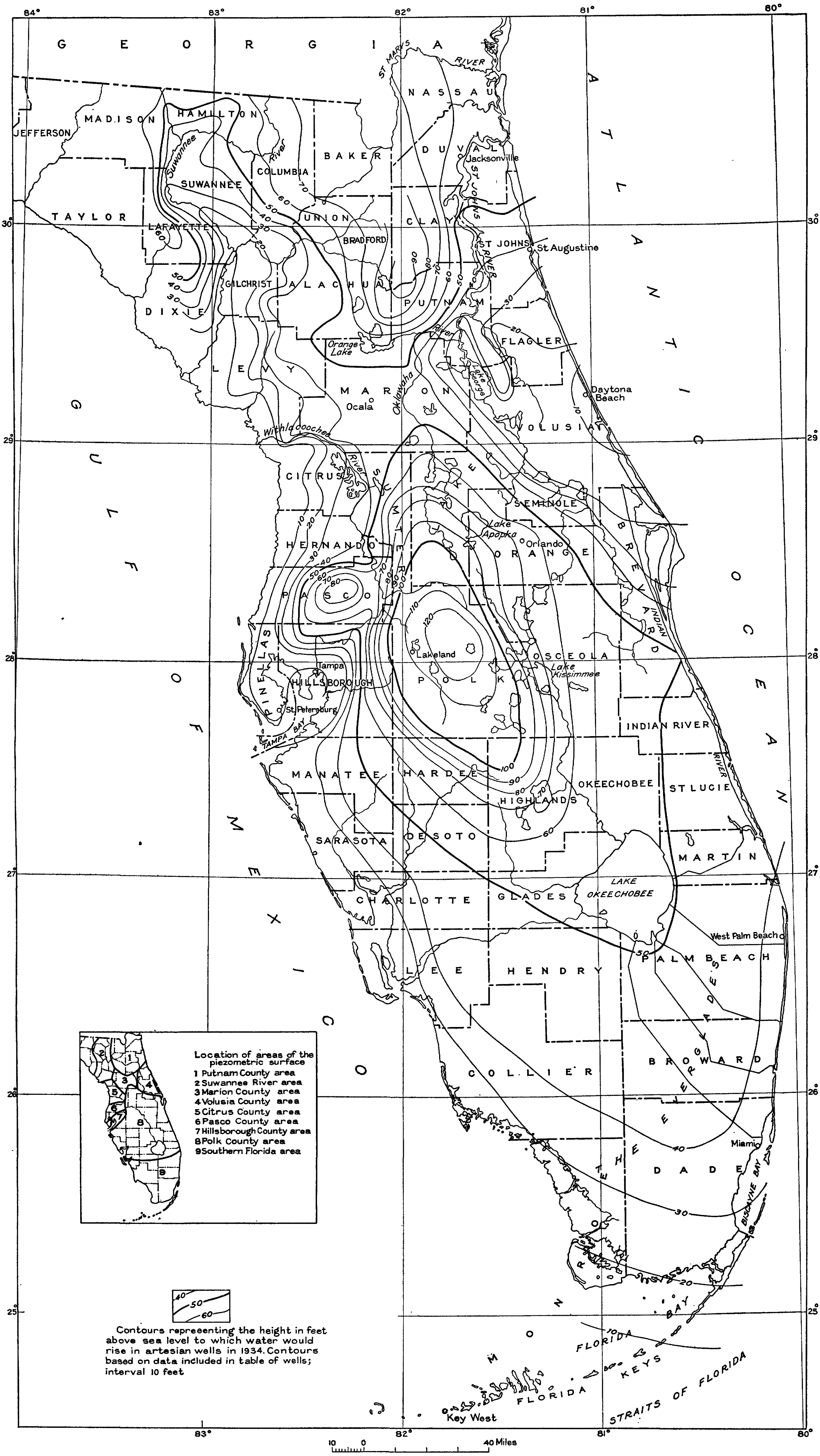
Increased head and flow with increased depth

Differences in the head and flow at different depths may be expected in some parts of the peninsula. The head in the lower part of the Hawthorn formation and in the underlying formations differs from that in the middle and upper parts of the Hawthorn, as shown by wells in Duval County and many other parts of the peninsula. (See pages 165-189.) In general the head in the lower part of the Hawthorn formation is approximately the same as that in the underlying Tampa and Ocala, although most wells in the Hawthorn yield less water than those in the underlying formations. However, in certain areas increases in head and flow have been observed with increased depth. According to a record [43]

43 Sellards, E. H., and Gunter, Herman, The artesian water supply of eastern and southern Florida: Florida Geol. Survey 5th Ann. Rept., pp. 146-147, 1913.

A. WATER-LEVEL RECORDER ON WELL 9, SARASOTA COUNTY.

B. WATER-PRESSURE RECORDER ON WELL 18, DUVAL COUNTY.



MAP OF FLORIDA PENINSULA REPRESENTING THE PIEZOMETRIC SURFACE OF ARTESIAN WATER.

of well 10 of the city water supply of Jacksonville, in Duval County, the artesian water had a pressure head of 27.72 feet with reference to the ground surface when the well reached a depth of 680 feet and a pressure head of 34.65 feet when it reached a depth of 900 feet. The flow was about 5 gallons a minute from a depth of 270 feet, 900 gallons a minute from a depth of 900 feet, and 1,500 to 2,000 gallons a minute from a depth of 980 feet. The well penetrated about 500 feet of the Hawthorn formation and entered the Ocala limestone at a depth of about 510 feet.

An incomplete log[44] of the well at the Ponce de Leon Hotel, at St. Augustine (well 27, St. Johns County), indicates that the artesian water had a pressure head of 32 feet with reference to the surface of the ground when the well reached a depth of 170 feet, a head of 38 feet when the well reached a depth of 350 feet, and a head of 42 feet when the well reached a depth of 520 feet. The Ocala limestone was penetrated at a depth of about 170 feet. The pressure head of this well in 1930 (see pages 173, 187) was about 30 feet with reference to the surface of the ground. That pressure head appears to be about the average for wells penetrating the Ocala limestone in the vicinity of St. Augustine -- a fact which suggests that where wells penetrate water-bearing beds at several horizons with different artesian pressures there will be an equalization of pressure in the beds at different horizons in the vicinity of the wells, as discussed under "Leakage of wells", unless the wells are so cased that they will prevent such leakage.

A difference in pressure head at different depths is also reported in the Ocala limestone in Sumter County. See table of wells at end of report. However, in Volusia, Seminole, and Sarasota Counties and some other parts of the peninsula wells much deeper than the average have been constructed in an unsuccessful attempt to obtain larger pressure heads and yields. Several of the deeper wells penetrated beds yielding highly mineralized water.

Fluctuations of artesian head

Observations have indicated that the head of the artesian water is fluctuating almost constantly. In order that the character of the piezometric surface could be interpreted and the effect of recharge and discharge of water determined, it was necessary to ascertain so far as possible the causes and amounts of these fluctuations. They were found

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44 Matson, G. C., and Sanford, Samuel, op. cit., p. 396.

to range from less than a foot to several feet. Some of the observed causes of fluctuations are rainfall, barometric pressure, tides, rivers, drainage wells, and artesian flow or pumpage from wells.

Fluctuations caused by rainfall

In recharge areas, such as Marion County, the water levels in wells may rise as much as 10 feet within a period of a few weeks, and much of the rise may be attributed to rainfall that enters the water-bearing formations. The graphs based on intermittent measurements of water level in wells 40, 41, and 42, Marion County (fig. 11) show examples of such fluctuations. Rainfall in Florida is often localized, and the record at Ocala represents only in a general way the rainfall in the intake areas of the wells. The effect of rainfall in the recharge area is transmitted to other parts of the formation, but this transmission is usually slow, requiring weeks or perhaps months, the time depending on the distance and the hydrologic conditions; moreover, with distance the magnitude of the effects decreases. In parts of the peninsula at some distance from recharge areas rainfall may indirectly cause fluctuations of water levels in wells. The hydrograph of well 9, Sarasota County, in an irrigation district, together with the record of rainfall shown in figure 12, shows that there is a marked increase in head during some periods after rains. For example, in 1931 a considerable increase in head followed rains of 1.08 inches on February 17, 1.81 inches on March 2, and 3.29 inches on April 15, with smaller amounts on the days immediately preceding and following. At certain other times, however, there has been considerable rainfall without such marked increase in the head. Generally when rain occurs in appreciable amounts during the irrigation season many of the flowing wells are closed, and this reduction in withdrawal of artesian water is the principal cause of increased head.

Matson[45] points out that rainfall may cause some increase in the head by the added weight of the rain water that may accumulate in the formation overlying the artesian formation. This weight may be transmitted to the underlying formation and may thereby cause an increase in artesian head. Increases of pressure after rains have been reported by owners of wells in Seminole County, but these wells are in irrigation districts, and the changes in head may be caused by the closing of the flowing wells, as described above. Moreover, in Seminole County there may be local recharge of the artesian formations.

45 Matson, G. C., and Sanford, Samuel, op. cit., pp. 238-239.

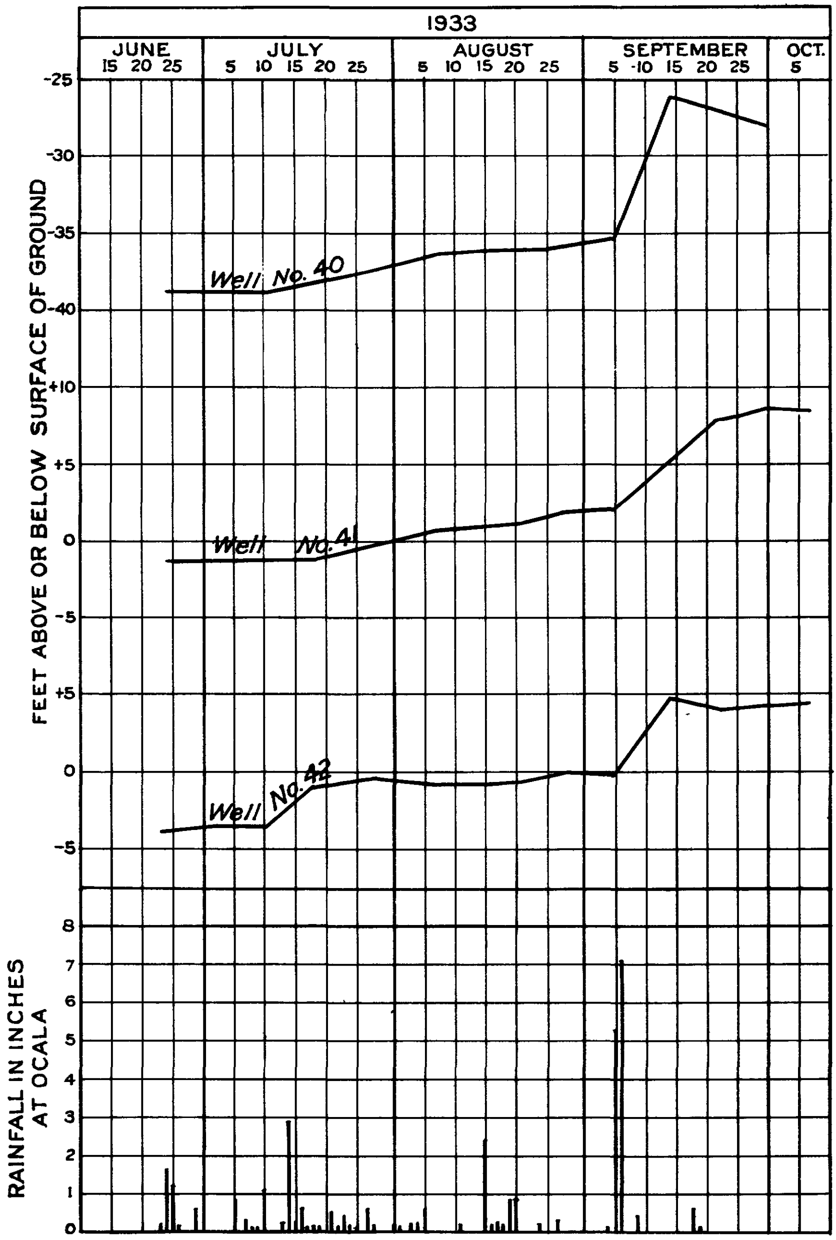

Figure 11.- Fluctuations of ground-water level and rainfall in Marion County, by days, June to October 1933.

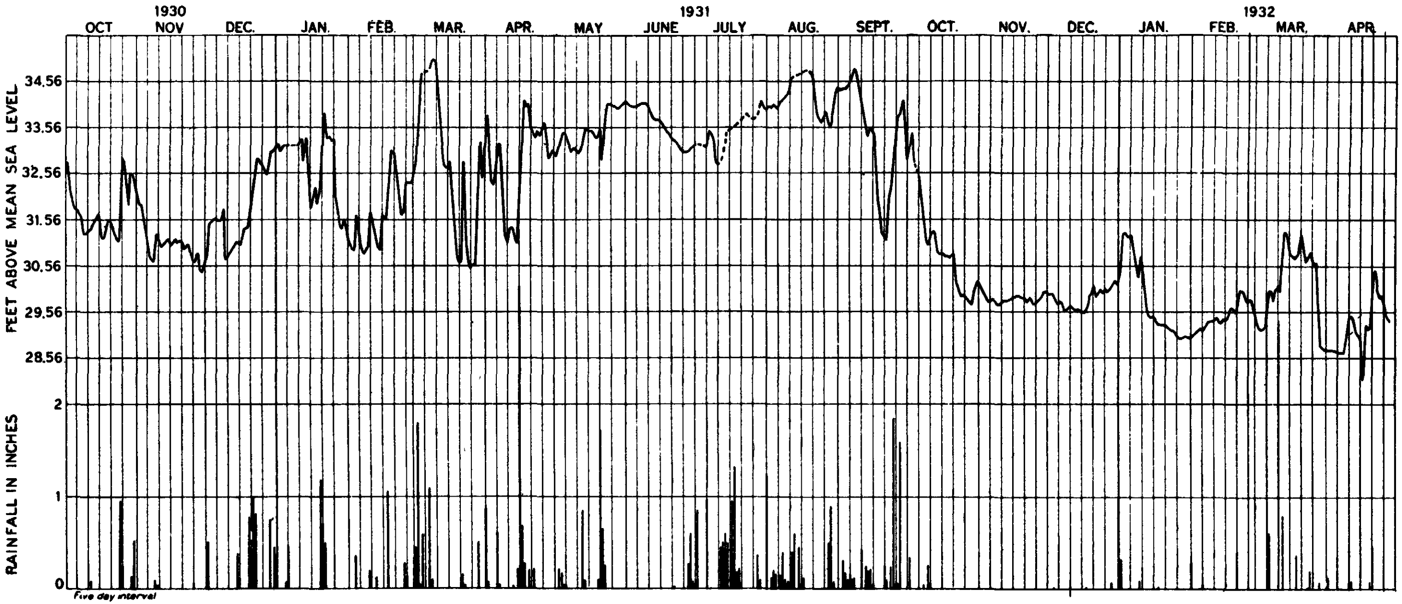

Figure 12.- Lowest water level in well 9, Sarasota County, and rainfall at Sarasota, by days, October 1, 1930, to April 30, 1932.

Fluctuations caused by changes in atmospheric pressure

Variations in atmospheric pressure probably tend to cause fluctuations in the head of water in all artesian wells, but these fluctuations may be masked by greater fluctuations due to other causes, chiefly variations in withdrawal of water. The fluctuations of the water level in well 9, Sarasota County, during a period when there was little discharge of water from artesian wells in that vicinity, is represented in figure 13. This diagram also shows the fluctuations in atmospheric pressure as recorded by a barograph in Sarasota. The barograph record, representing atmospheric pressure in inches of mercury, has been transformed to equivalent pressures in feet of water, and the graph inverted in order that it may be compared more readily with the graph representing the fluctuations in water level. As plotted, a downward trend of the barometric graph represents an increase in barometric pressure, and vice versa. The similarity of the two graphs is evident and is caused by changes in barometric pressure. The lack of similarity at some points may be attributed in part to differences in the sensitivity of the recording instruments and to the fact that the original barograph record is on a small scale, in which it is difficult to detect slight differences that would appear clearly in the graph made by the water-stage recorder. The two graphs in figure 13 show a semidiurnal cycle which is a characteristic of changes in barometric pressure. In addition to these small fluctuations more gradual changes appear on both graphs, which during a period of several days -- for example, between June 8 and 12 -- amount to as much as 0.5 foot. Such fluctuations of atmospheric pressure in cycles of a few days of stormy and fair weather, together with the semidiurnal cycles, reveal the close relation between fluctuations of the water level and changes in barometric pressure. The movement of water level is nearly equal in amount to the change in barometric pressure expressed in terms of feet of water pressure.

Barometric fluctuations of water levels in wells have been observed in many localities, and the explanation of this phenomenon has been discussed by Meinzer.[46]

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46 Meinzer, O. E., Outline of methods of estimating ground-water supplies: U. S. Geol. Water-Supply Paper 638, pp. 140-142, 1932.

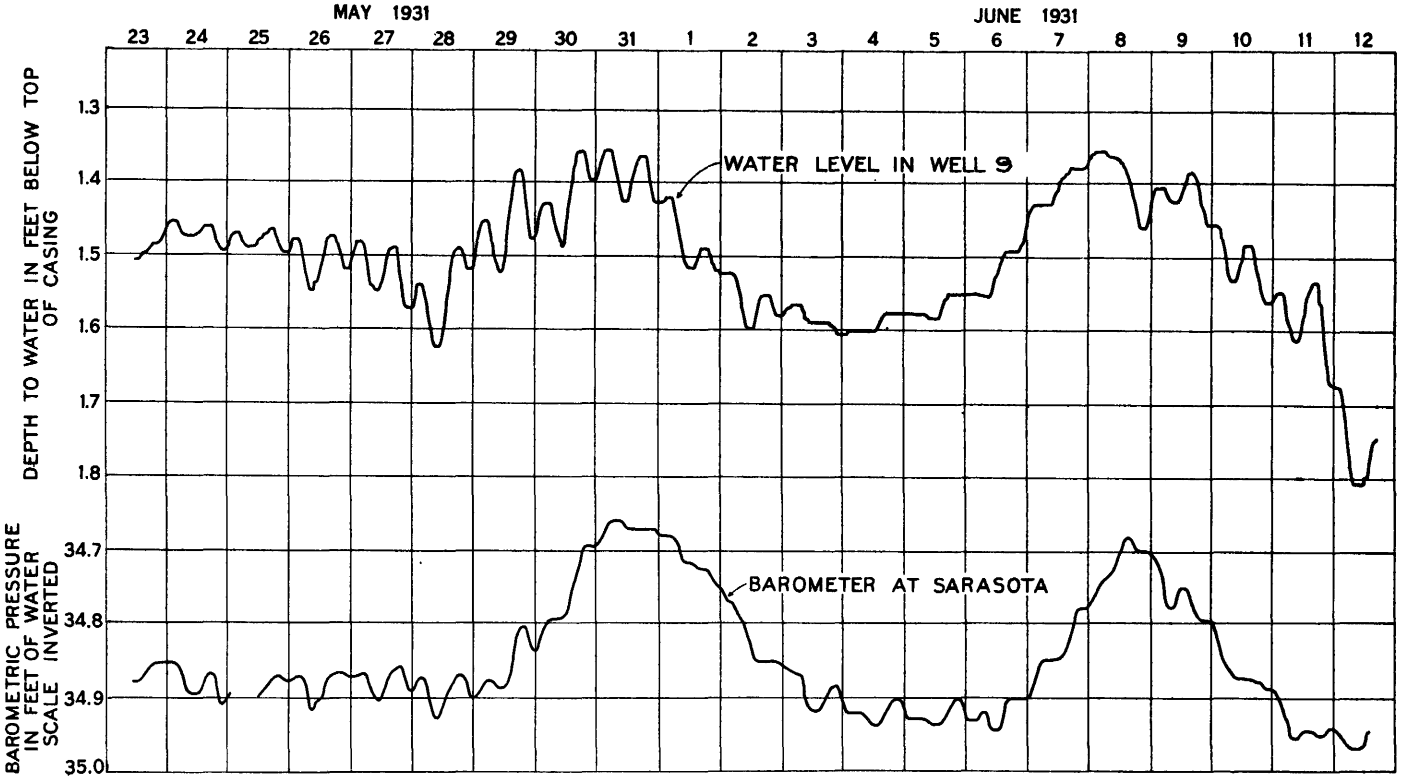

Figure 13.- Effect of atmospheric pressure on water level in well 9, Sarasota County, by days, May 23 to June 12, 1931.

Fluctuations caused by ocean tides

According to the records of a continuous water-stage recorder, a few observations, and many reported measurements, the head and yield of artesian wells near the coast of the Florida peninsula are affected by ocean tides. The maximum fluctuation observed that can be definitely attributed to that influence amounts to about 1 foot in wells near the Gulf of Mexico and 2 feet in wells near the Atlantic Ocean. The farthest point inland at which tidal fluctuations in head were definitely observed was about 0.2 mile from the nearest tidal water body.

The continuous records indicate that there is a semidiurnal variation of 1 to 2 feet in the artesian head on the Atlantic coast at Jacksonville Beach, in Duval County. The variation is undoubtedly caused by the tides in the ocean. The maximum pressure corresponds to the high tide, and the low pressure to the low tide.

Tidal fluctuations in wells may be attributed to one of two causes -- (1) the transfer of water between the ocean and the ground water through the water-bearing formations; (2) the alternate compression and expansion of the water-bearing formations by the added weight of water transmitted in the vicinity at high tide and the removal of the weight at low tide. The conditions in much of the coastal area of the peninsula, so far as they affect the occurrence of water in the artesian formations, are reported to be somewhat comparable to conditions in the vicinity of Atlantic City, N. J., where it has been demonstrated by Thompson[47] that fluctuations in the head of water in wells drawing from a bed at a depth of 800 feet are due to the alternate tidal loading and unloading in the immediate vicinity and not to any pressure change transmitted from the suboceanic outcrop of the bed.

Fluctuations caused by rivers

In the northwestern part of the peninsula, along the Suwannee River and the lower course of the Santa Fe River, and in the west-central part, along the lower course of the Withlacoochee River, any change in the stage of the rivers affects the ground-water level. In parts of their courses these rivers flow on the water-bearing formations.

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47 Thompson, D. G., Ground-water supplies of the Atlantic City region: New Jersey Dept. Cons. and Devel. Bull. 30, pp. 27-30, 57, 113, 1928, and unpublished data.

The ground-water level near the streams is generally about the same as the water level in the rivers, but during flood stages the rivers lose water to the formations and thereby cause the ground-water levels in adjacent areas to rise. Such fluctuations have been noted in a well at High Springs, in Alachua County; in a well at Branford, in Suwannee County; and in Falmouth Spring, near Falmouth, in Suwannee County.

Fluctuations caused by artificial drainage into wells

In areas where there is artificial drainage of surface water into wells the water levels in the other wells may rise several feet during and after periods of heavy rainfall. The record of a continuous water-level recorder on a well near Ocoee, in Orange County, shows the marked influence of drainage wells in that vicinity. Although no water entered the mouth of the recorder well, there was a rise in water level after each rain, and the maximum rise was about 6 feet, during a 3-day period. At Orlando, in Orange County, where there are numerous drainage wells, water levels in wells rise as much as 10 feet after periods of large rainfall. Figure 14 is a graph representing intermittent measurements of water levels showing fluctuations over a period of several years in a typical drainage well in Orlando.

Fluctuations caused by natural artesian flow or pumpage

In some of the irrigation districts, as in Sarasota, Manatee, and Seminole Counties, and some of the cities, such as Jacksonville, large fluctuations of water level are caused by variations in the draft from wells. Figure 15 shows the movement of the water level in well 9 in Sarasota County and illustrates typical fluctuations at certain times of the year when artesian water is being used for irrigation. During such times the head in the well fluctuates considerably because of the opening and closing of wells on farms within a radius of about 2 miles. In 1 day the water moved as much as 1 foot, and in a period of 3 weeks the maximum range in head was about 4 feet. Figure 16 shows the fluctuations in this well from October 1930 to March 1935.

A fluctuation of about 18 feet has been recorded on a well at the Water Works Park in Jacksonville (well 18, Duval County). That fluctuation is undoubtedly caused by changes in the rate of draft from the wells that furnish the public supply and possibly from nearby industrial wells. Well 9 in Sarasota County, mentioned above, is some distance from a discharging well. Obviously the fluctuations may be much larger in wells from which the water is being withdrawn.

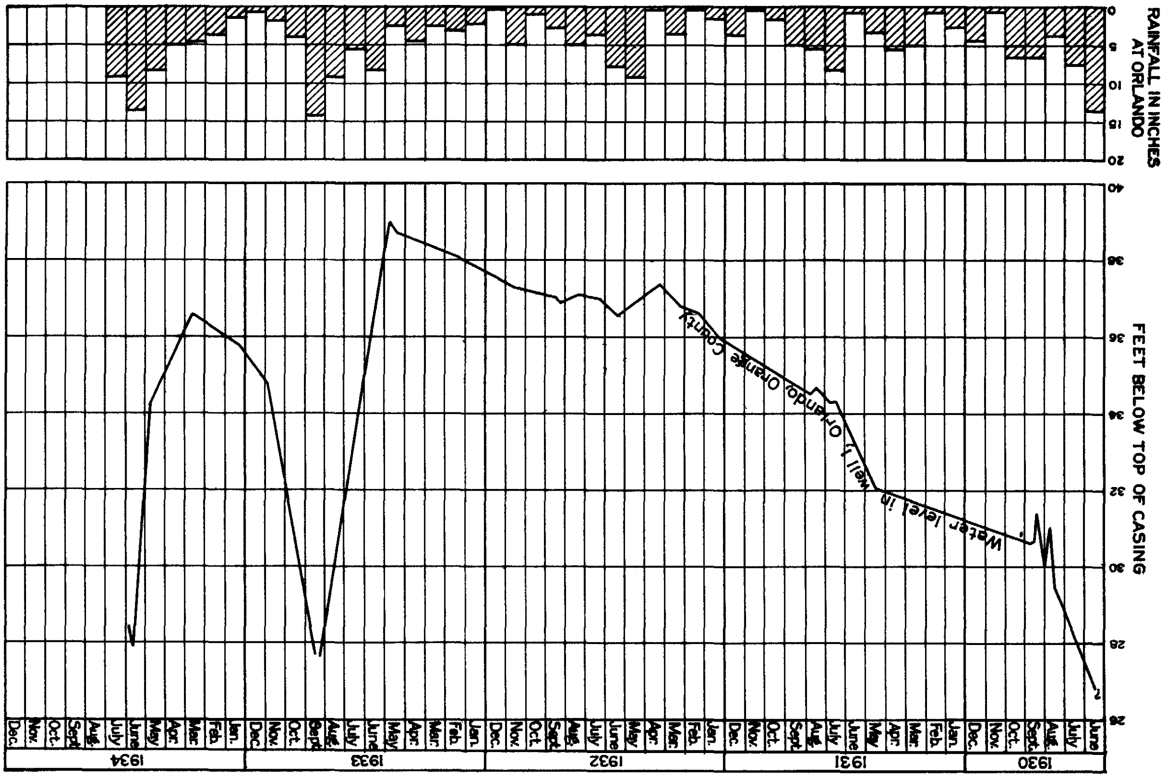

Figure 14.- Water level in well 1, Orange County, and rainfall, by months, June 1930 to June 1934.

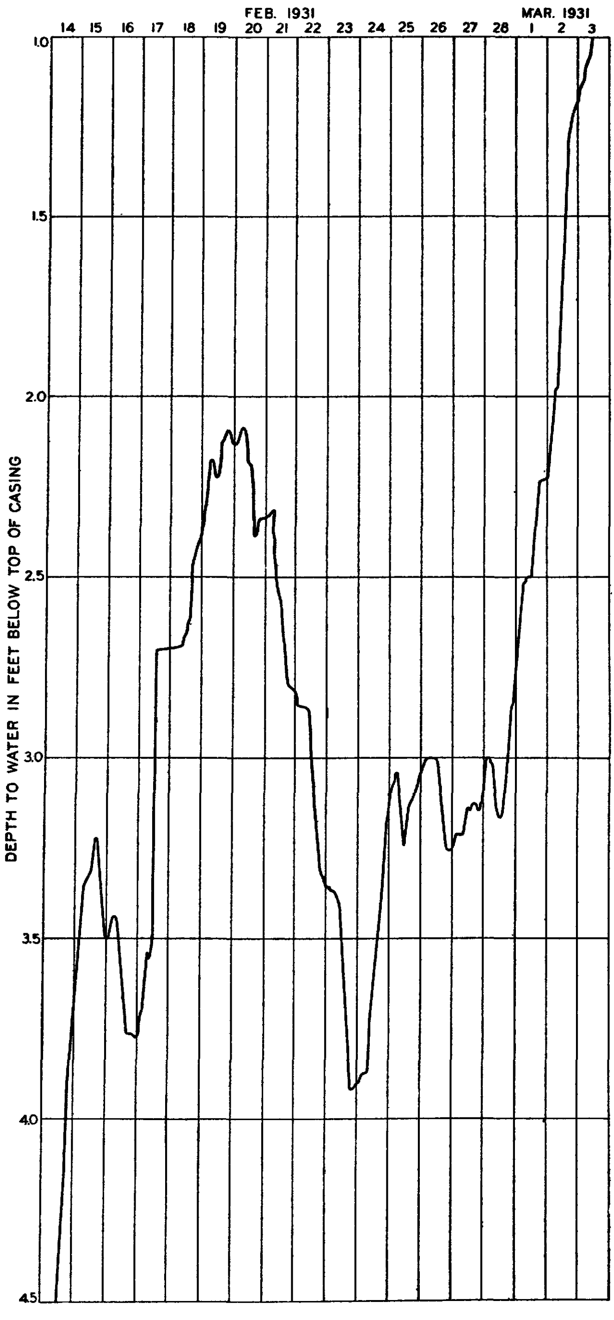

Figure 15.- Water level in well 9, Sarasota County, by days, February 14 to March 3, 1931, showing influence of draft from other wells.

Permanent loss in artesian head

Details of the history of the artesian head in the peninsula are not complete, but general and incomplete data indicate a permanent loss of head in some localities where much artesian water is being used. The loss of head is a normal process that invariably accompanies the withdrawal of artesian water in large amounts.

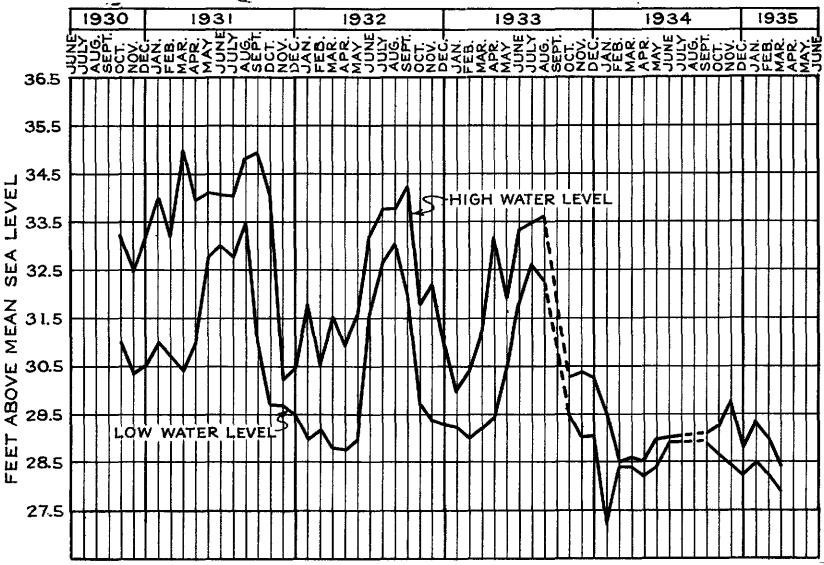

Figure 16.- Lowest and highest water level in well 9, Sarasota County, by months, October 1930 to March 1935.

The initial head in a 10-inch well 980 feet deep, drilled in Jacksonville in 1903 by R. M. Ellis, was 58 feet above the surface, or about 68 feet above sea level.[48] Well data compiled in 1905 by Darton[49] show that several of the representative wells of Jacksonville had heads of about 62 feet above the surface. At the present time the minimum head noted in this vicinity is about 30 feet above sea level, and the maximum is about 54 feet above sea level. In other areas of large draft where many wells are in use, as in Volusia, Seminole, Manatee, and Sarasota Counties, a comparison of recent measurements with reported records indicate a loss of head of 5 to 10 feet. However, in much of the peninsula the draft of artesian water is widely distributed, and no considerable loss of head has yet been caused by withdrawal of the water.

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48 Fuller, M. L., and Sanford, Samuel, Record of deep-well drilling for 1905: U. S. Geol. Survey Bull. 298, p. 47, 1906.

49 Darton, N. H., Preliminary list of deep borings in the United States: U. S. Geol. Survey Water-Supply Paper 149, p. 25, 1905.

Piezometric surface

The piezometric surface, or pressure-indicating surface, shown by means of contour lines on plate 12, represents the height to which artesian water would rise above mean sea level in 1934 in tightly cased wells that yield water from the Ocala or the Tampa limestone or in some localities from the lower part of the Hawthorn formation. Records of the wells are given on pages 165 to 189. The water in the Ocala and Tampa limestones and the lower part of the Hawthorn formation is under approximately the same pressure, but the water in the middle and upper parts of the Hawthorn formation has pressure heads that may be higher or lower than those in the underlying rock.

The high areas of the piezometric surface in general indicate recharge, and the low areas indicate discharge. However, recharge may occur in some of the areas of relatively low pressure. The water moves from the higher to the lower areas of the piezometric surface and at right angles to the contour lines representing that surface.

The map of the piezometric surface is based chiefly on observations made in 1934 and shown in the tables at the back of the report. Some of the well records obtained in the north-central part of the peninsula by the United States Engineer office at Jacksonville are also included. The altitudes of the measuring points of some of the wells in Sarasota, Orange, and Seminole Counties and of the wells measured by the United States Engineer office were determined by instrumental leveling and are recorded in the table on pages 165 to 189 to the nearest tenth of a foot. The altitudes of the measuring points of the other wells were determined by means of surveying aneroids and are shown in the table only to the nearest foot. The limits of error were sufficiently small to permit a fairly correct representation of the major features of the piezometric surface.

Obviously because of fluctuations of the pressure head the position of the piezometric surface is changing almost constantly, and a representation of it at any one time shows only approximately the conditions at any other time. Nevertheless, the map represents the major features, which do not change except in details from time to time.

In the central and northern parts of the peninsula (figs. 17, 18) the piezometric surface is 90 feet or more above sea level, but in the intervening saddle it is only about 40 to 50 feet above sea level. It slopes toward the Gulf coast to an altitude of about 2 to 10 feet and toward the Atlantic coast to an altitude of 10 to 50 feet. In the southern part of the peninsula it is relatively flat and ranges from only a few feet to about 50 feet above sea level.

For convenience in describing the piezometric surface the peninsula is divided into nine areas, each of which includes one or more of the major features. The general location of these areas is shown on the inset in plate 12.

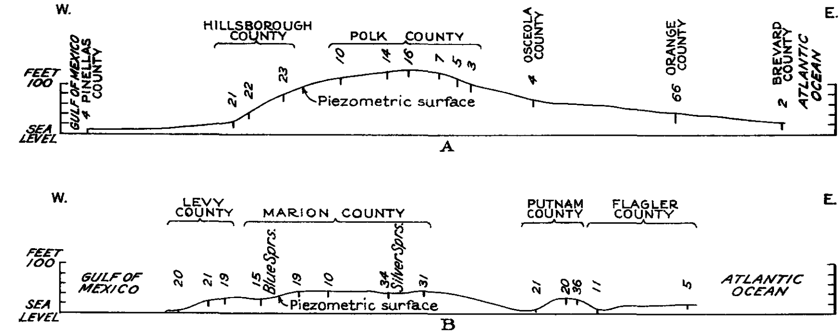

Figure 17.- Profiles of piezometric surface across central Florida (A) and north-central Florida (B). Numbers are well numbers.

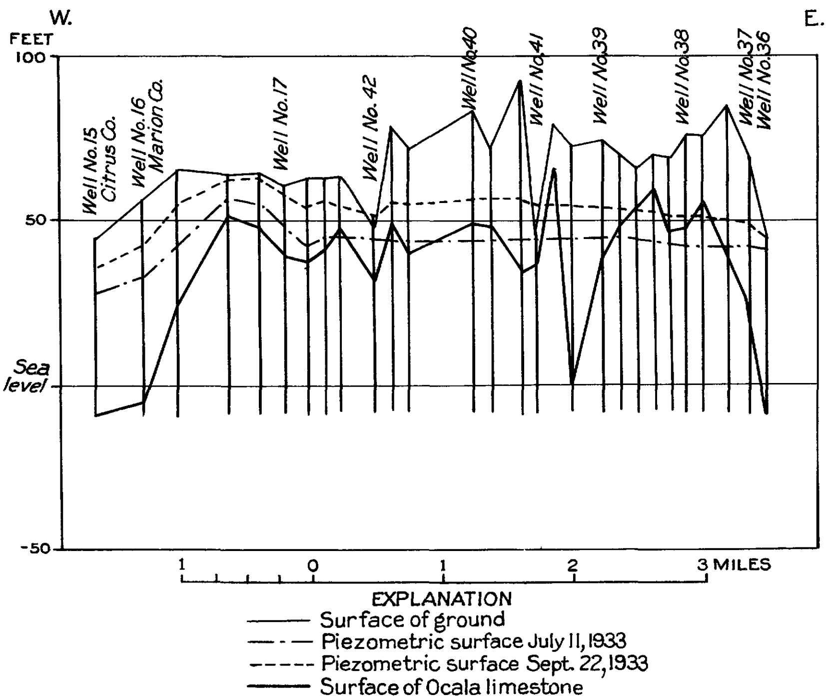

Figure 18.- Profile of piezometric surface in the southern part of Marion County.

Polk County area

One of the most conspicuous features of the piezometric surface is in the central part of the peninsula, in Polk and adjacent counties, where this surface has the shape of an elongated dome, a large part of which is 90 to 120 feet above sea level. This dome extends northward into Marion County to an altitude of about 50 feet. It extends southward into the southern part of the peninsula, where it merges about 50 feet above sea level into a relatively flat part of the piezometric surface. The total north-south extent is about 150 miles. It extends to the Atlantic coast on the east, where it has an altitude of about 40 to 50 feet. On the west it extends to Tampa Bay, where it has an altitude of 10 to 20 feet. On the northwest it merges into a relatively small saddle and dome-shaped feature in Pasco County. The total east-west extent is about 120 miles. The piezometric surface in this area indicates local recharge of the water-bearing formations, largely in Polk County. It appears that some recharge may take place in the lake region in the northwestern part of Highlands County and the south-central part of Lake County and in the lake region of Orange County. The recharge through drainage wells at Orlando and in adjacent parts of Orange County is evident.

The Ocala and Tampa limestones are overlain in part of the Polk County recharge area by relatively impervious members of the Hawthorn formation. However, well records indicate that in parts of the area the Hawthorn formation is relatively thin or absent and pervious sands rest directly on the water-bearing formations. For example, the log of a well at Davenport (well 5, Polk County) indicates the presence of unconsolidated quartz sand to a depth of 110 feet. Phosphatic marl, probably representing the Hawthorn formation, occurs in the interval between 110 and 120 feet, below which is soft limestone of the Ocala. Under such conditions local recharge of the Ocala limestone may readily occur. Also within the area there are numerous lakes that probably occupy old sink holes now filled with sands that permit downward percolation of water. There are few surface streams in this area, and the rainfall drains into the numerous lakes and depressions, providing a large source of water for recharge.

Lateral movement of ground water takes place in all directions from the central part of the Polk County recharge area. It supplies the fresh artesian water of the Ocala, Tampa, and Hawthorn formations in the southern part of the peninsula and contributes artesian water to other adjacent areas.

Pasco County area

In a relatively small area in northeastern Pasco County, west of the Polk County area, the piezometric surface is about 80 feet or more above sea level. It slopes northward into Hernando County to an altitude of about 30 to 40 feet and westward to the Gulf of Mexico and southward to Tampa Bay to an altitude of about 10 feet. On the east it is bordered by a small saddle about 60 to 70 feet above sea level. In most of the area the Tampa limestone is at or near the surface and permits ground-water recharge. The Hawthorn formation with relatively impervious material overlies the Tampa limestone in northeastern Pasco County, where the piezometric surface is 80 feet or more above sea level. However, within that area there are sink holes and lakes occupying sink holes through which recharge may take place, accounting in part for the high water levels. The geology, topography, and ground-water conditions in some respects are comparable to those of the Polk County area.

Lateral movement of the ground water takes place in all directions from the central part of the recharge area. This recharge area furnishes fresh ground water in the Tampa and Ocala formations in most of Pasco County, parts of Hernando and Pinellas Counties, and the northwestern part of Hillsborough County.

The water in well 11, Pasco County, in sec. 16, T. 25 S., R. 21 E., stands 190 feet above sea level and 120 feet above the piezometric surface in that locality. This well, however, taps ground water in the Hawthorn formation, and the water level is not part of the piezometric surface.

Putnam County area

In the northwestern part of Putnam County and the adjacent parts of Clay, Bradford, Baker, and Alachua Counties the piezometric surface is about 50 to 90 feet above sea level. On the north, in Bradford and Clay Counties, it forms a ridge 70 to 80 feet above sea level and extends at that altitude into Georgia. On the east it slopes to the Atlantic Ocean to an altitude of about 30 to 50 feet. On the south it merges into a broad saddle about 40 to 50 feet above sea level in Marion County. On the west it forms a broad area in Alachua County about 40 to 50 feet above sea level. It also extends to the Suwannee River Valley, where it ranges from a few feet to about 50 feet above sea level.

The artesian formations are not exposed where the piezometric surface has an altitude of 70 to 90 feet, but typical sink-hole topography affords conditions favorable for recharge. In the southern and western parts of the area recharge takes place through sink holes or directly into the Ocala and Tampa limestones where they are present at or near the surface.

In Baker County, in the northern part of the area, although the piezometric surface of the water in the Ocala limestone may be 70 feet or more above sea level, no recharge of the Ocala takes place locally because it is overlain by relatively impervious beds of the Hawthorn formation. However, water is supplied through a recharge area in Georgia.

Well 1 in Baker County is the only well reported in that county that probably penetrates the Ocala limestone. The other wells reported terminate in the middle and upper parts of the Hawthorn formation, and in parts of this area the water levels in such wells will rise higher than water levels in wells penetrating the Ocala. In parts of Duval and Nassau Counties, however, the pressure head of the artesian water of the Hawthorn formation is less than that of the Ocala.

In Jacksonville and vicinity, in Duval County, the piezometric surface has the shape of an inverted cone about 6 miles in diameter and 30 feet deep. The apex of the cone is in the vicinity of Water Works Park in Jacksonville and is about 30 feet above sea level. This was described in a manuscript prepared in 1927 by Malcolm Pirnie, consulting engineer, who made a careful study of artesian conditions for the city of Jacksonville. This cone of depression doubtless is caused in part by the draft from wells in that vicinity, estimated to be about 20 million gallons a day.

At Green Cove Springs and vicinity, in Clay County, a small local depression carries the piezometric surface to about 30 to 40 feet above sea level. The draft from wells in this area is relatively small and appears to be insufficient to cause the depression, which may be due in part to subsurface leakage from wells. The flow of Green Cove Springs doubtless affects the head of water in the Hawthorn formation in the vicinity of the springs, but it probably does not affect the head in the underlying Ocala limestone.

In the southern part of the Putnam County area the water in the Ocala and Tampa limestones moves laterally from the recharge area into Putnam, Alachua, Marion, Clay, and Bradford Counties. In the northern part of the area some of the water moves to the east and southeast, into Nassau and Duval Counties, and some of it moves to the west, toward the Suwannee River.

A. SILVER SPRINGS, MARION COUNTY, LOOKING TOWARD HEAD OF SPRINGS.

B. WELL 3, IN FLAGLER COUNTY, FLOWING ABOUT 750 GALLONS A MINUTE.

A. WEEKEWACHEE SPRING, HERNANDO COUNTY.

B. BLUE SPRINGS, MARION COUNTY.

The hydraulic gradient in the eastern part of Nassau and Duval Counties is relatively low, but the piezometric surface is 55 to 60 feet above sea level. Such conditions might be expected because in that area the Ocala limestone is overlain by about 500 feet of the Hawthorn formation with relatively impervious members, and the submarine outcrop of the Ocala is probably as much as 70 miles off the coast.

Marion County area

In Marion County the piezometric surface forms a broad saddle, about 40 to 50 feet above sea level, between the Putnam County area on the north and the Polk County area on the south. In this area the Ocala limestone is at or near the surface, and sink holes are well developed, affording favorable conditions for recharge. Large recharge doubtless takes place, and the area also receives some water from the Polk County and Putnam County areas. The limestone in this area is porous and in part cavernous, and the water may move freely through it. During and after periods of large rainfall part of the saddle is as much as 10 feet higher than in normal times. Under such conditions the 50-foot contour lines, instead of closing on the north and south side of the saddle, as mapped in plate 12, will extend along the east and west parts of the saddle and connect the Polk County area with the Putnam County area.

This is also an area of very large discharge. It furnishes water for Silver Springs and Blue Springs (pls. 13, A, and 14, A), two of the largest springs in the State. The discharge of these springs, with a combined maximum flow of about 2,000 second-feet,[50] or about 896,000 gallons a minute, in part causes the saddle in the piezometric surface. Part of the ground water from the Marion County area flows eastward into the eastern part of Marion County, and part of it flows westward into Levy and Citrus Counties.

Volusia County area

One of the most extensive low-pressure areas in the peninsula is in Volusia and Flagler Counties and parts of the adjacent counties, where the piezometric surface is only about 10 to 20 feet above sea level. This low pressure is caused in part by the discharge of ground water through springs in the St. Johns River Valley and submarine discharge through springs and outcrops in the Atlantic Ocean. One of these submarine

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50 Discharge measurement made by D. S. Wallace, district engineer, U. S. Geological Survey.

springs is about 2½ miles offshore east of Crescent Beach. A similar spring is reported near Port Orange, which lies just south of Daytona Beach, in Volusia County. A large spring is reported about 16 miles off the coast east of a point about midway between Coronado Beach, in Volusia County, and Canaveral, in Brevard County.

Extending from the southeastern part of Putnam County into the northwestern part of Volusia County is a long, narrow district between the St. Johns River Valley and Crescent Lake in which the piezometric surface is from 20 to 30 feet above sea level. Sink holes and lakes occupying old sink holes afford opportunity for recharge, which accounts in part for this ridge in the piezometric surface. There is a similar area, including De Land, Orange City, and Lake Helen, in the southwestern part of Volusia County east of the St. Johns Valley, but the piezometric surface in that area lies in the interval between 10 and 20 feet above sea level and is not shown by a contour line.

Hillsborough County area

The piezometric surface in Hillsborough County ranges from less than 10 feet to more than 50 feet above sea level. At Port Tampa (see well 16, p. 168) it is only about 3 feet above sea level. From Tampa and vicinity northeastward to Pasco County the piezometric surface has the shape of a valley that heads in a saddle in Pasco County and lies between the Pasco County and Polk County areas. This valley is caused in part by leakage of artesian water through springs in the outcrops of the Tampa limestone along the valley of the Hillsborough River. The largest of these springs is Sulphur Spring, near Tampa, and one of the best known of the smaller ones is Crystal Springs, near the town of Crystal Springs.

Citrus County area

In Citrus County and adjacent parts of Hernando and Levy Counties the piezometric surface slopes from an altitude of about 40 feet in the eastern part of the area to less than 5 feet in the western part, on the Gulf coast. The artesian water in this area is supplied in part from the Marion County, Polk County, and Pasco County areas. The Ocala limestone or the Tampa limestone is at or near the surface, and sink holes are well developed, especially in Citrus County, facilitating local recharge. The Ocala limestone is porous and even cavernous and thus permits fairly free movement of the water. The general direction of movement is toward the west, and most of this water appears as springs on the west coast.

The alinement of some of the sink holes in Citrus County is in an east-west direction, indicating the course of some of the underground streams. Such an alinement might be expected, because the contours representing the piezometric surface indicate movement of the ground water toward the west. In the northern part of Citrus County, along the Withlacoochee River, the ground-water level during normal stages is about the same as the water level in the river. During flood stages the river may lose water to the Ocala limestone.

Suwannee River area

The piezometric surface forms a valley along the Suwannee River, and the ground-water level in the bottom of the valley is generally about the same as the water level in the river. The piezometric surface slopes from about 50 or 60 feet above sea level near the State line on the north to less than 10 feet above sea level on the Gulf of Mexico. On both sides of the valley it rises to 50 feet or more above sea level. The gradient on the east side, however, is lower than that on the west.

The Ocala and Tampa limestones are present at the surface in this area and thus receive recharge. During low stages of the Suwannee River its flow is largely derived from ground water, but during flood stages it loses water to the formations. These relations between surface water and ground water also exist along the lower course of the Santa Fe River, a tributary of the Suwannee.

Near Falmouth, in Suwannee County about 3 miles east of the Suwannee River, a small section of the roof of an underground stream has collapsed, and the stream is exposed at the surface. It is known as Falmouth Spring. During normal stages of the Suwannee River the water level of Falmouth Spring is a few feet higher than the river and water from the spring flows westward to the river. However, during flood stages the river is somewhat higher than the spring and contributes water to the underground stream and the flow of Falmouth Spring is reversed.

Southern Florida

The piezometric surface in southern Florida ranges from a few feet to about 50 feet above sea level. In most of the area it is relatively flat and more than 30 feet above sea level. In the southern part of the area only a few wells penetrate the lower part of the Hawthorn formation and the underlying rocks, and therefore only a few control points are available to represent the piezometric surface. According to records of wells 1, 2, and 3 on the Florida Keys, in Monroe County (p. 183), the piezometric surface is approximately at sea level in that area. Records of wells 1 and 2 at Miami, in Dade County, indicate that the piezometric surface is there 40 feet or more above sea level. It thus appears to slope southward toward the Florida Keys.

The artesian water-bearing formations are deeply buried in this area, and no recharge takes place locally. Fresh water enters the formations in the Polk County area, but the low hydraulic gradient indicates that there is slight movement of artesian water toward the south. The ocean floor is more than 2,000 feet below sea level about 20 to 30 miles off the coast in the Straits of Florida, and therefore it appears likely that the formations have submarine outcrops within that distance offshore. The artesian pressure in part of the area appears sufficient to overcome back pressure from the salt water on the submarine outcrops, and some artesian water is escaping through them. The low pressure in the wells on the Florida Keys might be suggested as an indication of leakage through outcrops in the Straits of Florida, but this appears unlikely, because the pressure is not sufficient to displace the salt water at the submarine outcrops. Such low pressures will permit encroachment of sea water in the area if the formations are sufficiently permeable, and the high salinity of the water in wells on the Florida Keys may be attributed to sea water.

Information regarding the casing in the wells on the Keys is meager. and it is entirely possible that if the casing is insufficient subsurface leakage may occur. Under these conditions the head in the wells may be reduced approximately to sea level. On the other hand, the Florida Keys are at a considerable distance from the recharge area of the artesian formations. The formations appear to become thicker and less permeable toward the south, and although the general direction of movement of the ground water is southward some of it moves to the east and west, and smaller amounts of this water reach the Florida Keys.

Springs

Most of the large springs of the peninsula yield water under artesian pressure from the Ocala and Tampa limestones and are situated in parts of the northern half of the peninsula where these formations are at or near the surface. The Hawthorn formation is the source of a few of the large springs, such as Rock Spring, in Orange County, and of numerous smaller springs. In the northeastern and southern parts of the peninsula, where the formations are deeply buried, no large springs are present. The following list represents the largest springs in the peninsula, and plate 15 shows their distribution. The discharge measurements have been furnished by D. S. Wallace, of the United States Geological Survey. Among the various reports that contain data on the springs of Florida, a paper by Meinzer[51] includes a description of some of the large springs.

Large springs in the Florida peninsula

No. on pl. 15	Name and location	Discharge 1/ (second-feet)	Date of measurement	Temperature (°F.)
1	Silver Springs, near Ocala, Marion County	Max. 1,240 Min. 526 Mean 808	Sept. 9, 1933 June 6, 1932	73-74
2	Blue Springs, near Dunnellon, Marion County (recently named Rainbow Spring)	Max. 910 Min. 487 Mean 652	Oct. 4, 1933 Oct. 3, 1932	74
3	Itchatucknee Springs, near Hildreth, Columbia County	Max. 467 Min. 260 Mean 340	Jan. 30, 1930 June 4, 1932	..
4	Weekewachee Spring, near Brooksville, Hernando County	Max. 231 Min. 106 Mean 142	May 6, 1931 Feb. 14, 1933	..
5	Blue Spring, near Orange City, Volusia County	Max. 188 Min. 137 Mean 159	Dec. 5, 1932 Mar. 2, 1933	73
6	Homosassa Spring, at Homosassa, Citrus County	2/87.0 3/177 3/141	Oct. 9, 1930 Mar. 15, 1932 Feb. 14, 1933	..
7	Manatee Spring, near Chiefland, Levy County	149	Mar. 14, 1932	..
8	Silver Glen Spring, near Astor, Marion County	125 95.9 89.9	Mar. 17, 1931 Mar. 3, 1932 Feb. 7, 1933	74
9	Alexander Spring, near Astor, Lake County	112 124	Feb. 12, 1931 Feb. 7, 1933	..
10	Juniper Spring Creek, near Astor, Marion County	117 106	Mar. 3, 1932 Feb. 7, 1933	72

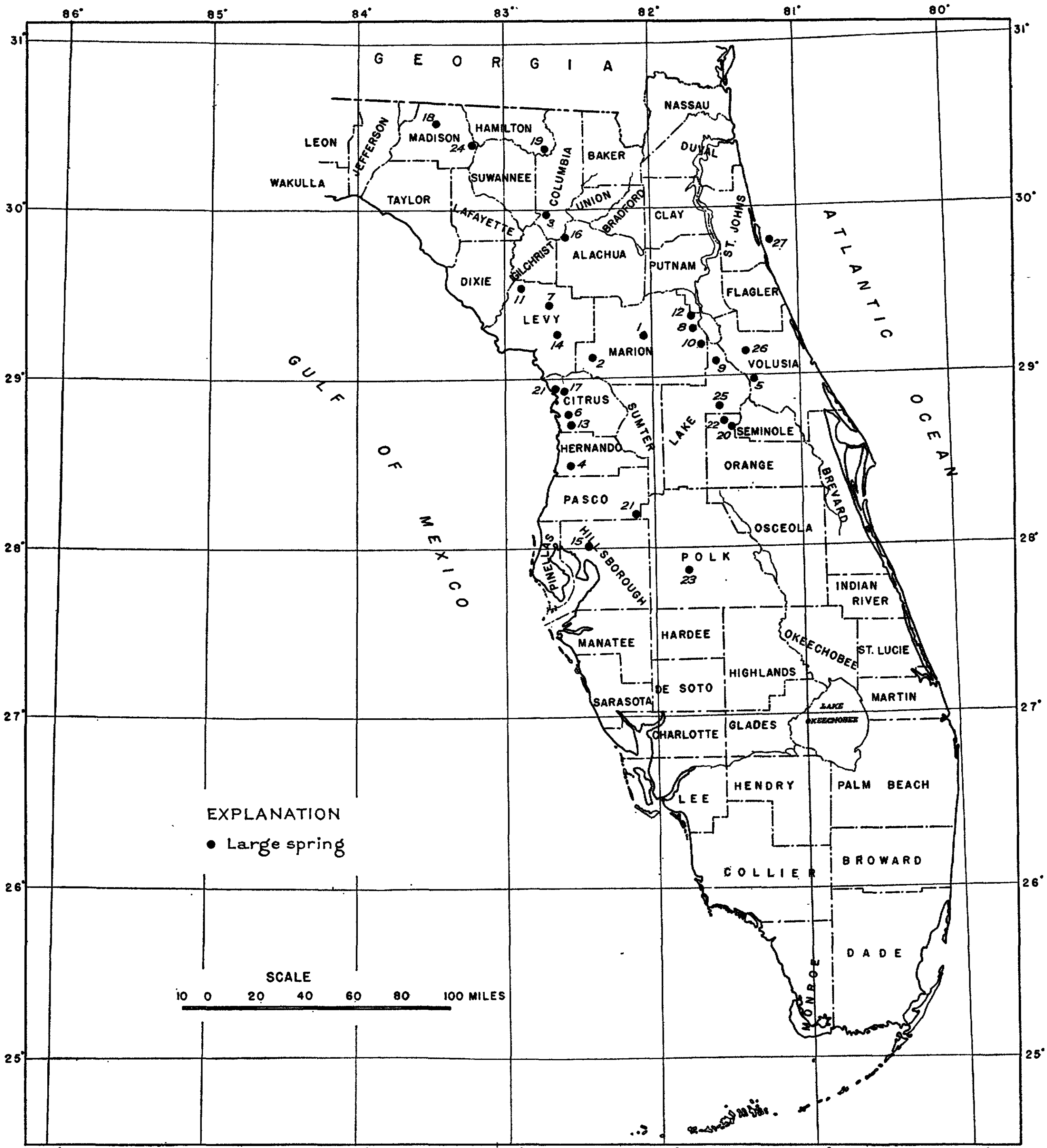
1 One second-foot equals 448.8 United States gallons a minute, or 646,317 gallons a day. Mean represents the average of measurements made to date.
2 Only main spring. Estimate 42 second-feet in second channel.
3 All springs.

51 Meinzer, O. E., Large springs in the United States: U. S. Geol. Survey Water-Supply Paper 557, pp. 8-13, 1927.

Large springs in the Florida peninsula - Continued

No. on pl. 15	Name and location		Discharge (second-feet)	Date of measurement	Temperature (°F.)
11	Fannin Spring, near Wilcox, Levy County		109	Oct. 25, 1930	..
			79.2	Mar. 14, 1932	
12	Salt Spring, at Lake Kerr, Marion County	Max.	105	May 5, 1931	..
		Min.	61.8	Feb. 7, 1933	
		Mean	85.1		
13	Chassahowitska Spring, near Homosassa, Citrus County		4/101	Oct. 9, 1930	..
			98.1	Mar. 15, 1932	
14	Wekiva Spring, near Gulf Hammock, Levy County		64.7	Feb. 21, 1917	..
			100	Feb. 1, 1929	
			75.2	Oct. 25, 1930	
			81.3	Feb. 9, 1931	
			55.1	Mar. 16, 1932	
15	Sulphur Spring, near Tampa, Hillsborough County	Max.	92.3	May 9, 1930	76
		Min.	12.9	Feb. 12, 1934	
		Mean	45.1		
16	Poe Spring, near High Springs, Alachua County		86.5	Feb. 19, 1917	..
			31.2	Mar. 14, 1932	
17	Hunter Spring, at Crystal River, Citrus County		15.6	Mar. 15, 1932	75
			87.0	Feb. 14, 1933	
18	Blue Spring, near Lee, Madison County		5/75.0	Mar. 16, 1932	..
19	White Spring, at White Springs, Hamilton County		67.2	May 8, 1927	..
			36.2	Nov. 4, 1931	
			46.4	Mar. 17, 1932	
			43.1	Apr. 20, 1932	
20	Wekiva Spring, near Apopka, Orange County		63.9	Mar. 8, 1932	74
			66.9	Feb. 10, 1933	
21	Crystal Springs, near Crystal Springs, Pasco County		57.4	Jan. 6, 1933	..
			53.0	Feb. 17, 1933	
			67.2	Jan. 15, 1934	
			57.7	Oct. 25, 1934	
22	Rock Spring, near Apopka, Orange County		55.9	Feb. 5, 1931	74
			51.9	Mar. 8, 1932	
			54.2	Feb. 10, 1933	
23	Kissengen Spring, near Bartow, Polk County		43.6	Oct. 11, 1933	..
			19.2	June 11, 1932	
			30.2		
24	Swanacoochee Spring, at Ellaville, Madison County		40.8	Nov. 6, 1931	..
			18.3	Mar. 16, 1932	
25	Seminole Spring, near Sorrento, Lake County		27.1	Feb. 5, 1931	..
			6/10.2	Mar. 8, 1932	
			35.8	Feb. 10, 1933	
26	Ponce de Leon Spring, near De Land, Volusia County		22.0	Feb. 11, 1929	73
			20.4	Mar. 7, 1932	
27	Submarine spring, about 2½ miles east of Crescent Beach, St. Johns County		....	....	7/71¼

4 Total flow of river.
5 Estimated.
6 Does not include all springs.
7 Temperature at a depth of 121 feet. Measured by the U. S. Coast and Geodetic Survey.



MAP OF FLORIDA PENINSULA REPRESENTING LOCATION OF LARGE SPRINGS.

The two springs with the largest discharge are Silver Springs and Blue Springs, in Marion County. (See pls. 13, A, and 14, A.) Rock Spring, in Orange County, is one of the few large springs with an outlet of the underground stream in part above the water level. Most of the large springs emerge more or less vertically as boils out of deep pools. One of the deepest of these pools is that of Weekewachee Spring, in Hernando County, which, according to measurements made by D. G. Thompson and the writer, has a depth of about 145 feet. (See pl. 14, B.)

Submarine springs are reported to be present off the coast east of the Volusia County area. One of them is about 2½ miles east of Crescent Beach. The location of this spring and the depth of water in it have been charted.[52] This spring has been described by A. M. Sobieralski, of the U. S. Coast and Geodetic Survey.[53] It was visited by the writer in 1934. The ocean floor at the spring is about 55 feet below sea level, and the bottom of the spring is as much as 125 feet below sea level. The spring has sufficient pressure and discharge to be noticeable at the surface of the ocean. The water, like much of the artesian water in Florida, contains hydrogen sulphide. According to the appearance of the discharge at sea level the orifice of the spring may be as much as 200 feet in diameter. No discharge measurements were made, but the discharge may be comparable to that of some of the larger springs in the peninsula. This spring is probably the same as that referred to by Matson and Sanford.[54]

Wells

General features

Records of representative artesian wells in various parts of the peninsula are shown in the table on pages 165 to 189, which also includes a few records of wells representing water-table conditions. The areas in which the artesian wells will flow under natural pressure are shown in plate 10, and the height to which the water will rise in tightly cased wells is shown on plate 12 and in the tables. The artesian wells range from about 50 feet to more than 1,000 feet in depth, depending on the local conditions within the area in which they are constructed. The wells range from about 2 inches to more than 12 inches in diameter. Few

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52 U. S. Coast and Geodetic Survey Chart 3258, Florida inside route, St. Augustine to Titusville, 1931.

53 Rude, G. T., St. Augustine and its oceanic spring: Geog. Soc. Philadelphia Bull., vol. 23, no. 3, pp. 85-91, 1925.

54 Matson, G. C., and Sanford, Samuel, op. cit., pp. 207, 218, 213, 397.

of the wells are entirely cased, and the casing usually terminates in the top of the first consolidated limestone penetrated. Some wells as much as 1,000 feet deep may have only about 100 feet of casing. Generally the wells are equipped with valves, so that the flow can be controlled or shut off. However, a few wells are not equipped with valves and permit continuous waste of water. (See pl. 13, B.)

Most of the artesian wells are within the areas in which the wells flow, and the greatest concentrations are in irrigation districts, as in Sarasota, Manatee, and Seminole Counties. In parts of the irrigation districts in Seminole County there is an average of one or more wells for each acre of land irrigated. In some of the larger cities, such as Jacksonville, wells are numerous. There are also a large number of non-flowing artesian wells used for surface drainage in and near Orlando, in Orange County. A few of the flowing artesian wells are used for drainage on the east coast.

The capacity of the wells depends on the hydrologic conditions and the construction of the wells. In general the wells with the smallest capacities are in the southern part of the peninsula. In Sarasota County[55] some of the deeper wells that penetrate the Hawthorn formation, the Tampa limestone, and the Ocala limestone yield little or no water from the Tampa and Ocala, the artesian formations that yield large supplies of water to wells except in the southern part of the peninsula.

The yield of flowing artesian wells under natural flow ranges from a few gallons to more than 1,000 gallons a minute. The largest yields by natural flow are in the eastern and northeastern parts of the peninsula, where the artesian pressure is relatively large and the surface of the ground is only a few feet above sea level. One of the largest yields observed was about 2,000 gallons a minute from a well 8 inches in diameter at Crescent Beach (well 20, St. Johns County). The largest reported yield by natural flow is 6,200 gallons a minute from well 2 in Brevard County, a 12-inch well.

When wells are flowing under natural artesian pressure, the pressure at the mouth of the well is almost zero, so that the draw-down, or loss in head resulting from the discharge of water, is almost equal to the head with reference to the outlet of the well. Such temporary loss in head for different flowing wells in different parts of the peninsula

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55 Stringfield, V. T., Exploration of artesian wells in Sarasota County, Florida: Florida Geol. Survey 23d-24th Ann. Rept., pp. 202-214, 220, 1933.

has been observed to range from a fraction of a foot to about 45 feet. Obviously, the maximum loss of head in a flowing well is limited to the shut-in head. The results of the losses of head may be expressed in terms of specific capacity, which is the number of gallons discharged per unit loss of head. The specific capacity is significant for comparison of yield of different wells and for determining the loss of head that will result if the yield of the well is increased by pumping. Data regarding the specific capacities of a few wells for which calculations could be made are shown in the following table:

Specific capacity of artesian wells in Florida peninsula

Well no.	Diameter (inches)	Pressure head (feet)	Yield (gallons a minute)	Specific capacity (gallons a minute for each foot of loss in head with reference to the measuring point)
		Brevard County		
2	12	25	6,200	248
4	12	16	2,100	131
5	12	13	3,000	230
14	12	31	3,200	103
24	12	39	3,200	82
8	10	34	4,350	128
6	8	14	2,500	178
10	8	24	1,860	77
23	8	39	2,000	51
26	6	35	2,000	57
12	6	37	1,000	27
16	6	35	1,440	41
18	6	42	1,081	25
21	6	19	1,004	52
22	6	23	783	34
25	6	39	1,000	25
3	4	16	416	26
20	4	29	332	11
		Clay County		
6	8	45	700	16
12	6	41	750	18
22	6	22	650	27
21	6	28	1,004	36
23	4	34	350	10
5	2	26	25	1
		Flagler County		
4	6	15	500	33
1	4	10	350	35
		Hendry County		
2	4	27	400	15
		Polk County		
38	18	[1]9	7,500	833
		Palm Beach County		
10	8	35	400	11
11	6	32	350	10

1 Draw-down in nonflowing well.

The largest yield recorded from a nonflowing well in the peninsula is 7,500 gallons a minute from well 38 in Polk County. The discharge measurement was made in 1926 by the American Agricultural Chemical Co.

Subsurface leakage of wells

Few of the artesian wells in the peninsula are completely cased, and in many of them the uncased parts extend through water-bearing beds at several horizons. Under such conditions water entering the well from beds with relatively high artesian pressure may escape into beds with lower pressure instead of rising to the surface or remaining confined in the well.

The artesian pressure of the water in the middle and upper parts of the Hawthorn formation in different localities may be higher or lower than the artesian pressure of water in the underlying part of the Hawthorn and the Tampa and Ocala limestones. Wells penetrating these formations may have subsurface leakage unless they are properly cased.

In Baker County and elsewhere in the northern part of the peninsula the artesian head of the middle and upper parts of the Hawthorn formation is higher than that in the lower part and the underlying Ocala limestone. Wells drilled into the Ocala in that area should therefore be cased to prevent leakage from the upper beds into the lower beds. East of that area, in Duval and Nassau Counties, and in most of the other parts of the peninsula where the Hawthorn formation is present the pressure in the Hawthorn formation is less than that in the underlying limestones, and subsurface leakage in wells may occur by loss of water to the Hawthorn formation. The observed difference in head ranges in different parts of the peninsula from a fraction of a foot to as much as 40 feet.

Exploration of artesian wells in the northwestern part of Sarasota County[56] revealed no underground leakage in wells in that locality. However, it is entirely possible that some leakage had taken place but that the pressure of the beds at the two horizons was at equilibrium at the time the tests were made.

Well data collected subsequent to that work indicate that underground leakage occurs in other localities. On the west coast of Manatee County wells that will flow are reported to have been nonflowing during construction, before their upper parts were cased.

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56 Stringfield, V. T., Exploration of artesian wells in Sarasota County, Florida: Florida Geol. Survey 23d-24th Ann. Rept., pp. 199-216, 1933.

Near Sun City, in the southwestern part of Hillsborough County, a well 340 feet deep was reported to be nonflowing until well 14 at Sun City, 550 feet deep, with only 42 feet of casing, was constructed, thus indicating that part of the water from the rocks penetrated by well 14 that normally would rise to the surface through that well enters the rocks penetrated by the 340-foot well.

A well in the town of Green Cove Springs (well 14, Clay County) is reported to have had a pressure head of about 21 feet above the surface of the ground in 1927, when it was constructed. In 1934 it had a reported pressure head of 1.5 feet above the surface of the ground, or about 24 feet above sea level. Other wells observed in that vicinity had pressure heads of about 40 feet above sea level. Even though well 14 is reported to be cased to a depth of about 400 feet below the surface, the loss of head in that well may be caused by leakage through defective casing. Although the loss of head may be attributed to other causes, the inference of underground leakage is substantiated to some extent by the reports that the water level in this well is influenced by fluctuations in Green Cove Springs, a few hundred yards to the east. The water of Green Cove Springs comes from a relatively shallow source and should not influence the water level in a well cased to a depth of 400 feet unless there is some defect in the casing.

Surface drainage into wells

In some parts of the lake region and other localities where the surface drainage is poorly developed and the ground water stands several feet below the surface in wells, surface water is drained into wells constructed for that purpose. The drainage wells are located in sink holes or other depressions, along margins of lakes, or in ditches, in order that the mouths of the wells will be lower than the area drained. Probably the largest number of drainage wells is in and near Orlando, in Orange County, where more than 120 wells penetrating the Ocala limestone are in use for drainage. About 90 of the wells are owned by the city of Orlando, and practically all the sewage and run-off from rainfall in the city is disposed of through drainage wells. About 30 wells are owned and operated by the highway department of Orange County for drainage of roads in the county. The wells range from about 6 to 16 inches in diameter and from about 160 feet to more than 800 feet in depth. In parts of Orange County the static water levels representing the piezometric surface of the water in the Ocala limestone, as measured in wells, range from a few feet to as much as 60 feet below the surface of the ground. The estimated drainage capacities of the wells range from less than 100 gallons to several thousand gallons a minute. The maximum capacity reported was 9,500 gallons a minute for well 50 (county well 16), about 4 miles northeast of Orlovista. The effect of recharge through drainage wells in Orange County has been described above. Notes on drainage wells in the peninsula are included in several reports.[57]

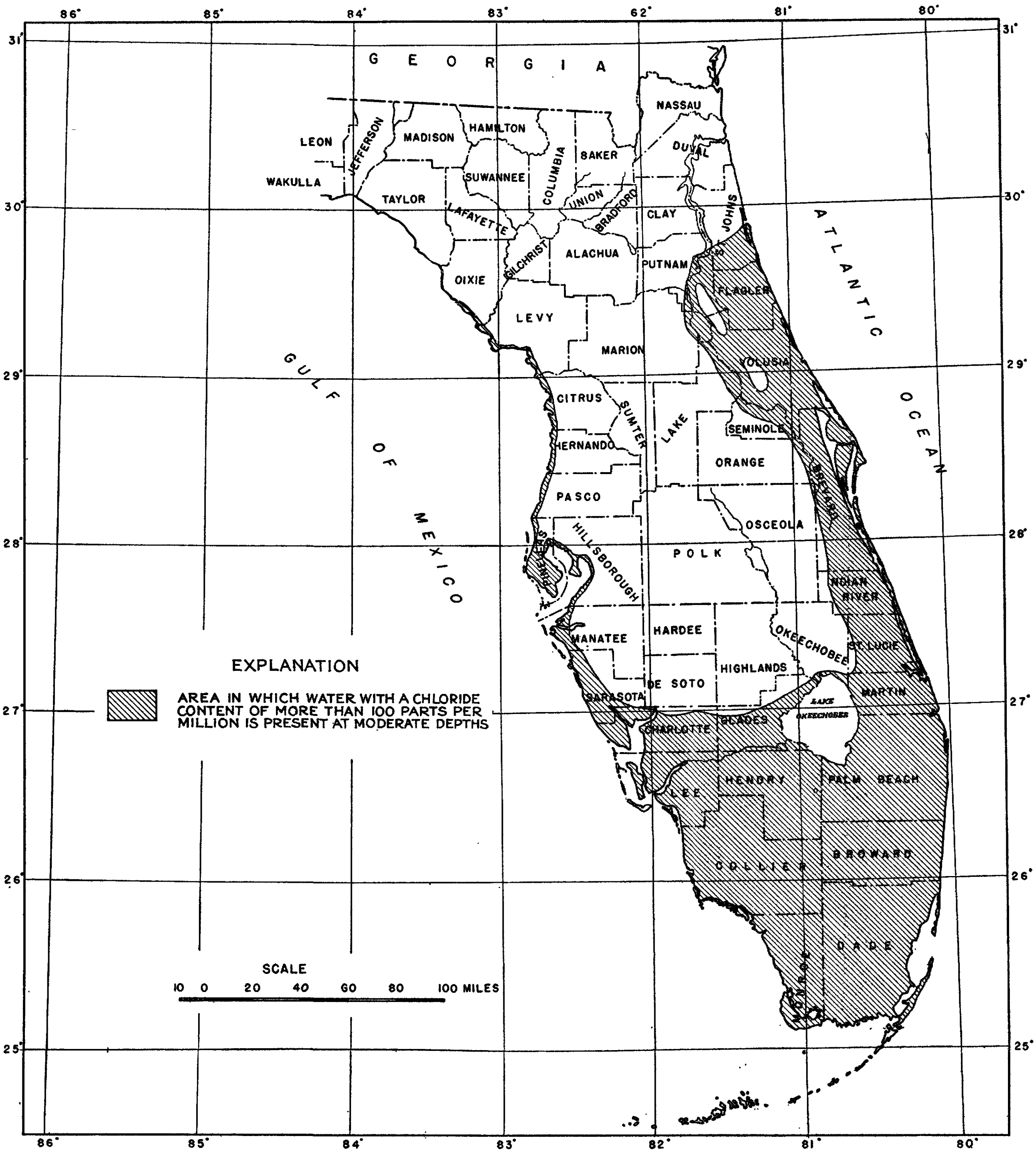
Areas of highly mineralized water and their relation to the piezometric surface

Numerous field determinations of the chloride content of ground water, both artesian and nonartesian water, were made during the investigation. On the basis of these tests together with many published[58] and a few unpublished analyses of water, the general areal extent of relatively highly mineralized ground water was outlined. According to the records of deep wells it appears that salt water underlies the entire peninsula. However, it is confined to rocks of great depths except in certain coastal areas and in the southern part of the State. The areas in which the chloride content of the water is more than about 100 parts per million at relatively moderate depths are represented in plate 16. The area on the east coast includes part of St. Johns County and extends from that county to the southern part of the peninsula and as far inland as the eastern parts of Marion, Lake, and Seminole Counties, including part of the valley of the St. Johns River.

Salt Spring, in Marion County, one of the larger springs in the peninsula, yields salt water. There are other small salt-water springs along the valley of the St. Johns River. As may be noted on plate 16, there are within this area two districts in which the ground water at moderate depth is low in chloride content. One extends as a narrow strip from southeastern Putnam County into northwestern Volusia County between the valley of the St. Johns River and Crescent Lake. The other is in the southwestern part of Volusia County, east of the St. Johns

57 Sellards, E. H., A preliminary report on the underground water supply of central Florida: Florida Geol. Survey Bull. 1, pp. 60-67, 1908; Some Florida lakes and lake basins: Florida Geol. Survey 3d Ann. Rept., pp. 68-76, 1910. Stringfield, V. T., Ground-water investigations in Florida: Florida Geol. Survey Bull. 11, pp. 19-24, 1933.

58 Collins, W. D., and Howard, C. S., Chemical character of the waters of Florida: U. S. Geol. Survey Water-Supply Paper 596-G, 1928.



MAP OF FLORIDA PENINSULA REPRESENTING AREAS IN WHICH HIGHLY MINERALIZED WATER IS PRESENT AT MODERATE DEPTHS.

River Valley. These are within local areas in which the piezometric surface is relatively high.

The area of relatively highly mineralized water extends through the southern part of the State and occupies a narrow belt on the west coast. Fortunately the shallow water in most of the Florida peninsula has relatively low mineral content, and with careful development water supplies suitable for public and private consumption have been obtained and may be obtained in the future from that source.

Certain general relations between salt and fresh water in coastal areas are known and have been summarized by Brown.[59] The general relations in Sarasota County have been described by the writer.[60] The principle of equilibrium between salt and fresh water as applied to the hydrology of seacoasts is sometimes referred to as the "theory of Ghyben and Herzberg"[61] and may be expressed by the formula $\underline{h} = \frac{t}{g-1}$, in which $\underline{h}$ is the depth of fresh water below sea level, $\underline{t}$ is the height of fresh water or hydrostatic head above sea level, and $\underline{g}$ is the specific gravity of the salt water. The specific gravity of sea water varies somewhat from one locality to another and may also be different at different depths. Where the specific gravity of the sea water is 1.025 the fresh water will extend 40 feet below sea level for every foot that the ground water stands above sea level. This theory is applicable in a general way to the artesian conditions in the Florida peninsula. In the central part of the peninsula, where the pressure is high, the salt water occurs only at great depths, but in the coastal areas, where the pressure is low, salt water is present at shallow or moderate depths. This general relation is also present locally, as in Putnam and Volusia Counties, where water of relatively low mineral content is found in an area where the piezometric surface is high, and highly mineralized water is found in adjacent areas of low pressure head.

In several of the coastal areas where highly mineralized water is present, the pressure of the artesian water is sufficient to cause the water to discharge through submarine springs, and no encroachment of sea water is now occurring, but encroachment may occur if a sufficient lowering of pressure takes place.

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59 Brown, J. S., A study of coastal ground water, with special reference to Connecticut: U. S. Geol. Survey Water-Supply Paper 537, 1925.

60 Stringfield, V. T., Ground-water resources of Sarasota County, Fla.: Florida Geol. Survey 23d-24th Ann. Rept., pp. 167-177, 1933.

61 Brown, J. S., op. cit., p. 16.

A well at Titusville, in Brevard County, is reported[62] to have penetrated a thin bed of salt at a depth of about 50 feet below the surface. Although this is the only record of the presence of salt that has been reported, it appears likely that salt as thin beds or disseminated in the materials penetrated might escape notice. Salt water resembling sea water in composition but more than twice as concentrated as sea water was penetrated at moderate depth in Manatee County.[63] Under these conditions the contamination of the artesian water must be caused by the presence of salt water or mineral salts within the formation, and thus the flushing action of the artesian water is one of the controlling factors in the present distribution of the highly mineralized water.

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62 Matson, G. C., and Sanford, Samuel, op. cit., p. 276.

63 Stringfield, V. T., Exploration of artesian wells in Sarasota County, Fla.: Florida Geol. Survey 23d-24th Ann. Rept., p. 219, 1933.

Records of wells in the Florida peninsula

[Date on which the well was completed, depth and diameter of the well, probable geologic formation that is the principal source of the water, depth to which the well is cased, pressure head or level of the water expressed in feet above (+) or below (-) the measuring point, date of measurement, altitude of measuring point (M. P.) referred to mean sea level, and use and temperature of the water. Abbreviations: O, Ocala limestone; H, Hawthorn formation; T, Tampa limestone; R, railroad water supply; P, public water supply; N, water not used; Ind., industrial use; Irr., irrigation; D, domestic; M, medicinal; F, fire protection; A, swimming pool, park, tourist camp, etc.; Dr., drainage; B, supply for boat basin; S, stock. See pages 175-189 for further details.]

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level		M. P. (feet)	Use	Temperature (°F.)
						Feet	Date			
					Alachua County					
1	....	250	8	O	90	-12	1/Apr. 17, 1934	50	R	74
2	Feb. 1929	583	8	O	526	-35	....	75	P	..
2a	1913	415	10	O	98	- 7.53	1/Sept.29, 1934	46	N	..
3	1913	378	8	O	...	-36	....	76	P	..
4	....	80	12	O	...	-13.2	Apr. 25, 1934	58	N	..
5	Sept. 1913	118	10	O	67	-41	....	84	P	..
6	....	75	8	O	75	-11.0	1/Apr. 25, 1934	56	R	..
7	....	155	6	O	155	-30 -38	....	81	Ind.	..
8	....	116	4	H	...	- 5.5	Apr. 19, 1934	156	Irr.	..
9	....	42	4	H	42	-14	....	155	P	..
9a	....	35	3.5	H	25	+ 2.5	Nov. 15, 1934	145	Irr.	70
10	1927	390	10	O	245	-130	....	175	Ind.	..
11	....	442	8	O	442	-127	1932	173	Ind.	73
12	Oct. 1930	335	8	O	120	-144	Sept. 5, 1934	184	Ind.	74
13	....	1,000	6	O	...	-83	....	140	D	..
14	Sept. 1934	243	10	O	123	-95.8	1/Nov. 17, 1934	142	Ind.	75
15	1898	395	6	O	...	-14.0	1/Apr. 22, 1934	81	R	..
16	1926	190	6	O	150	-62.8	1/Apr. 22, 1934	143	N	72
17	About 1910	97	6	O	97	-69.2	1/Apr. 22, 1934	124	...	..
18	....	75	4	O	75	-62.0	....	116	...	..
19	....	44	48	O	...	-43	Aug. 30, 1932	72	...	..
20	....	92	2	O	...	-57.5	Aug. 31, 1932	91.9	...	..
21	....	58	2	O	...	-35	Sept.28, 1932	79.4	...	..
22	....	218	8	O	...	-81.5	Nov. 7, 1932	163.3	...	..
23	....	115	6	O	...	- 5.6	Nov. 29, 1932	65.6	...	..
24	....	115	6	O	...	-19	Nov. 29, 1932	78	...	..
25	....	135	6	O	...	-38.1	Dec. 2, 1932	91	...	..
					Baker County					
1	Feb. 1933	236	4	H,O	212	-90	....	165	...	..
2	....	94	2.5	H	...	+15	March, 1932	50	...	74
3	....	137	2	H	...	-30	....	128	...	..
4	....	175	2	H	...	-11.5	Apr. 13, 1934	131	P	72
5	....	165	6	H	...	-66	Dec. 19, 1932	134.6	...	..
					Bradford County					
1	1900	529	5	O	500	-94.4	Nov. 7, 1934	170	P	..
2	1928	580	10	O	500	-80	1928	166	...	72
3	....	90	3	H	60	-20	....	166	P	72
4	....	250(?)	5.5-2.5	H	250(?)	- 2	Apr. 19, 1934	148	...	..
5	1931	120	4	H	120	-18	....	150	P	72
					Brevard County					
1	....	400	...	O	...	+ 3.9	Aug. 16, 1934	8	M	80
2	1932	137	12	O	...	+25	1932	3	...	..
3	1922	400	4	O	...	+16	Aug. 10, 1934	6	Irr.,Ind.	78
4	1932	615	12	O	...	+16	....	8	Ind.	80
5	1932	415	12	O	...	+13	Aug. 16, 1934	6	...	76
6	1929	626	8	O	80	+14	....	4	...	78
7	1890(?)	313	4	O	81.5	+18	Aug. 10, 1934	12	...	77
8	1916	310	10	O	100	+34	....	7	...	79
9	1931	420	8	O	80	+24.5	Aug. 10, 1934	4	Ind.,D	79
10	1932	227	4	O	90	+24	1/Aug. 16, 1934	12	D	79
11	1932	350	6	O	...	+38	Aug. 15, 1934	5	Ind.	80
12	1926	400	6	O	100	+37.0	1/Aug. 15, 1934	11	Ind.	80
13	Sept. 1927	511	6	O	110	+23.5	Aug. 8, 1934	20	F	79
14	1927	600	12	O	...	+31.5	....	15	P	79
15	1928	400	6	O	80	+39.1	....	9	Ind.	78
16	....	400	4	O	110	+35	Aug. 10, 1934	11	Dom.	79
17	1927	300	6	O	110	+22	Aug. 10, 1934	23	Dom.	79
18	1923	620	6	O	100	+42	....	10	...	79
19	1929	413	2	O	80	+28.7	Aug. 15, 1934	24	D	..
20	1929	447	4	O	125	+29.5	Aug. 14, 1934	36	Irr.	..
21	1927	610	6	O	120	+19.5	Aug. 14, 1934	36	Ind.,D	78
22	1926	350	6	O	150	+23+	Aug. 14, 1934	16	Ind.	79
23	1929	872	8	O	170	+39.1	....	7	Ind.	79
24	1929	1,000	12	O	156	+39.1	....	7	Ind.	..
25	1922	630	6	O	160	+39.1	....	7	Ind.	..
26	1929	1,000	8	O	260	+35.0	1/Aug. 9, 1934	12	Ind.	79

1/ Also measured on other dates; see table of well measurements.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level		M. P. (feet)	Use	Temperature (°F.)
						Feet	Date			
					Broward County					
1	....	152	12	H(?)	150	- S	....	10	P	76
2	1926	108	10	H(?)	140	- 3	Mar. 9, 1934	5	N	..
3	1929	3,010	8-12	...	3,012(?)	+30	....	...	...	..
					Citrus County					
1	Jan. 1927	150	10	0	135	- 4(?)	....	5(?)	P	76
2	Sept.1933	80	2.5	0	70	- 5(?)	....	5(?)	Ind.	..
3	....	200	12	0	...	+ 0.5	1/.............	22	Ind.	..
4	1910	193	5	0	...	-13.5	1/Jan. 19, 1934	26	D	..
5	1918	68	4	0	40	-50	....	60	...	73
6	1927	109	4	0	70	-75	....	95	S	74
7	1923	200	10	0	99	-22	....	52	P	..
8	1917	80	2	0	50	-16	....	50	D	..
9	....	53	2	...	...	-26	....	47.9	...	..
10	....	50	2	...	...	-45.7	Sept.16, 1932	60.1	...	..
11	....	60	4	...	...	-57.6	Sept.16, 1932	63.7	...	..
12	....	45	3	0	...	-15.6	1/July 6, 1933	32.9	...	..
13	....	113	3	0	...	- 8.3	1/July 7, 1933	38.2	...	..
14	....	99	3	0	...	-13.2	1/July 8, 1933	47.7	...	..
15	....	82	3	0	...	-17.5	1/July 8, 1933	44.5	...	..
16	....	126	3	0	...	-64.0	1/May 10, 1933	70.5	...	..
17	....	79	3	...	...	-41.9	1/May 8, 1933	58.0	...	..
18	....	101	3	0	...	- 9.7	1/July 10, 1933	20.7	...	..
19	....	48	2	...	...	-15.4	1/July 10, 1933	32.2	...	..
20	....	27	2	0	...	- 6.7	1/July 10, 1933	11.6	...	..
					Clay County					
1	1930	580	4.5	0	500	- 6.5	June 6, 1934	60	D	75
2	1897	450	3	0	...	+39.+	May 16, 1934	15	P	74
3	1912	450	4	0	300	+45	1/May 16, 1934	8	P	74
4	1910	530	6	0	350	+44	June 4, 1934	12	D	81
5	1907	330	3	0	300	+25	June 4, 1934	50	...	72
6	1925	414	8	0	100	+45	June 4, 1934	11	Ind.	72
7	1907	498	3	0	300	+45	June 4, 1934	30	D	71
8	1907	360	3	0	330	+17.+	June 4, 1934	37	P	72
9	1927	419	6	0	36	+40	June 2, 1934	30	Irr.	73
10	....	450	4	0	80	+41	May 16, 1934	18	P	74
11	1909	500	4	0	137	+41	June 6, 1934	14	Ind.	76
12	May 1934	400	6	0	72	+41.5	1/June 6, 1934	13	....	74
13	1890(?)	600	4	0	150(?)	+18.0	1/June 7, 1934	20	D	81
14	1927	850	8	0	400	+ 1.5	May 7, 1934	23	P	82
15	1929	680	6	0	420	-75.2	1/Nov. 11, 1934	160	Irr.	72
16	....	400+	5	0	400	-10.2	1/June 6, 1934	90	D	72
17	....	400+	6	0	350+	- 4.95	1/Nov. 2, 1934	85	Irr.	..
18	1928	500+	8	0	250	- 9.0	1/June 5, 1934	83	Irr.	..
19	1928	550	8	0	260	-18	1928	91	P	72
20	1929	420	8	0	220	-20.2	1/June 6, 1934	88	S	..
21	1926	600	6	0	200	+28	1/Aug. 30, 1934	20	Irr.	78
22	1926	600	6	0	200	+21.5	1/June 2, 1934	16	...	84
23	1920	360+	6	0	80	+34	June 1, 1934	11	Irr.	75
24	1917	329	4	0	50+	+30	June 1, 1934	15	Irr.	76
					Collier County					
1	1910	590	6	H	...	+ 1.5	Feb. 21, 1934	44	...	78
2	1925	42	2	...	...	-15	....	42	...	72
3	....	400	6	H	...	+18.0	Feb. 20, 1934	7	...	80
4	....	500	3.5	H	...	+27.5	1/Feb. 20, 1934	13	...	77
5	April 1924	432	6	H	400	+11.5(?)	Feb. 15, 1934	3.5	P	77
6	July 1929	426	6	H	320	+29	Feb. 15, 1934	6	Ind.	77
7	Sept. 1925	565	4	H	390	+30.5	1/Feb. 15, 1934	6	P	78
					Columbia County					
1	March 1934	325	12	0	160	-42.15	1/Nov. 7, 1934	104	P	..
2	1905	420	8	0	300+	-138.7	Apr. 12, 1934	201	P	..
3	....	65	2	H	65	-38	....	96	P	72
4	1931	152	2	0	150	-142	....	171	...	72
5	....	70	10	0(?)	...	-17.9	1/Apr. 26, 1934	41	R	..
6	....	70	2	0(?)	...	-44.9	Apr. 17, 1934	66	...	..
7	....	100	6	H	...	-13	Oct. 24, 1932	121.7	...	..
8	....	165	6	0	...	-58	Oct. 21, 1932	123.3	...	..
					Charlotte County					
1	Jan. 1934	977	6	0	...	+23	Jan. 29, 1934	7	A	84
					Dade County					
1	1919	1,000	8	Miocene(?)	925	+35	Reported 1933	12	A	..
2	1931	5,432	14	Eocene (?)	1,100	+28.5	Nov. 28, 1934	13	...	80
3	1926	60	6	...	55	-12.6	Feb. 19, 1934	14	...	..
4	....	20	2	...	18	- 4.5	Feb. 18, 1934	7	D	..
5	....	81	12	...	72	- 5.4	....	10	P	77
6	....	26	6	...	24	- 6.8	....	10	P	74

1/Also measured on other dates; see table of well measurements.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level		M. P. (feet)	Use	Temperature (°F.)
						Feet	Date			
					De Soto County					
1	....	375	8	H	...	- 8.63	Jan. 24, 1934	59	N	..
2	May 1930	395	12-10	H	327	+22	July 7, 1932	32	P	80
3	....	400(?)	6	H	...	+ 1.5	Jan. 27, 1934	50(?)	N	79
4	....	400(?)	6	H	...	-21	Feb. 17, 1934	75	N	..
					Duval County					
1	....	575	10	H,O	...	+39.5	Aug. 19, 1930	12	...	..
2	....	575	4	H,O	...	+44	1/Oct. 8, 1930	10	...	..
3	Apr. 1934	585	8	H,O	357	+42.2	June 15, 1934	11	P	..
4	....	875	6	O	400	+ 1.3	1/June 15, 1934	55	D	..
5	1912	1,150	6	O	...	+24	Aug. 15, 1930	24	Ind.	84
6	....	1,075	10	O	...	+36.5	1/May 8, 1931	22	...	..
7	June 1925	875	8	O	540	+35.7	1/June 15, 1934	24	D	..
8	May 1924	763	8	O	563	+45	Aug. 21, 1930	12	...	..
9	Feb. 1923	755	8	O	542	+34	Aug. 15, 1930	22	...	..
10	May 1926	660	6	O	520	+45	Aug. 15, 1930	10	...	..
11	1930	840	8	O	450	+42.5	1/May 9, 1931	15	...	84
12	Apr. 1923	729	8	O	476	+35.5	1/May 11, 1931	10	...	..
13	1928	705	8	O	503	+46.2	1/ June 1934	10	...	..
14	....	800(?)	10	O	...	+34	Sept. 9, 1930	14	...	..
15	....	560	4-2	O	500	+45.5	May 11, 1933	20	...	..
16	1917	710	8-6	O	710	+41.2	Aug. 23, 1930	22	D	..
17	....	632	10	O	...	+49	May 9, 1931	9	D	..
18	1898	650	6	O	...	+20	....	10	...	..
19	Dec. 1932	725	6-4	O	500	+43.0	Apr. 10, 1934	18	D	74
20	1920	115	2	H	100+	-14.9	Apr. 13, 1934	91	D	72
21	1920	120	1¼	...	120	- 7	1/Apr. 18, 1934	95	...	70
22	1927	600	4	O	420	+38	1/May 16, 1934	16	P	75
23	Dec. 1931	448	6	O	322	+33	Aug. 28, 1934	25	Ind.	75
24	1929	1,060	6	O	583	- 0.5	Nov. 5, 1934	65	D	74
25	....	780	6	O	300+	+35.0	1/Nov. 3, 1934	25	Irr.	76
					Flagler County					
1	1926	105	4	O	102	+ 9	June 25, 1934	14	Ind.	75
2	1890	134	5	O	130	+12	June 25, 1934	14	N	75
3	1891	108	6	O	108	...	....	..	...	75
4	....	105	6	O	105	+15	June 25, 1934	10	...	74
5	1926	105	4	O	100	+13	June 25, 1934	8	...	74
6	1926	135	4	O	120	+13	June 25, 1934	9	...	73
7	1910	210	4	O	100+	+ 0.5	June 28, 1934	28	...	72
8	....	160	4	O	100	+ 2.0	June 28, 1934	26	...	72
9	1907	240	4	O	120	+ 0.5	June 28, 1934	28	...	73
10	....	150(?)	2	O	...	+ 5	May 25, 1934	13	...	72
11	....	400	6	O	...	+ 7.5	May 25, 1934	10	...	74
12	1909	300	5	O	130	- 2.0	....	23	...	..
13	1919	180	6	O	...	- 8.0	....	..	...	..
					Gilchrist County					
1	1928	115	5	O	35	-21.4	Apr. 25, 1934	42	P	73
2	....	300(?)	3	O	150(?)	-42.5	1/Apr. 25, 1934	63	...	..
3	....	47	2	...	...	-40.3	Dec. 16, 1934	49.6	...	..
4	....	40	2	...	...	-32	Dec. 16, 1934	40.8	...	..
5	....	63	2	...	...	-55	Sept. 1, 1934	67.2	...	..
6	....	110	2	...	...	-60	Dec. 20, 1934	92.1	...	..
7	1928	175	8	...	100+	-12.2	Nov. 17, 1934	22	R	..
					Glades County					
1	....	525	6	H	...	+ 8	May 8, 1933	45	D	76
2	....	804	6	H,T	700	...	....	..	...	..
					Hamilton County					
1	1913	308	6	O	138	-84	....	140	P	72
2	Aug. 1932	345	8	O	110	-104	....	146	P	72
3	....	525	8	O	500+	-112	June 1933	146	...	..
4	1926	303	10	O	205	-76.88	1/Apr. 12, 1934	136	P	72
					Hardee County					
1	....	800	6	H,O	...	-19.2	Feb. 21, 1934	115	N	..
2	1914(?)	686	6	H,O	...	+10	Feb. 16, 1934	52	...	74
3	1914	730	8	H,O	...	-28	....	103	...	..
					Hendry County					
1	....	600	3	H,T	...	+15	Feb. 21, 1934	25	Irr.	77
2	1911	640	6	H,T	...	+28	1/Feb. 2, 1934	18	P	81
					Hernando County					
1	1926	200	8	O	100	-38.5	1/Jan. 25, 1934	71	Dr.	..
2	1926	200	8	O	100	-39	Jan. 24, 1934	71	Dr.	..
3	1933	804	10	O	...	-229	....	256	D, Irr.	74
4	1926	200(?)	18	O	40(?)	-65.4	1/Jan. 25, 1934	97	D	..
5	....	225	2	O	225	-100	....	129	S	..
6	1927	103	2	O	100	-22	....	44	D	74
6a	....	46	2	...	...	-24	Sept.14, 1932	56.7	...	..
7	....	30	1.5	...	27	-19	....	20	D	72
8	1926	250	5	T,O	100	-107	1/Mar. 3, 1934	133	...	..
9	1928	602	18	O	478	-97.7	1/Sept.17, 1934	133	P	77

1/ Also measured on other dates; see table of well measurements.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level Feet	Water level Date	M. P (feet)	Use	Temperature (°F.)
					Hernando County - Continued					
10	1917	213	8	O	125	-100	....	133	...	..
11	1927	205	10	O	100	- 5	Feb. 2, 1934	47	Ind.	..
12	1927	190	10	O	100	- 5	....	47	Ind.	..
13	....	74	2	O	74	-21	....	54	Dom.	..
14	1921	984	10	O	100	-45	....	79	...	..
15	....	200+	6	O	...	-15.8	Jan. 26, 1934	72	Dom.	..
16	1925	114	6	T,O	60	-79	....	105	P	72
17	....	74	6	...	...	-20.6	....	56.6	...	..
					Highlands County					
1	....	640	8-6	T,O	...	+17.9	Feb. 15, 1934	36	A	78
2	....	900	6	O	400	-25	Feb. 21, 1934	133	...	..
3	....	116	1¼	...	116	- 2	....	...	...	..
4	Mar. 1933	192	12-8	...	189	...	....	139	...	..
					Hillsborough County					
1	1930	340	...	T	...	- 6.88	1/June 20, 1930	44.94	P	..
2	1930	304	...	T	...	- 7.83	1/June 20, 1930	44.59	P	74
3	1930	354	...	T	...	-11.19	1/June 20, 1930	48.25	P	73
4	1930	344	...	T	...	-10.77	1/June 20, 1930	49.53	P	..
5	1930	349	...	T	...	-10.58	1/June 20, 1930	49.34	P	..
6	1930	296	...	T	...	-11.39	1/June 20, 1930	50.45	P	..
7	1930	349	...	T,O	...	-16.27	1/June 20, 1930	55.73	P	..
8	1930	345	...	T,O	...	-13.65	1/June 20, 1930	54.21	P	72
9	1930	318	...	T	...	-15.58	1/July 2, 1930	54.44	P	..
10	1930	289	...	T	...	-12.01	1/June 20, 1930	54.17	...	..
11	1930	300	...	T	...	-17.63	1/June 20, 1930	60.19	P	..
12	1930	298	...	T	...	-15.35	1/June 20, 1930	58.41	P	74
13	1930	300	...	T	...	- 7.0	1/Oct. 2, 1930	59.19	...	..
14	1926	550	10	T	42	+ 0.5	Feb. 22, 1934	17	...	76
15	....	200(?)	4	T	...	+ 6.0	Feb. 22, 1934	11	...	75
16	....	100	6	T	...	- 1.8	Apr. 18, 1934	5	...	..
17	1923	3,255	...	Eocene(?)	...	- .5	Apr. 19, 1934	10	...	..
19	....	237	4	T	83	- 9.1	Mar. 7, 1934	109	Irr.	72
20	....	337	4	T,O	60	-18.0	....	118	Irr.	72
21	1906	380	6	T,O	60	-56	....	76	...	..
22	....	150	4	T	70	-12.5	Mar. 7, 1934	62	Irr.	..
23	1907	360	10	T,O	110	-36.9	1/Sept.21, 1934	128	P	..
24	1914	637	16	T,O	160	-40	....	132	P	..
						-44	....			
25	1927	367	12	T,O	100	-40	....	128	P	77
26	Mar. 1934	805	26-16	O	361	-20.8	1/Nov. 21, 1934	100(?)	Ind.	..
27	Nov. 1929	776	16-12	O	170	+ 3.25	1/Nov. 21, 1934	92(?)	Ind.	79
					Indian River County					
1	1928	538	4	O	190	+24	Aug. 14, 1934	31	Irr.	79
2	1923	660	4	O	150	+27.7	Aug. 14, 1934	28	Irr.,Ind.	79
3	1914	400	2	O	200	+29.5	Aug. 14, 1934	16	D	80
4	1924	507	6	O	180	+36	1924	15	Ind.	80
5	....	600	4	O	320	+20.+	Feb. 13, 1934	25(?)	D	78
6	....	560	4	O	140	+17.7	Feb. 13, 1934	30	Irr.	77
7	....	400(?)	4	...	...	+ 6.5	Feb. 13, 1934	16	A	74
8	....	500	4	O	...	+21	Feb. 13, 1934	30	D	..
9	1913	500	4	O	...	+23	....	30	P	..
10	1922	667	8	O	...	+35	....	..	P	..
11	1920	560	4	O	...	+33	Nov. 29, 1934	..	Irr.	77
					Lake County					
1	....	200	6	O	...	-18.3	June 27, 1934	101	Ind.	..
2	1926	194	8	O	84	-11	1926	105	Dr.	..
3	Dec. 1928	191	10	O	140	-61	Dec. 1928	148	P	..
4	Dec. 1928	191	12	O	140	-63	Dec. 1928	150	P	..
5	1926	420	8	O	...	-16	1/Jan. 12, 1934	132	P	..
6	....	200(?)	4	O	...	- 5.5	1/Jan. 12, 1934	122	Irr.	..
7	June 6, 1927	294	12	O	125	+ 6	Dec. 8, 1933	90	P	..
8	1928(?)	185	3	O	...	-14	Oct. 1933	75	P	..
9	1928(?)	215	5	O	...	-14	Oct. 1933	75	P	..
10	....	180	6	O	...	-15.+	....	70+	P	..
11	....	80	2	O	...	+10.5	June 12, 1934	6	D	73
12	....	80	2	O	...	+ 6.5	June 12, 1934	10	D	73
13	....	155	10	O	92	-17	....	76	P	76
13a	....	96	4	...	...	-12.3	Nov. 15, 1932	77.3	...	..
14	....	250	6	O	100	- 4	Mar. 27, 1934	80	Ind.	..
15	....	288	6	...	...	-14.5	Nov. 21, 1932	72.9	...	..
16	....	97	4	...	...	-41.0	Nov. 21, 1932	102	...	..
					Lee County					
1	1928	685	6	H	235	+11.6	1/Feb. 10, 1934	5	Ind.	82
2	1928	188	6	H	186	+ 9.0	Feb. 14, 1934	8	D	75
3	1928	182	6	H	180	+11.0	Feb. 14, 1934	7	D	74
4	1927	620	6	H	120	+28.5	Feb. 10, 1934	10	Irr.	82
5	1930	520	6	H	120	+27.5	1/Feb. 10, 1934	9	Irr.	82
6	1928	970	6	T,O	190(?)	+21.0	1/Feb. 10, 1934	14	Irr.	86
7	1929	445	8	H	100+	+32	Feb. 13, 1934	11	A	83
8	....	700(?)	6	H,T(?)	160(?)	+13	Feb. 21, 1934	37	Ind.	86
9	1926	650+	4.5	...	150	+35.0	Nov. 24, 1934	9	P	82
9a	....	127	4.5	...	45	+ 7	....	7	D	..
10	....	173	4	...	60	+16	Feb. 9, 1934	9	Irr.	76
11	....	85	2	...	35	+ 5.7	Feb. 9, 1934	9	D	73

1/ Also measured on other dates; see table of well measurements.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level		M. P. (feet)	Use	Temperature (°F.)
						Feet	Date			
					Lee County - Continued					
12	1929	620	6	...	200	+28.0	1/Feb. 22, 1934	15	Irr.	88
13	1933	899	6	...	200	+25.0	1/June 17, 1934	13	Irr.	85
14	1924	165	6	...	120	+19	Feb. 22, 1934	12	Dom.	79
15	1910(?)	162	1.5	...	100(?)	+11	Feb. 22, 1934	12	...	..
16	1924	1,100	6	H,T,O	200	+22.0	1/July 17, 1934	15	Irr.	84
17	....	950+(?)	3.5	...	150(?)	+20.0	Feb. 22, 1934	16	Irr.	80
18	1928	725	6	H	200	+22.0	1/Feb. 22, 1934	16	Irr.	80
					Levy County					
1	Jan. 1927	717	8	O	209	-14.2	1/Apr. 24, 1934	64	Ind.	74
2	1923	190	6	O	90	-54.8	1/Sept.29, 1934	105	P	..
3	1930	75	3	O	75	-20.9	Mar. 31, 1934	73	...	..
4	1928	1,115	8	...	1,115	-10.5	1/Apr. 24, 1934	18	...	..
5	....	97	4	O	97	- 6	...	7	...	..
6	....	105	4	O	...	-29.0	Sept. 9, 1932	78	...	..
7	....	36	2	O	...	-24	Nov. 11, 1934	39.4	...	..
8	....	21	2	...	...	- 4	Nov. 11, 1934	32.6	...	..
9	....	16	2	O	...	-.4	Nov. 11, 1934	27.2	...	..
10	....	36	2	O	...	-21.3	1/Mar. 30, 1933	62.4	...	..
11	....	32	2	O	...	-25.5	1/Sept. 7, 1932	68.4	...	..
12	....	98	6	O	...	-28.0	1/Jan. 23, 1933	71.4	...	..
13	....	125	6	O	...	-41.3	Jan. 24, 1933	82.5	...	..
14	....	10	2	...	...	- 3.2	Dec. 21, 1932	8.3	...	..
15	....	75	2	O	...	- 3.2	Dec. 21, 1932	14.0	...	..
16	....	124	6	O	...	-48.7	Dec. 10, 1932	89.5	...	..
17	....	70	6	O	...	- 4.6	Dec. 8, 1932	39.8	...	..
18	....	40	6	O	...	- 3.4	Dec. 12, 1932	11.9	...	..
19	....	38	2	O	...	-18	Feb. 15, 1933	50.5	...	..
20	....	54	6	O	...	-10	Sept. 6, 1932	11.5	...	..
21	....	101	3	O	...	- 2.2	1/Aug. 7, 1933	30.9	...	..
22	....	15	2	...	...	- 9.1	Dec. 21, 1932	10.0	...	..
					Manatee County					
1	....	500	4	H,T	...	...	...	...	...	..
2	1925	650	6	H,T,O	200	+16.7	June 11, 1931	8.±	P	..
3	1911	450	6	H,T	...	+ 6	June 11, 1931	...	...	..
4	1910	450	4	H,T	200	...	...	...	P	..
5	....	8	...	...	...	...	...	...	D	..
6	1932	398	6	H,T	40	- 8	June 1932	...	D	..
7	....	550	8-6	H,T	250	+17	June 1931	8±	A	..
8	....	600	8-6	H,T,O	250	+16.3	1/Jan. 23, 1934	8±	A	78
9	....	8	...	...	...	- 8	...	...	D	..
10	1932	225	6	H	40	...	...	...	...	..
11	....	500	4	H,T	...	+18	June 11, 1931	...	D	..
12	....	250	...	H	...	+ 8	1931	...	...	..
13	1912	646	8	H,T,O	...	...	...	...	D	..
14	....	402	4	H,T	...	+11.6	June 11, 1931	13	D	..
15	1914	640	5	H,T,O	...	+11.5	1/May 28, 1931	7	D	..
16	....	400	4	H,T	...	+17.4	June 11, 1931	7	D	..
17	1922	652	8-6	H,T,O	272	+	...	...	D	..
18	....	500	6	H,T	...	+	...	...	N	78
19	1916	634	8	H,T,O	...	+	...	...	D,Irr.	..
20	1929	700	8-6	H,T,O	200	...	...	...	Irr.	80
21	1929	700	8-6	H,T,O	200	...	...	...	Irr.	..
22	....	600	6	H,T,O	150	+ 5.±	1931	...	Irr.	79
23	....	510	8-6	H,T,O	275	+	...	...	Irr.	77
24	....	135	6	H	...	+	...	...	Irr.	..
25	....	135	5	H	...	+	...	...	Irr.	..
26	....	135	5	H	110	+	...	...	Irr.	..
27	....	135	5	H	110	+	...	...	Irr.	..
28	....	360	3	H	...	+10	June 19, 1931	...	D	..
29	1931	600	6	H,T,O	...	...	...	...	D	..
30	1930	112	5	H	...	+ 5	June 1931	...	Irr.	..
31	1930	115	2	H	20	+ 4	June 1931	...	D	76
32	....	82	2	H	...	+ 5	June 1931	...	Ind.	..
33	....	360	6	H,T	...	+ 9	June 17, 1931	...	Ind.	76
34	....	115	5	H	...	+ 5	1931	...	...	..
34a	....	435	6	H,T	...	+ 5	1931	...	Irr.	77
35	1927	922	16-12	H,T,O	353	+ 1	1/June 10, 1931	15	P	..
36	1927	922	18-12	H,T,O	353	+ 1	June 10, 1931	...	P	..
37	1925	701	8-6	H,T,O	250	...	...	...	Ind.	..
38	....	650	6	H,T,O	...	...	...	...	Ind.	..
38a	....	180	8	H	...	...	...	...	Ind.	..
39	....	40(?)	4	H	...	+ 1.4	1/Sept.27, 1930	6	...	79
40	1931	525	8	H,T	...	+ 5.9	1/Jan. 8, 1932	20	...	78
41	....	600	8	H,T	...	+ 4	June 13, 1931	...	D	..
42	....	600	8	H,T	...	...	...	...	D	..
43	June 1915	700	8	H,T	271	+ 7.6	1/July 7, 1932	16	P	80
44	About 1910	450	6	H,T	...	+ 8.1	July 23, 1931	16	D	..
45	....	500	6	H,T	...	+ 3	June 23, 1931	...	D,I	..
46	Nov. 10, 1928	650	6	H,T	...	+	...	...	Ind.	..
47	....	500	4	H,T	...	+14	June 21, 1931	...	D,Irr.	..
48	1929	550	8	H,T	...	+ 9	May 29, 1931	...	D	83
49	1914	556	8-6	H,T	...	+	...	...	...	..
50	....	500(?)	6	H,T	...	+15	...	...	Irr.	78
51	....	450(?)	8	H,T	...	+ 8.2	1/Sept. 9, 1932	20	Irr.	..
52	1927	480	6	H,T	...	+	...	...	Irr.	..
53	1923	500	8	H,T	250	+11	May 29, 1931	...	D	..
54	....	500(?)	6	H,T	...	+	...	...	...	..
55	....	573	6	H,T	...	+	...	...	Irr.	78
56	....	400	4	H	...	...	...	...	...	..
57	....	500	4	H,T	...	+16	June 5, 1931	...	Irr.	..
58	....	600	6	H,T	...	+	...	...	D,Irr.	..

1/Also measured on other dates; see table of well measurements.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level: Feet	Water level: Date	M. P. (feet)	Use	Temperature (°F.)
					Manatee County - Continued					
59	1915	365	6	H	...	+12.0	1/ Sept.26, 1930	10	Irr.	77
60	....	150	2	H	...	+16	Sept.26, 1930	...	D	77
61	....	365	6	H	...	+	....	...	B	77
62	....	400	6	H	...	+	....	...	Irr.	..
63	....	400	6	H	...	+	....	...	Irr.	..
64	....	536	6	H,T	...	+11.6	1/ May 29, 1931	15	Irr.	..
65	About 1925	550	6	H,T	...	+	....	...	Irr.	..
66	....	1,025	16(?)	...	...	+	....	...	Ind.	83
67	....	2,660	16(?)	...	...	+	....	...	N	84
68	....	100(?)	6(?)	H	...	+	....	...	N	76
69	....	578	6	H,T	...	+	....	...	...	80
70	1931	812	12.5	H,T,O	...	+ 9.2	Jan. 23, 1934	15	...	..
71	....	198	6	H	...	+13	Sept.23, 1930	...	D,Irr.	74
72	....	634	6	H,T	...	+ 5.4	1/ Sept. 7, 1932	13	P	..
73	....	634	6	H,T	...	...	....	...	P	..
74	1903	800	6	H,T,O	...	+	....	...	P	..
75	1929	330	6	H	40	+18	June 2, 1931	...	Irr.	..
76	....	400(?)	6	H	...	+19	June 2, 1931	...	D,Irr.	..
77	1928	404	6	H	230	+12.0	1/ Jan. 22, 1934	12	D,Irr.	76
78	....	457	8	H,T	...	+ 9	....	...	D,Irr.	..
79	....	400	6	H	...	+	....	...	Irr.	..
80	1922	550	6	H,T	100	+11	....	...	D,Irr.	..
81	1913	385	6	H	125	+16.5	Jan. 22, 1934	8	N	76
82	....	126	1¼	H	...	...	....	...	D	..
83	1905	618	...	H,T	...	+	....	...	Irr.	..
84	1896	532	3	H	...	+ 9	Jan. 5, 1934	...	Irr.	..
85	1912	525	6	H,T	...	+16	....	...	D,Irr.	78
86	1911	375	4	H	...	-	....	...	P	..
87	1931	400	8-6	H	...	- 9	1931	...	D	..
88	....	400(?)	6	H	...	+ 5.6	1/ June 11, 1931	26	D	78
89	....	400(?)	6	H	...	- 0.1	1/ June 3, 1931	31	N	..
90	1916	600	5	H,T	...	...	....	...	D,Irr.	78
91	1912	700	6	H,T	...	+18.4	June 3, 1931	15	Irr.	79
92	....	600	...	H,T	...	-	....	...	...	..
93	....	400	8	H	...	+20	June 2, 1931	...	D	..
					Marion County					
1	1933	96	6	O	96	-33.2	1/ Aug. 25, 1934	89	Dr.	..
2	....	1,150	6	...	...	-13.9	1/ Mar. 30, 1934	65	...	..
3	1932	99	4	O	99	+ 5.0	1/ May 8, 1934	20	...	74
4	....	1,140	6	...	...	-42.0	1/ Mar. 30, 1934	80	...	..
5	....	135	6	O	135	+ 5.75	1/ May 5, 1934	40	...	74
6	1931	350	6	O	152	-13.05	1/ May 7, 1934	64	Dr.	..
7	....	169	8	O	96	-13	Nov. 14, 1934	46	P	74
8	....	88	2	O	...	-15	1/ Sept. 7, 1932	52.3	...	..
9	1892	1,200	8	O	...	-74.4	1/ Mar. 27, 1933	115.5	...	..
10	....	46	3	O	...	-31.1	1/ Mar. 1, 1933	72.3	...	..
11	....	286	3	O	...	-23.1	Oct. 4, 1932	73.3	...	..
12	....	80	3	...	...	-30	Oct. 4, 1932	92	...	..
13	....	34	3	O	...	-27.5	Oct. 7, 1932	70	...	..
14	....	50	2	O	...	-43.5	Oct. 7, 1932	91.9	...	..
15	....	102	2	O	...	-24.0	Feb. 11, 1933	56.2	...	..
16	....	65	3	O	...	-23.8	1/ July 8, 1933	56.7	...	..
17	....	69	3	...	...	-12.9	1/ July 8, 1933	60.2	...	..
18	....	55	2	O	...	-44.0	Feb. 22, 1933	85.2	...	..
19	....	179	4	O	...	-69.1	Feb. 22, 1933	108.4	...	..
20	....	142	6	...	...	-45.7	Dec. 2, 1932	97.4	...	..
21	....	59	36	...	...	-47.5	1/ Apr. 28, 1933	92.9	...	..
22	....	45	36	...	...	-39.0	1/ Sept.26, 1932	89.0	...	..
23	....	54	3	...	...	-19.8	1/ June 23, 1933	67.0	...	..
24	....	68	36	...	...	-46.6	1/ Sept.26, 1932	88.5	...	..
25	....	98	4	...	...	-45.1	1/ Apr. 18, 1933	87.0	...	..
26	....	250	6	...	...	-19.1	1/ June 16, 1933	70.2	...	..
27	....	100	6	...	...	-26.2	1/ June 16, 1933	73.1	Dr.	..
28	....	65	4	...	...	- 2.9	1/ May 15, 1933	24.0	...	..
29	....	125	2	...	...	-16.1	Apr. 21, 1933	67.8	...	..
30	....	90	6	...	...	-20.8	Dec. 21, 1932	72.3	...	..
31	....	133	6	...	...	- 2.2	Nov. 4, 1932	46.3	...	..
32	....	100	6	...	...	-14.8	Sept.27, 1932	62.3	...	..
33	....	140	6	...	...	-18.0	Dec. 20, 1932	63.4	...	..
34	....	31	2	...	...	- 9.8	Mar. 29, 1933	49.4	...	..
35	....	80	2	...	...	-28.3	Mar. 29, 1933	68.2	...	..
36	....	49	3	...	...	0.0	1/ July 1, 1933	40.8	...	..
37	....	78	3	O	...	-27.5	1/ July 8, 1933	69.5	...	..
38	....	85	3	O	...	-33.9	1/ June 27, 1933	76.8	...	..
39	....	83	3	O	...	-30.1	1/ July 8, 1933	74.5	...	..
40	....	91	3	O	...	-38.9	1/ July 8, 1933	82.5	...	..
41	....	54	3	O	...	- 1.4	1/ July 8, 1933	45.6	...	..
42	....	57	3	O	...	- 3.9	1/ July 24, 1933	47.7	...	..
43	....	29	2	...	...	-19.5	Apr. 5, 1933	52.3	...	..
44	....	13	2	...	...	- 6.4	1/ Apr. 5, 1933	34.8	...	..
					Martin County					
1	1928	700	3	T,O	700(?)	+31	Mar. 12, 1934	17	Irr.	76
2	1928	750	3.5	T,O	750(?)	+30	Mar. 12, 1934	17	Irr.	76
3	1924	700+	6	T,O	...	+42.0	1/ Mar. 2, 1934	6	D	76
4	....	1,284	4	T,O	...	+28	Mar. 12, 1934	14	Irr.	76
					Monroe County					
1	1910	1,010	10	...	1,010	- 6.6	Nov. 27, 1934	6	...	..
2	....	2,000+	...	...	...	...	....	...	...	..
3	1917	2,555	10	...	1,128	0.0	1917	1	...	..

1/ Also measured on other dates; see table of well measurements.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level		M. P. (feet)	Use	Temperature (°F.)
						Feet	Date			
					Nassau County					
1	1909	400	2	O	...	+40	Apr. 7, 1934	18	P	73
2	1910	600+	8	O	...	+33	Apr. 7, 1934	27	Ind.	75
3	....	600	4	O	...	+15	Apr. 7, 1934	41	S	75
4	....	700	4	O	...	+34.5	Dec. 17, 1934	27	...	73
5	1898	600(?)	3.5	O	...	+46	Apr. 6, 1934	15	Ind.	73
6	1921	750	8	O	450	+29	Apr. 6, 1934	20	P	74
7	....	700	3	O	...	+40	Apr. 5, 1934	14	P	75
8	1931	490	3	O	400	+42	1/ Apr. 6, 1934	16	S	74
9	....	1,000	4	O	450	- 4.3	1/ Apr. 5, 1934	64	R	73
10	....	500	4	H,O	...	+22	Apr. 5, 1934	34	P	73
11	1932	600	3	O	300+	+22	Dec. 18, 1934	38	...	..
12	1904	600	3	O	...	+18.+	1/ Apr. 7, 1934	22	Ind.	74
13	....	525	2	O	240	+46	1/ Apr. 7, 1934	18	S	72
14	1920	400	3	O	192	+38	Apr. 7, 1934	26	P	74
15	1910	40+	2	H	40	+ 1	....	18	...	..
16	1931	492	3	O	200	+42	1/ Apr. 7, 1934	22	P	74
17	....	106	1¼	H	106	-19.7	Apr. 9, 1934	89	D	71
18	....	82	1.5	H	82	- 4.9	Apr. 9, 1934	75	D	70
19	1928	201	2	H	100	- 1	Apr. 9, 1934	68	D	70
20	1900	650	6	...	...	0.0	....	69	...	..
21	....	96	1.5	H	96	+ 1	Apr. 9, 1934	66	D	70
22	1910	648	8	O	...	- 5.1	Dec. 19, 1934	72	...	..
					Okeechobee County					
1	....	718	8-6	O	484	+18	1/ Feb. 15, 1934	32	N	79
					Orange County					
1	....	409	12	O	130	-28.4	1/ June 19, 1934	96	Dr.	..
2	Mar. 30, 1927	495	12	O	155	-40.2	1/ May 11, 1933	97.5	Dr.	..
3	Jan. 18, 1927	413	12-10	O	158	-36.5	1/ Aug. 8, 1931	97.8	Dr.	..
4	....	...	5	...	...	-47.5	1/ May 1, 1933	105.5	Dr.	..
5	Feb. 20, 1926	400	12	O	...	-46.6	1/ May 1, 1933	104.3	Dr.	..
6	May 28, 1926	217	12	O	...	-44.3	1/ Aug. 8, 1931	106.1	Dr.	..
7	....	300	12	O	...	-38.7	1/ June 26, 1934	107	Dr.	..
8	Nov. 8, 1926	348	12	O	90	-35.1	1/ June 26, 1934	104	Dr.	..
9	....	811	8	O	67	- 3.8	1/ Sept.15, 1930	70.7	Dr.	..
10	....	300	8	O	...	- 4.7	1/ June 26, 1934	74	Dr.	..
11	July 1, 1928	483	12	O	153	-43.1	May 11, 1933	101	Dr.	..
12	Dec. 19, 1929	364	12	O	77	...	....	...	Dr.	..
13	May 4, 1929	377	12	O	113	...	....	...	Dr.	..
14	Dec. 14, 1926	405	12	O	120	...	....	...	Dr.	..
15	Feb. 2, 1927	427	12	O	158	-38	Feb. 1927	...	Dr.	..
16	Aug. 8, 1927	465	12	O	213	-22.5	Aug. 1927	...	...	..
			10		285					
			8		417					
17	Sept. 1, 1926	430	12	O	129	...	....	...	Dr.	..
			10		370					
			8		385					
18	May 6, 1926	353	12	O	100	-27	May 1926	...	Dr.	..
			10		253					
19	....	865	...	O	...	...	....	...	Dr.	..
20	Apr. 2, 1926	313	12	O	113	-42	Apr. 1926	...	Dr.	..
21	Oct. 18, 1926	213	12	O	80	-40	Oct. 1926	...	Dr.	..
22	Oct. 19, 1926	183	12	O	130	- 8	Oct. 1926	...	Dr.	..
23	Oct. 2, 1926	228	12	O	146	-45	Oct. 1926	...	Dr.	..
24	Oct. 1, 1926	408	12	O	123	-23	Oct. 1926	...	Dr.	..
25	Dec. 17, 1926	405	12	O	108	-43	Dec. 1926	...	Dr.	..
			10		180					
26	....	203	12	O	100	...	....	...	Dr.	..
27	Mar. 23, 1926	219	12	O	124	-41	Mar. 1926	...	Dr.	..
28	July 8, 1926	469	12	O	125	-34	July 1926	...	Dr.	..
29	....	169	12	O	120	...	....	...	Dr.	..
30	Mar. 12, 1926	408	...	O	109	-46	Mar. 1926	...	Dr.	..
31	Feb. 15, 1927	451	...	O	...	-40	Feb. 1927	...	Dr.	..
32	....	415	...	O	...	...	....	...	Dr.	..
33	Feb. 4, 1927	439	12	O	97	...	....	...	Dr.	..
			10		390					
34	Nov. 12, 1926	454	12	O	172	-35	Nov. 1926	...	Dr.	..
			10		292					
35	Oct. 1927	160	8	O	128	-35.5	1/ May 15, 1934	97.35	Dr.	..
36	Nov. 1927	457	12	O	99	-36.5	1/ June 4, 1934	99.1	Dr.	..
37	Nov. 1927	375	8-6	O	272	-37.1	1/ Nov. 2, 1933	99.2	Dr.	..
38	Nov. 7, 1927	141	8	O	74	-37.3	1/ Jan. 4, 1934	98.6	Dr.	..
39	Dec. 29, 1927	417	12	O	211	-35.5	1/ Mar. 12, 1934	97.5	Dr.	..
40	Dec. 13, 1927	474	8	O	94	...	....	...	Dr.	..
41	Jan. 1928	383	8	O	139	-35.5	1/ May 10, 1933	94	Dr.	..
			6		383					
42	Apr. 1928	390	12	O	153	-36	1/ June 26, 1934	101.9	Dr.	..
43	June 1928	427	8	O	169	-38.9	1/ June 26, 1934	105.1	Dr.	..
44	June 1928	463	12	O	105	-31.5	1/ Mar. 12, 1933	94.2	Dr.	..
45	July 1928	452	8	O	161	...	....	...	Dr.	..
46	Aug. 1928	422	12	O	137	-36.9	1/ Nov. 22, 1933	98.5	Dr.	..
47	Aug. 1928	328	6	O	328	- 5.45	1/ Mar. 8, 1932	72.6	Dr.	..
48	Sept.1928	123	8	O	75	-31.85	1/ Oct. 4, 1930	97.7	Dr.	..
49	Nov. 1928	421	8	O	162	-30	....	...	Dr.	..
50	Jan. 1929	383	16	O	100	-24	....	...	Dr.	..
51	Dec. 1928	199	8	O	100	-36.35	1/ Sept. 9, 1932	98.2	Dr.	..
52	....	435	12	O	113	-31.5	1/ June 26, 1934	98	Dr.	..
53	1930	416	12	O	...	-28.7	1/ June 26, 1934	98.06	Dr.	..
54	Oct. 1928	400	10	O	81	-25	1/ May 18, 1934	86.8	Dr.	..
55	1930	400(?)	12	O	...	-10	1/ June 18, 1934	77.4	Dr.	..
56	Apr. 5, 1926	423	12	O	124	-58.6	1/ June 29, 1934	118.6	Dr.	..
57	....	465	4	O	...	- 2.66	1/ Jan. 6, 1932	70.8	N	..

1/ Also measured on other dates; see table of well measurements.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level: Feet	Water level: Date	M. P. (feet)	Use	Temperature (°F.)
Orange County - Continued										
58	....	130	4	O	...	+11.4	1/Jan. 6, 1932	74.4	Irr.	..
59	....	300	4	O	...	-22.8	1/Dec. 18, 1933	107	Irr.,Dr.	..
60	1925	500	16	O	...	...	....	...	Irr.,Dr.	..
61	....	500(?)	8	O	...	-36.4	1/June 6, 1934	123.4	Dr.	..
62	....	484	12-10	O	...	-24.3	1/May 11, 1933	101.6	Dr.	..
63	....	300(?)	10	O	...	-14.6	1/Nov. 24, 1933	81.5	Dr.	..
64	....	300(?)	10	O	...	-21.25	1/Nov. 24, 1933	87	Dr.	..
65	1926	211	10	O	205	-22.6	May 1933	69	P	..
66	....	200(?)	4	O	...	+ 7.1	Nov. 28, 1933	35	Irr.	72
Osceola County										
1	1932	90	4	...	...	+ 2.75	Feb. 2, 1934	76	...	74
2	1927	475	6	O	...	+ 1.25	Feb. 2, 1934	72	A	75
3	....	400(?)	4	O	...	+ 2.66	Dec. 21, 1934	70	Irr.	74
4	1910	350	8	...	120	+ 7	....	65	...	..
5	1915	450	12	...	150	+ 7	....	65	...	..
6	1916	729	8-6	...	610	-19	....	81(?)	...	..
7	1925	602	10-8	...	478	-19	....	81(?)	...	..
8	1924	600	6	...	...	-26	....	80	...	..
Palm Beach County										
1	....	60	2	...	60	- 6	....	17	Ind.	..
2	1932	182	6	...	182	-16	....	18	Ind.	76
3	1930	180	6	...	180	-13	Mar. 8, 1934	15	...	..
4	1926	1,050	12	O	1,050	+19.25	Nov. 28, 1934	18	...	74
5	1933	85	6	...	85	- 3	....	16	...	75
6	1926	135	16	...	135	-17	Mar. 10, 1934	30	P	..
7	....	135	16	...	135	-19	....	30	P	81
8	1934	202	2	...	202	- 2	Mar. 9, 1934	3	...	..
9	1924	100	10	...	100	-10	Mar. 10, 1934	12	P	77
10	1926	1,332	10-8	O	957	+35	Apr. 24, 1933	18	...	79
11	....	958	6	T,O	850	+32	May 1, 1933	18	N	80
Pasco County										
1	....	140	6	O	100(?)	-19+	Jan. 17, 1934	67	P,Ind.	76
2	1902	80	8	T	80	-16.5	1/Jan. 18, 1934	35	...	..
3	1932	65	1.5	T	56	-12.0	Jan. 18, 1934	78	D	74
4	1932	54	2	T	53	-34.0	....	120	D	74
5	1928	386	12	T	90	-80.17	Apr. 23, 1935	163	P	75
6	....	170	4	T	...	-51	....	154	...	..
7	....	143	4	T	...	-103	May 26, 1934	193	D	73
8	1926	150	10	T	100	-43.5	....	107	P	74
9	1907(?)	90	6	T	...	-15.8	1/Jan. 16, 1934	80	...	..
10	....	95	6	T	...	- 9.3	1/Jan. 16, 1934	73	Ind.	..
11	1912	133	4	H	100	-44	....	238	...	74
12	1890	150	9	T	...	- 7.5	Mar. 5, 1934	54	...	..
13	....	43+	6	T	43	- 7.75	1/Mar. 14, 1934	89	...	..
14	1930	90	1.5	T	65	-11	Jan. 18, 1934	73	D	74
15	1931	96	1.5	T	75	-15	Jan. 15, 1934	78	D	74
16	Nov. 1931	1,008	8	T,O	20	-66	....	126	...	..
17	Dec. 1931	300	6	T	109	-95	....	156	Irr.	74
18	1923	415	10	T	80	-18	....	79	P	76
19	1927	160	10	...	...	-43	....	...	...	..
20	1914	91	3	...	...	-34	....	...	...	..
Pinellas County										
1	Dec. 20, 1922	166	13	T	75	-25.9	Apr. 8, 1933	36	...	..
2	....	186	12	T	...	-27.0	Apr. 8, 1933	37	...	..
3	....	207	12	T	...	-26.0	Apr. 8, 1933	36	...	..
4	....	200	4	T	...	+ 5	Apr. 19, 1934	4	D	..
5	....	192	10	T	...	- 5.8	Sept.12, 1930	15	P	..
6	....	195	10	T	...	-40	....	50	...	..
7	....	195	10	T	...	-40	....	50	...	..
Polk County										
1	Sept. 1932	578	10	T,O	138	-82	....	189	Irr.	..
2	1925	567	10	O	200	-13	....	135	P	76
3	....	400	6	O	100	-18	1/Mar. 16, 1934	111	Ind.	76
4	1932	365	6	O	365	-21	1/Mar. 23, 1934	135	...	..
5	1924	365	10	O	180	- 9	....	122	P	76
6	June 1926	490	10	O	102	-13	....	138	P	79
7	June 1926	680	8	O	75	- 6.3	1/Jan. 10, 1934	132	P	..
8	....	476	6	O	...	- 7.1	1/July 20, 1934	133	R	..
9	1921	753	12	O	100(?)	-107	....	220	Ind.	..
10	1924	360	8	O	...	-107	1/Feb. 29, 1924	220	Ind.	78
11	1910	804	8	O	200+	-97	1/Mar. 15, 1934	213	...	..
12	1922	741	15	O	260	-80	....	192	P	79
13	....	1,201	18	O	360	-75	....	187	P	..
14	....	490	10	O	136	-40	1933	169	P	76
15	1926	155	12	O	145	-13.0	1/Mar. 15, 1934	141	P	..
16	1924	157	10	O	74	- 7.1	1/July 20, 1934	141	P	77
17	1928	245	6	O	200	-22	....	150	Dr.	..
18	1928	195	5	O	160	-23	....	150	Dr.,Irr.	..
19	1917	495	6	O	130	-12	....	134	P	74
20	1916	613	10	O	100	- 3	....	138	P	..
21	1928	404	12	O	162	-40	....	174	P	74
22	1921	600	10	O	...	-50.15	1/July 23, 1934	175	P	75
23	....	400	6	O	...	- 8	....	136	P	..
24	....	700	10	O	...	-14.25	1/Sept.13, 1934	120	...	..

1/Also measured on other dates; see table of well measurements.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level		M. P. (feet)	Use	Temperature (°F.)
						Feet	Date			
					Polk County - Continued					
25	....	550	10	O	...	-17.9	Sept.13, 1934	124	...	..
26	....	700	10	O	...	-14.7	Sept.13, 1934	121	...	..
27	....	685	10	O	...	-29.5	1/Sept.13, 1934	140	...	..
28	1924	630	6	O	30	-33.4	1/July 24, 1934	137	...	..
29	1908	416	8	O	416	-16	....	117	Irr.	..
30	1920	645	18	O	645	-28.7	Sept.26, 1934	136	...	..
31	1927	765	15	O	700	-20	....	130	P	..
32	1916	534	12	O	140	- 6.15	1/Sept.20, 1934	124	Irr.	79
33	1930	798	15	O	98	- 2.45	Sept.20, 1934	119+	Irr.	79
34	1927	1,260	12	O	1,100	- 2.3	1/July 26, 1934	118	P	..
35	....	765	30	O	351	-62.77	1/Nov. 22, 1934	149	Ind.	..
36	....	1,020	15	O	480	-47.0	1/Jan. 9, 1934	150	...	79
37	....	1,000	18	O	500	-42.8	1/Jan. 9, 1934	146	...	..
38	Dec. 2, 1926	852	30-18	O	324	-49.8	1/Nov. 22, 1934	154	Ind.	..
39	1913	480	6	O	200	+11.2	1/Jan. 5, 1934	85	Irr.	75
40	1910	150	6	H,T	30	+ 4.2	Jan. 4, 1934	91	A	72
41	1925	400	8	T,O	160	+ 1.1	1/Sept.21, 1934	92	P	77
42	1913	850	12	O	800	-42	....	132	...	..
					Putnam County					
1	1915	210	2.5	O	210	-50	....	142	D	75
2	....	350	4	O	40(?)	+17	June 1, 1934	23	Irr.	73
3	1922	426	4	O	80	+ 7	May 31, 1934	35	Ind.	74
4	1917	385	4	O	45	+ 9	May 31, 1934	31	Irr.	73
5	....	350(?)	4	O	50(?)	+10	May 31, 1934	30	Irr.	73
6	1924	580	4	O	...	+23	May 31, 1934	26	S	74
7	1933	190	4	O	80	+22	May 11, 1934	5	...	76
8	1926	209	4	O	108	+24	May 11, 1934	11	Irr.	76
9	1926	200	4	O	100+	+23	May 11, 1934	11	Ind.	76
10	1910(?)	160(?)	4	O	...	+12.+	May 11, 1934	14	D	72
11	....	233	3	O	...	+16	May 11, 1934	17+	D	74
12	....	680	12	O	...	+20	1/May 8, 1934	13+	...	75
13	1895	250+	3	O	75	+15	May 8, 1934	19	P	75
14	1926	303	12	O	300	-34.3	1/Apr. 22, 1934	106	P	72
15	1910	196	3	O	70	+19	May 11, 1934	12	R	75
16	1914	320	6	O	320	+10.5	June 9, 1934	14	D	72
17	1931	210	2.5	O	100	+26	May 11, 1934	9	D	72
18	1934	298	3	O	298	- 5.5	May 24, 1934	9	D	72
19	1922	115	2	O	98	-22	May 10, 1934	56	D	74
20	....	200	2.5	O	...	-20.8	1/May 9, 1934	55	...	..
21	1928	185	3.5	O	185	+ 8	May 9, 1934	6	D	72
22	....	60+	1.5	O	60	+ 3	....	12	D	72
23	....	72	1¼	O	72	+ 5	May 9, 1934	9	D	72
24	....	161	6	O	90	+16	....	20	P	74
25	May 1934	140	6	O	108	-12.3	May 24, 1934	...	...	..
26	May 1934	41	2	...	41	- 9.7	May 24, 1934	...	...	..
					St. Johns County					
1	1880	800	8	O	...	+21	Aug. 28, 1934	27	Irr.	74
2	1928	640	6	O	60	+28	Aug. 28, 1934	21	Irr.	76
3	1916	388	6	O	100	+26	Aug. 28, 1934	24	...	75
4	1925	336	6	O	240	+36	Aug. 28, 1934	19	D	74
5	1925	365	6	O	182	+37	Aug. 28, 1934	18	...	74
6	1912	490	6	O	300	+35	Aug. 23, 1934	18	D	75
7	1931	350	6	O	180(?)	+43	Aug. 23, 1934	10	Ind.	72
8	....	300+	...	O	...	+18	June 23, 1934	17	...	74
9	....	300+	...	O	...	+19.0	June 23, 1934	21	...	73
10	1930	400+	6	O	150	+20.0	1/Aug. 31, 1934	22	D	76
11	1909	302	6	O	107	+33	June 8, 1934	7	P	76
12	Aug. 1931	410	6	O	200	+35	June 8, 1934	6	Ind.	76
13	June 1933	421	6	O	193	+31	June 8, 1934	9	Ind.	75
14	1931	216	4	O	104	+38.5	June 22, 1934	6	D	75
15	1933	198	6	O	195	+29.5	June 22, 1934	12	D	74
16	1908	260	5	O	...	+ 1	June 8, 1934	36	Irr.,S	72
17	1923	245	4	O	100(?)	+17	June 26, 1934	14	D	75
18	....	300	6	O	...	+15	June 22, 1934	16	...	82
19	1926	196	4	O	115+	+16	....	11	Irr.	78
20	Oct. 1933	235	8	O	172	+14	June 6, 1934	12	Ind.	81
21	1910	280	6	O	80	+16	June 6, 1934	10	...	76
22	1933	222	3	O	80	+29	May 11, 1934	5	Irr.	72
23	1933	222	3	O	85	+25	May 11, 1934	8	Irr.	72
24	1922	400+	6	O	...	+22.0	May 11, 1934	11	...	73
25	....	180(?)	4	O	...	+23.0	May 11, 1934	11	...	72
26	....	310	8	O	...	+27.2	Aug. 25, 1930	13(?)	D	..
27	Feb. 1887	1,400	12.9	...	170	+30.0	Aug. 25, 1930	10(?)	D	..
28	....	358	8	O	...	+20.2	Aug. 12, 1930	15	P	..
					St. Lucie County					
1	....	800	6	O	800	+31.0	Mar. 13, 1934	12	...	76
2	....	550	3	T,O	550	+26.0	Mar. 13, 1934	19	...	80
3	....	703	4	T,O	60	+21.5	Feb. 17, 1934	20	Irr.	75
					Sarasota County 2/					
1	1924	675	8	H,T,O	80	+ 4.3	3/Mar. 11, 1932	21.1	P	..
2	1924	440	8	H,T	...	+11.6	3/June 24, 1931	15.2	...	..

1/ Also measured on other dates; see table of well measurements.
2/ Stringfield, V. T., Ground-water resources of Sarasota County: Florida Geol. Survey 23d-24th Ann. Rept., table 1, 1933. Reports include records of 233 wells.
3/ Also measured on other dates; see table 3 of Sarasota County report.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level Feet	Water level Date	M. P. (feet)	Use	Temperature (°F.)
				Sarasota County - Continued						
3	About 1924	700	8	H,T,0	...	+ 1.7	3/June 9, 1931	31.4	P	79
4	....	550	6	H,T	...	+17	3/Nov. 30, 1933	7.7	...	71
5	....	720	8	H,T,0	...	- 4.4	3/Apr. 7, 1932	44.4	...	..
6	....	458	8	H	...	+10.7	3/Aug. 4, 1930	10	...	..
7	....	707	8	H,T,0	...	+ 1.4	3/June 20, 1931	29.8	...	..
8	....	684	8	H,T,0	...	+ 0.6	3/Mar. 11, 1932	25.5	...	..
9	Jan. 1928	730	6	H,T,0	101	.....	....	...	...	..
				Seminole County						
1	....	100(?)	2	0	...	+ 4.25	1/May 13, 1933	36	N	72
2	1925	115	3	0	115	+ 0.9	1/May 18, 1933	...	Irr.	73
3	....	75	2	0	60	+	....	...	Irr.	76
4	....	225	4	0	80	- 8.75	1/May 18, 1933	50	Dr.	..
5	....	100(?)	3	0	...	+ 7.0	1/May 19, 1933	31	N	72
6	About 1921	100	2	0	70±	+14.0	May 15, 1933	22	Irr.	74
7	....	140	3	0	...	+10.0	May 18, 1933	...	Irr.	..
8	....	154	6	0	...	- 3.7	1/May 18, 1933	...	N	..
9	1917	105	2	0	...	+ .65	1/May 26, 1933	41	Irr.	72
10	....	100(?)	2	0	...	+ 9.0	1/May 26, 1933	28	Irr.	74
11	....	103	3	0	...	+ 0.7	1/May 15, 1933	34	Irr.	74
12	....	125	2	0	80±	+ 4.6	1/May 26, 1933	33	Irr.	74
13	About 1930	106	3	0	60±	+ 3.6	1/May 26, 1933	36	N	74
14	About 1927	126	3	0	...	+ 7.0	1/Dec. 5, 1933	39	D,Irr.	74
15	1930	130	2	0	...	+11.25	Dec. 5, 1933	...	D,Irr.	73
16	1926	190	3	0	...	+ 1.0	May 15, 1933	...	D	..
17	....	120(?)	3	0	...	0.0	May 17, 1933	...	Irr.	..
18	....	...	6	0	...	+	....	...	...	77
19	....	120(?)	3	0	...	+	....	...	N	76
20	....	120(?)	3	0	...	+	....	...	N	76
21	....	144	3	0	...	+	....	...	N	73
22	....	140(?)	2	0	...	+ 6.6	May 27, 1933	...	...	..
23	June 1930	122	2	0	91	+13.0	May 27, 1933	...	...	74
24	About 1905	100(?)	3	0	...	+10	1/May 24, 1934	15	N	74
25	....	100(?)	3	0	...	+12	May 26, 1934	...	N	..
26	....	93	2.5	0	90	+15.5	1/Aug. 25, 1930	17	Irr.	..
27	....	100(?)	3	0	...	+ 4	May 1933	...	N	..
28	....	100(?)	2	0	...	+15	May 26, 1933	...	Irr.	..
29	Mar. 1925	171	8	0	171	...	....	...	P	..
30	....	100(?)	3	0	...	+ 5.8	May 19, 1933	...	Irr.	72
31	....	100(?)	2	0	...	+ 7.5	May 1933	...	Irr.	72
32	....	143	2	0	140	+15.25	May 26, 1933	10	Irr.	71
33	....	168	2	0	90	+ 3	May 26, 1933	...	Irr.	72
34	....	100(?)	2	0	...	+ 4	May 27, 1933	...	Irr.	72
				Sumter County						
1	1900	110	3	0	110	-76.5	1/Mar. 29, 1934	125	...	..
2	1919	129	5	0	90	-70	....	115	D	..
3	....	75	4	0	75	-10.75	1/Mar. 27, 1934	62	...	..
4	....	180	2	0	180	- 9.9	Mar. 27, 1934	61	...	..
5	1900	225	2	0	225	-13	Mar. 27, 1934	62	Ind.	..
6	1930	830	10	...	830	- 0.2	Mar. 27, 1934	70	...	76
7	1933	400	6	0	400	-15.9	1/Mar. 27, 1934	70	...	..
8	1927	630	12	0	600	+ 0.5	....	72	P	76
9	....	208	4	0	200	-10	....	74	Ind.	78
10	1926	432	12	0	200	-10.5	1/Mar. 26, 1934	88	P	74
11	....	70	3	0	70	- 4.9	Mar. 26, 1934	71	...	..
12	....	253	4	0	...	- 7.0	Nov. 17, 1932	69.1	...	..
13	....	58	2	0	...	-16.4	Nov. 17, 1932	94.9	...	..
14	....	27	2	0	...	- 9.5	Nov. 17, 1932	93	...	..
15	....	33	2	0	...	- 3.6	Nov. 17, 1932	71.7	...	..
				Suwannee County						
1	....	1,145	8	...	790	-60	....	106	P	78
2	1922	655	8	...	520	-60	....	106	P	..
3	....	400	8	...	100	-60	....	106	P	..
4	1928	84	6	...	84	-66.1	1/Apr. 26, 1934	104	Dr.	..
5	1914	300	4	...	...	-35	....	47	P	75
6	....	94	2	T	...	-63.2	Oct. 21, 1932	112.9	...	..
7	....	98	2	T	...	-68.4	Oct. 22, 1932	119	...	..
8	....	69	2	T	...	-51	Oct. 19, 1932	91.5	...	..
9	....	78	2	...	...	-70	Oct. 12, 1932	103.1	...	..
10	....	75	2	...	...	-29	Oct. 17, 1932	61.9	...	..
11	....	57	2	...	...	-41.7	Oct. 17, 1932	80.1	...	..
12	....	130	5	...	...	- 5.2	1/Aug. 27, 1934	104	Dr.	..
				Union County						
1	....	160	4	H	160	-26	....	148	S	..
2	Feb. 26, 1926	662	12	0	152	-79.67	1/Nov. 26, 1934	151	P	..
3	1932	182	10	H	182(?)	-60	....	130	P	..
4	1932	76	6	...	...	+ 4	....	125	...	71
5	....	155	6	0	...	-59.3	Nov. 7, 1932	114.5	...	..
6	....	70	2.5	H	...	-10	Apr. 4, 1934	126	...	..
7	....	900	6	...	...	-58.6	1/Nov. 7, 1934	138.5	...	..

1/ Also measured on other dates; see table of well measurements.
3/ Also measured on other dates; see table 3 of Sarasota County report.

Records of wells in the Florida peninsula - Continued

No.	Date completed	Depth (feet)	Diameter (inches)	Source	Depth of casing (feet)	Water level		M. P. (feet)	Use	Temperature (°F.)
						Feet	Date			
				Volusia County						
1	About 1893	160	10	0	160	-26	Jan. 18, 1934	38	P	..
2	1924	293	24-12	0	293	-43	1924	54	P	..
3	1924	480	10	0	90	-45	....	56	P	..
4	....	189	10-8	0	...	-21.5	Dec. 7, 1933	37	...	..
5	Dec. 1932	125	4	0	80	-10	....	25	D	..
6	....	140	2	0	...	+ 2	....	12	D	72
7	May 1932	160	2	0	...	+ 3	....	18	D	73
8	1914	180	4	0	...	+ 9.5	1/May 23, 1934	25	...	73
9	1920	135	2	0	80	+ 5.2	Aug. 17, 1934	6	F	76
10	1929	190	6	0	90	+ .1	Aug. 16, 1934	11	...	76
11	1923	180	4	0	...	+ 4	Aug. 13, 1934	12	...	73
12	1922	130	4	0	...	+ 1.2	Aug. 13, 1934	10	...	76
13	1931	141	4	0	141	+ 1.2	Aug. 16, 1934	14	...	76

1/ Also measured on other dates; see table of well measurements.

Owners, location, and drillers of the wells, description of the measuring points, and remarks

(Abbreviations: D, driller; M. P., measuring point; A. C. L., Atlantic Coast Line Railroad; S. A. L., Seaboard Air Line Railroad; U. S. E. D., United States Engineer Department; Surface, general surface of ground at well.)

Alachua County

1. A. C. L., High Springs. M. P., top of 8-inch casing, 25 feet below surface.
2. Town of High Springs, High Springs. D., R. J. Neikirk. M. P., surface.
2a. Town of High Springs, High Springs. D., E. A. Durst. M. P., top of 10-inch casing, 29 feet below surface.
3. Town of Alachua, Alachua. D., J. B. McCreary. M. P., top of concrete curb of pit, 1 foot above surface.
4. Well about 2.5 miles southwest of Newberry, at old Neal phosphate mine, sec. 7, T. 10 S., R. 17 E. M. P., top of 12-inch casing, 35 feet below surface.
5. Town of Newberry, Newberry. D., E. A. Durst. M. P., surface.
6. A. C. L., Newberry. M. P., top of 8-inch casing, 28.6 feet below surface.
7. Maddox Foundry & Machine Co., Archer. D., J. O. Edson. M. P., top of pump pit, 6 inches above surface.
8. B. C. Riley, well on State road 13, about 1.5 miles north of Waldo, sec. 11, T. 8 S., R. 21 E. D., J. W. Coleman. M. P., top of 4-inch tee on well, 2 feet above surface.
9. Waldo Ice Co., Waldo. D., Gray. M. P., floor of pump house, 1 foot above surface.
9a. T. K. Godby, about 3/4 mile south of Waldo. D., T. K. Godby. M. P., top of 3.5-inch casing, at surface. Seven flowing wells on property encountered limestone at 25 feet.
10. A. C. L. creosoting plant, about 2 miles north of Gainesville. D., R. M. Perry. M. P., floor of pump house, 1 foot above surface.
11. Chemical Retort Co., about 2 miles north of Gainesville. D., Gray. M. P., pump base, 6 inches above surface.
12. Gainesville Ice Co., Gainesville. D., Gray. M. P., pump base, 2.5 feet above surface.
13. University of Florida, Gainesville. M. P., surface.
14. West Coast Ice Co., Gainesville. D., Gray & Stevens. M. P., pump base, 1 foot above surface.
15. A. C. L., Rochelle. M. P., top of 6-inch casing, 6 inches above surface.
16. Florida Public Service Co., Hawthorn. M. P., top of 5-inch casing, 2.5 feet above surface.
17. J. R. Whiting, Micanopy. D., Barr & Watkins. M. P., top of 6-inch casing, 1.5 feet above surface.
18. Power plant, Micanopy. M. P., top of 4-inch casing, 2 feet above surface.
19. I. Bell, about 0.8 mile northeast of Wade; U. S. E. D. 1. M. P., surface.
20. O. C. Young, about 1.8 miles east of Alachua; U. S. E. D. 7. M. P., surface.
21. C. A. Priest, Arredondo; U. S. E. D. 58. M. P., surface.
22. L. A. Flowers, Campville; U. S. E. D. 118. M. P., surface.
23. U. S. E. D., about 3 miles north of Island Grove, NE¼NW¼ sec. 27, T. 11 S., R. 22 E.; U. S. E. D. 342. D., U. S. E. D.
24. U. S. E. D., about 5.5 miles east of Micanopy, SW¼SE¼ sec. 14, T. 11 S., R. 21 E.; U. S. E. D. 343. D., U. S. E. D. M. P., surface.
25. U. S. E. D., about 1.3 miles northwest of Micanopy, NW¼NE¼ sec. 27, T. 11 S., R. 20 E.; U. S. E. D. 344. D., U. S. E. D. M. P., surface.

Baker County

1. Olustee Experiment Forest Station, about 0.2 mile west of Olustee, sec. 2, T. 2 S., R. 22 E. D., Gray & Stevens. M. P., pump base, 6 inches above surface.
2. U. S. E. D., about 5.5 miles northeast of Macclenny, sec. 2, T. 2 S., R. 22 E. D., U. S. E. D. M. P., surface.
3. School, Glen St. Mary. M. P., floor of pump house, same altitude as surface.
4. L. W. Dykes, Macclenny. M. P., top of 2-inch casing, same altitude as surface.
5. U. S. E. D., about 17 miles northeast of Lake City, NW¼NW¼ sec. 5, T. 2 S., R. 20 E.; U. S. E. D. 332. D., U. S. E. D. M. P., surface.

Bradford County

1. Town of Starke, Starke. M. P., bottom of 5-inch flange on well, 3½ feet above surface.
2. Town of Starke, Starke. D., Gray. M.P., 3.5 feet above surface. Well drilled to depth of 300 feet in 1923; water level 20 feet below surface.
3. Town of Starke, Starke. M. P., surface.
4. Wright & Shandust, Hampton. M. P., top of casing, 6 inches above surface.

Brevard County

1. Dixie Hotel, Titusville. M. P., top of 3/4-inch pipe at pool 1 foot above surface. Water is very salty.
2. M. S. Whaley, Merritt Island, sec. 12, T. 22 S., R. 36 E. D., P. Harrod. M. P., top of casing at surface.
3. R. B. LaRoche, Courtenay. D., T. Sams. M. P., top of 3/4-inch faucet about 150 feet south of well, 1.5 feet above surface.
4. E. P. Porcher, about ½ mile south of Courtenay. D., H. Bruntsch. M. P., top of 12-inch valve, 5 feet above surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Brevard County - Continued

5. E. P. Porcher, Hall Hammock, Merritt Island. D., Peck Harris. M. P., top of 2-inch valve 6 inches above 12-inch casing, 2.5 feet above surface.
6. E. P. Porcher, Hall Hammock, Merritt Island, at Mrs. Wheeler's house. D., H. Bruntsch. M. P., top of 8-inch valve, 1 foot above surface.
7. U. S. Government, Canaveral Light House. M. P., top of 1-inch valve, 10 feet north of lighthouse and 1 foot above surface.
8. E. P. Porcher, Cocoa. D., H. Bruntsch. M. P., top of 10-inch casing, 4 feet above surface.
9. C. A. Jones, Merritt Island, about 1 mile north of Merritt. D., E. C. Smith. M. P., top of 3/4-inch faucet, at northeast corner of house, 1 foot above surface.
10. M. S. Whaley, about 1.5 miles south of Rockledge. D., P. Harrod. M. P., top of 4-inch valve, 4 feet above surface.
11. J. H. Pearson, about 1.5 miles south of Bonaventure. M. P., top of 3/4-inch faucet on well, 1 foot above surface.
12. E. H. Schwartzberg, about 3 miles north of Eau Gallie. D., E. C. Smith. M. P., top of 3/4-inch pipe, 1 foot above surface.
13. Town of Eau Gallie, Eau Gallie. D., E. C. Smith. M. P., top of 2-inch plug in 6-inch tee, 4 feet above surface.
14. Town of Eau Gallie, Eau Gallie. D., E. C. Smith. M. P., pump base, 1 foot above surface.
15. Mathers estate, south end of Merritt Island. D., E. C. Smith. M. P., top of casing, 2 feet above surface.
16. Mathers estate, south end of Merritt Island. M. P., top of 3/4-inch faucet, 1 foot above surface.
17. Mathers estate, at drawbridge on south end of Merritt Island. D., E. C. Smith. M. P., top of 3/4-inch faucet, 13 feet above river level.
18. Mrs. W. B. Crouch, Palm Bay. M. P., top of 6-inch valve at well, 4 feet above surface.
19. R. M. Wall, at St. Johns bridge 9 miles west of Melbourne. D., Hedges. M. P., top of 2-inch well tee, 1 foot above surface.
20. Burkhard, about 9 miles west of Malabar, sec. 4, T. 29 S., R. 36 E. M. P., top of 3/4-inch faucet at well, 1 foot above surface.
21. C. L. Davidson, about 4 miles west of Malabar, sec. 3, T. 28 S., R. 37 E. M. P., top of 1-inch valve at southwest corner of pool, 1 foot above surface.
22. Marshal Lumber Co., Malabar. D., E. C. Smith. M. P., top of 3/4-inch faucet, 2 feet above surface.
23. Couch Manufacturing Co., Grant. D., H. Bruntsch. M. P., pump base, at surface.
24. Couch Manufacturing Co., Grant. D., H. Bruntsch. M. P., pump base, at surface.
25. Couch Manufacturing Co., Grant. D., H. Bruntsch. M. P., pump base, at surface.
26. S. W. Patcher, Micco. M. P., top of 3/4-inch faucet, 2 feet below surface.

Broward County

1. Town of Fort Lauderdale, Fort Lauderdale well 6. M. P., floor of pump house, 1.5 feet above surface. One of six shallow wells on golf course.
2. Town of Fort Lauderdale, Fort Lauderdale, at old plant. M. P., top of 10-inch casing, 6 inches above surface. Well reported to flow at times.
3. Port Everglade Oil Co., Fort Lauderdale. D., Brown & Posey. M. P., surface. Test well for oil.

Citrus County

1. Town of Crystal River, Crystal River. D., Gray. M. P., top of 10-inch casing, same altitude as surface.
2. Ed Sayburn, Crystal River. D., R. L. Allen. M. P., top of 2½-inch casing, at surface.
3. Camp Phosphate Co., about ½ mile west of Felicia, sec. 15, T. 18 S., R. 19 E. D., J. O. Edson. M. P., top of 12-inch casing, 40 feet below surface.
4. Crystal River Rock Co., about 5 miles southeast of Crystal River, sec. 1, T. 19 S., R. 17 E. D., Alberts. M. P., top of 5-inch well casing, 10 feet below surface.
5. J. Lee Allen, about ½ mile northwest of Lecanto, sec. 32, T. 18 S., R. 18 E. D., J. Lee Allen. M. P., top of 4-inch casing, 1 foot above surface.
6. H. Maynard, about 1 mile northwest of Lecanto. D., J. Lee Allen. M. P., top of 4-inch casing, 1 foot above surface.
7. Town of Inverness, Inverness. D., J. O. Edson. M. P., surface.
8. J. O. Edson, Floral City. D., J. O. Edson. M. P., top of 2-inch casing, 2 feet above surface.
9. J. Smith, about 1.5 miles north of Floral City; U. S. E. D. 26. M. P., surface.
10. J. Roberts, about 0.8 mile north of Holder; U. S. E. D. 33. M. P., top of casing, at surface.
11. H. A. Ross, Holder; U. S. E. D. 34. M. P., top of casing, at surface.
12. U. S. E. D., about 3 miles east of Holder; U. S. E. D. 329. D., U. S. E. D. M. P., top of casing, at surface.
13. U. S. E. D., about 2 miles south of Stokes Ferry, SE¼NE¼ sec. 25, T. 17 S., R. 19 E.; U. S. E. D. 330. D., U. S. E. D. M. P., top of casing, at surface. Limestone at depth of 101 feet.
14. U. S. E. D., about 1 mile southwest of Dunnellon, U. S. E. D. 322. D., U. S. E. D. M. P., top of casing, at surface. Limestone at depth of 43 feet.
15. U. S. E. D., about 1½ miles southwest of Dunnellon; U. S. E. D. 323. D., U. S. E. D. M. P., top of casing, at surface. Limestone at depth of 54 feet.
16. U. S. E. D., about 2 miles southwest of Dunnellon; U. S. E. D. 324. D., U. S. E. D. M. P., Top of casing, at surface. Limestone at depth of 114 feet.
17. U. S. E. D., about 3 miles west of Dunnellon, SE¼SW¼ sec. 5, T. 17 S., R. 18 E.; U. S. E. D. 325. D., U. S. E. D. M. P., top of casing, at surface. No limestone penetrated.
18. U. S. E. D., about 5.5 miles west of Dunnellon, NW¼NW¼ sec. 12, T. 17 S., R. 17 E.; U. S. E. D. 326. D., U. S. E. D. M. P., top of casing, at surface. Limestone at depth of 84 feet.
19. M. S. Greer, about 7 miles southwest of Dunnellon, sec. 15, T. 17 S., H. 17 E.; U. S. E. D. 235. M. P., top of casing, at surface.
20. A. D. Williams, Red Level, sec. 25, T. 17 S., R. 16 E.; U. S. E. D. 239. M. P., top of casing, at surface.

Clay County

1. Yale Experiment Station, about 1 mile west of Orange Park. D., Dan Woods. M. P., top of 6-inch pipe, 6 inches above surface.
2. Mrs. H. Hall, Orange Park. D., H. Partridge. M. P., top of 3/4-inch faucet, 2 feet above surface.
3. W. E. Parmenter, Orange Park. D., Allen. M. P., top of 3/4-inch faucet on well casing, 2 feet above surface.
4. R. Sasenett, Orange Park. D., L. T. Ivey. M. P., top of 3/4-inch faucet 20 feet southeast of well, 2 feet above surface.
5. Jennings Artesian Farm Land Co., about 7 miles northwest of Middleburg, sec. 17, T. 4 S., R. 24 E. D., Stafford. M. P., top of 3-inch tee on well, 2 feet above surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Clay County - Continued

6. Columbus Brick & Tile Co., Dixton, sec. 24, T. 4 S., R. 25 E. D., C. T. Ivey. M. P., top of ¼-inch plug in 8-inch casing, 3 feet above surface.
7. Mrs. M. A. Chalker, Middleburg. D., Stafford. M. P., top of 3/4-inch faucet 4 feet south of well, 2 feet above surface.
8. F. W. Buddington, Middleburg. D., Stafford. M. P., top of 3/4-inch faucet, 2 feet above surface. Leaky well.
9. Jennings Artesian Farm Land Co., about 2 miles northeast of Middleburg, sec. 6, T. 5 S., R. 25 E. D., C. T. Ivey. M. P., top of 3/4-inch pipe at 6-inch well tee, 2 feet above surface.
10. Orange Acreage, Russell. D., C. D. Ace. M. P., top of 3/4-inch faucet, 2 feet above surface.
11. L. H. McKee, Hibernia. D., L. T. Ivey. M. P., top of 4-inch tee of well, 2 feet above surface.
12. Girl Scout Camp, about 4 miles northwest of Green Cove Springs, T. 5 S., R. 26 E. D., L. Ivey. M. P., top of 6-inch valve of well, 1.2 feet above surface.
13. St. Elmo Hotel, Green Cove Springs. D., N. B. Ivey. M. P., top of 1¼-inch valve, 1 foot above surface.
14. Town of Green Cove Springs, Green Cove Springs. D., L. Ivey. M. P., top of 2-inch valve at well, 6 inches above surface.
15. Penney Gwinn Farms, NW¼ sec. 17, T. 6 S., R. 24 E. D., Gray & Stevens. M. P., top of 6-inch casing, 1 foot above surface.
16. Penney Gwinn Farms, Camphor Farm, sec. 16, T. 6 S., R. 24 E. M. P., top of 5-inch casing, same altitude as surface.
17. Penney Gwinn Farms, Black Creek well, sec. 13, T. 6 S., R. 24 E. M. P., top of 6-inch casing, at surface.
18. Penney Gwinn Farms, North Kentucky Ave., Penney Farms, sec. 8, T. 6 S., R. 25 E. D., Thompson. M. P., top of 8-inch casing, 7 feet below surface.
19. Penney Gwinn Farms, city well 1, Penney Farms, sec. 16, T. 6 S., R. 25 E. D., Gray. M. P., pump base, 1.5 feet above surface.
20. Penney Gwinn Farms, Spring Bank Dairy, sec. 18, T. 6 S., R. 26 E. D., Gray. M. P., top of 8-inch casing, 1 foot above surface.
21. Grant Van Sant, about 1 mile north of Walkill. M. P., top of 6-inch casing, 1½ feet above surface.
22. Green Cove Springs, Green Cove Springs airport. M. P., center of 6-inch valve, 3 feet above surface.
23. Louis Ivey, about ½ mile northwest of West Tocoi. D., Louis Ivey. M. P., top of 3/4-inch pipe at 6-inch valve, 6 inches above surface.
24. J. O. Nobles, about ½ mile north of West Tocoi. D., J. Frazier. M. P., top of 3/4-inch faucet, 6 feet above surface.

Collier County

1. A. C. L., Immokalee. M. P., top of 6-inch casing, 1.5 feet above surface.
2. Sam Thompson, Immokalee. D., Sam Thompson. M. P., surface.
3. Hotel, Naples. M. P., top of 3/4-inch faucet, 1 foot above surface.
4. Deep Lake Co., Deep Lake. M. P., top of 3½-inch tee, 3 feet above surface.
5. Collier Corporation, well no. 1, Everglades. M. P., top of ell, 3 feet above surface.
6. Collier Corporation, power plant, well 3, Everglades. M. P., top of 3-inch valve, 2 feet above surface.
7. Collier Corporation, Everglades. D., H. Raehn. M. P., top of 3-inch tee, 3 feet above surface.

Columbia County

1. Town of Lake City, about 3/4 mile south of Lake City, sec. 5, T. 4 S., R. 17 E. D., Gray & Stevens. M. P., top of 12-inch casing, 5 feet above surface.
2. Town of Lake City, Lake City. M. P., top of 6-inch ell, 4 feet above surface.
3. Bailey Bros., Ellisville. M. P., surface.
4. O. T. Harrell, about 16 miles south of Lake City on road 2, sec. 15, T. 6 S., R. 17 E. M. P., top of casing, 2 feet above surface.
5. A. C. L., about ¼ mile west of Fort White. M. P., top of 10-inch casing, 16.6 feet below surface.
6. R. F. Pearson, Fort White. M. P., top of pump, 2 feet above surface.
7. U. S. E. D., about 12 miles northeast of Lake City, NE¼SW¼ sec. 4, T. 2 S., R. 18 E.; U. S. E. D. 333. D., U. S. E. D. M. P., surface.
8. U. S. E. D., about 10 miles northeast of Lake City, NE¼SW¼ sec. 4, T. 2 S., R. 17 E.; U. S. E. D. 334. D., U. S. E. D. M. P., surface.

Charlotte County

1. Charlotte Harbor Hotel, Punta Gorda. D., R. A. Davis. M. P., top of 3/4-inch faucet, 1 foot above surface.

Dade County

1. J. Derring, 3250 Miami Ave., Miami. D., Kiser Drilling Co. M. P., surface.
2. East Coast Oil & Natural Gas Co., about 2 miles east of Kendall, sec. 12, T. 55 S., R. 40 E. D., Kiser Drilling Co. M. P., top of 14-inch casing, at surface. Test well for oil. No water reported below 1,800 feet. Head of 32 feet reported when drilled.
3. City of Miami, 7th St. and 57th Ave. SW., Miami. D., Kiser Drilling Co. M. P., top of 6-inch elbow at well, 3 feet above surface.
4. Florida, Royal Palm State Park. M. P., top of 2-inch tee, 6 inches above surface.
5. Town of Homestead, Homestead. D., Kiser Drilling Co. M. P., surface.
6. Town of Homestead, Homestead. D., Kiser Drilling Co. M. P., surface.

DeSoto County

1. Old city well of Arcadia, Arcadia. M. P., cap on well, same altitude as surface.
2. Town of Arcadia, Arcadia. D., R. J. Niekirk. M. P., top of ½-inch pipe on pump, 1 foot below surface.
3. Carlstrom, about 8 miles southwest of Arcadia. M. P., top of casing, 1 foot above surface.
4. About 11.8 miles east of Arcadia on south side of road at Dorr field. M. P., concrete base, 1 foot above surface.

Duval County

1. Town of Jacksonville Beach, Jacksonville Beach. M. P., top of 3/4-inch pipe, 2 feet above surface.
2. Town of Jacksonville Beach, Jacksonville Beach, 2d St. between Railroad and Pablo Aves. M. P., top of 3/4-inch pipe, 1 foot above surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Duval County - Continued

3. Town of Neptune Beach, Florida Boulevard and First St., Neptune Beach. D., Gray & Stevens. M. P., top of ½-inch pipe in well casing, 1 foot above road surface.
4. Mrs. H. V. Stevens, at residence on north side of road to Atlantic Beach, NW¼ sec. 24, T. 2 S., R. 27 E. M. P., top of 1-inch pipe, 3 feet above surface.
5. Jacksonville Gas Co., Acorn and Church Sts., Jacksonville. M. P., top of 3/8-inch pipe above top of concrete wall around well, 4 feet above surface.
6. City of Jacksonville, Huron and Enterprise Sts., Woodstock Park, Jacksonville. M. P., top of ½-inch pipe, 2 feet above concrete floor of pump house.
7. P. Reisz, at Reisz Dairy, on north side of highway to Baldwin 0.6 mile west of Jacksonville city limits. D., Wiggins. M. P., top of 3/4-inch pipe, 2 feet above concrete floor of dairy barn.
8. City of Jacksonville, Panama Park, 63d St. west of Buffalo St., Jacksonville. D., E. A. Durst. M. P., top of ½-inch outlet, 2 feet above surface of pump-house floor.
9. Municipal Golf Links, Municipal Golf Links, Golfair Boulevard and Moncrief Road, Jacksonville. D., E. A. Durst. M. P., top of pipe on pump, 2 feet above surface.
10. Mexican Oil Corporation, Talleyrand Ave., Jacksonville. D., Wiggins. M. P., top of pipe, 4 feet above surface.
11. Ribault Club, Ribault Club, Fort George Island. D., E. A. Durst. M. P., top of 3/4-inch pipe, 1.5 feet above surface.
12. City of Jacksonville, south of post office in Ortega. D., Hugh Partridge. M. P., top of 3/4-inch pipe, 6 inches above surface.
13. Venetian Yacht Club, south of Ortega, on St. Johns River. D., Hugh Partridge. M. P., top of 3/4-inch pipe, 1 foot above surface.
14. U. S. Rifle Range, near Yukon U. S. Rifle Range. M. P., top of ½-inch pipe, 4 feet above surface.
15. W. S. Stover, Dinsmore. D., J. W. Sheffield. M. P., top of 3/4-inch pipe, 1 foot above surface.
16. B. H. Carlton, southwest of Dinsmore near Spalding. M. P., top of 3/4-inch pipe, 1 foot above surface.
17. Bayshore Co., west of Fort George, on east side of Sister Creek and north side of St. Johns River. D., E. A. Durst. M. P., top of 3/4-inch pipe, 2.5 feet above surface.
18. Waterworks Park, Jacksonville. M. P., surface.
19. G. C. Cole, sec. 10, T. 1 S., R. 26 E., about 1 mile north of Trout Creek on Lem Turner Road. D., Gray & Stevens. M. P., top of 4-inch tee on well, same altitude as surface. Pressure head of water in Hawthorn formation is 2.5 feet above surface.
20. J. Beard, Baldwin. M. P., top of 2-inch casing, 5 feet above surface.
21. Fred Lucas, Maxville. D., Fred Lucas. M. P., top of casing, 2 feet above surface.
22. R. G. Crosby, Yukon. D., N. Partridge. M. P., top of 4-inch tee, 1 foot above surface.
23. R. M. Williams, Bayard. D., N. Partridge. M. P., top of 3/4-inch faucet, 2 feet above surface.
24. Joe Quattlebaum, about ½ mile north of Marietta. D., Hooten & Lewis. M. P., top of 6-inch valve, 3 feet above surface.
25. L. W. Bowman, sec. 7, T. 3 S., R. 26 E., on old Orange Park Road, Jacksonville. M. P., top of 6-inch pipe, 1.5 feet above surface.

Flagler County

1. Mellon & Hilliard, Summer Haven. D., G. Brunner. M. P., top of 3/4-inch faucet, 2 feet above surface.
2. John Bartrees, Summer Haven. D., H. Walker. M. P., top of 3/4-inch faucet, 1 foot above surface.
3. Washington Place, about 6 miles south of Summer Haven, on east side of highway. D., H. Walker.
4. Johnson Farms, sec. 4, T. 11 S., R. 31 E., Johnson Farms. D., Allen & Merserve. M. P., top of 3/4-inch faucet, 2.5 feet above surface.
5. George Brunner, about 2.5 miles north of Flagler Beach. D., Brown. M. P., top of 4-inch tee, 2 feet above surface.
6. G. M. Moody, at canal about 1 mile west of Flagler Beach. D., George Brunner. M. P., top of 2-inch pipe, 1.5 feet above surface.
7. R. W. Cody, sec. 30, T. 13 S., R. 30 E., near Haw Creek. D., R. Melton. M. P., top of 4-inch tee, 6 inches above surface.
8. J. Dahlquist, sec. 30, T. 13 S., R. 30 E. D., N. J. White. M. P., top of 4-inch casing, at surface.
9. N. E. Roberts, sec. 30, T. 13 S., R. 30 E. D., N. J. White. M. P., surface.
10. John Campbell, Shell Bluff, sec. 33, T. 11 S., R. 28 E. M. P., top of 2-inch pipe, 5½ feet above surface.
11. E. F. Warner, St. Johns Park. M. P., top of 1 3/4-inch pipe, 1 foot above surface.
12. Lambert & Moody, Bunnell. D., N. H. Monck. M. P., surface.
13. Town of Bunnell, Bunnell. M. P., surface.

Gilchrist County

1. V. W. Minus, Trenton. D., Minns & Hodge. M. P., top of 5-inch casing, 19 feet below surface.
2. Coca Cola Bottling Co., Trenton. M. P., top of casing, 0.3 foot above surface.
3. J. F. Beech, about 4 miles northwest of Trenton, SW¼SW¼ sec. 31, T. 9 S., R. 15 E.; U. S. E. D. 203. M. P., surface.
4. J. H. McDade, Lottieville, sec. 15, T. 10 S., R. 14 E.; U. S. E. D. 204. M. P., surface.
5. Barron, Bell; U. S. E. D. 4. M. P., surface.
6. C. Langford, about 5 miles west of Newberry; U. S. E. D. 207. M. P., surface.
7. A. C. L., Wilcox Junction. M. P., top of 8-inch casing, 5 feet above surface.

Glades County

1. R. J. Brewton, Palmdale. M. P., top of 4-inch pipe, 3 feet above surface.
2. Town of Moore Haven, Moore Haven.

Hamilton County

1. Town of Jennings, Jennings. D., W. R. McGrew. M. P., top of 6-inch casing, 6 inches below surface.
2. Town of Jasper, Jasper. D., Gray & Stevens. M. P., pump-house base, 2 feet above surface.
3. Town of Jasper, Jasper. M. P., pump-house base, 1 foot above surface.
4. Town of White Springs, White Springs. D., Maine Engineering Co. M. P., top of 3/4-inch plug in ell on 10-inch pipe, 1 foot below surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Hardee County

1. Florida Public Service Co., Bowling Green. M. P., top of 6-inch casing, 6 inches above surface.
2. Judge Harrison, about 2 miles southeast of Zolfa Springs. M. P., top of 6-inch pipe, 2 feet above surface.
3. Town of Wauchula, Wauchula. D., E. A. Durst. M. P., surface.

Hendry County

1. Collier Corporation, about 3 miles west of La Belle, sec. 1, T. 43 S., R. 28 E. M. P., top of 1 3/4-inch pipe, 7 feet above surface.
2. Everett Hotel, La Belle. D., Kellog. M. P., top of 3/4-inch faucet, 6 feet above surface.

Hernando County

1. William Panell, Stafford, sec. 29, T. 21 S., R. 19 E. M. P., top of 8-inch casing, 2 feet above surface.
2. William Panell, Stafford, sec. 29, T. 21 S., R. 19 E., west of levee. M. P., top of 8-inch casing, 1 foot below surface.
3. U. S. Agricultural Experiment Station, about 5 miles north of Brooksville. M. P., pump base, at surface.
4. Quinn Snow, about 6.5 miles north of Brooksville, sec. 30, T. 21 S., R. 20 E. M. P., top of 18-inch casing, 1 foot above surface.
5. Mrs. C. M. Baxley, about 2 miles west of Istachatta. M. P., pump base, 1 foot above surface.
6. L. S. McKnight, Istachatta. M. P., surface.

6a. Town of Istachatta, Istachatta; U. S. E. D. 28. M. P., surface.

7. Henry Goethe, Bayport. D., Goodspeed. M. P., top of pitcher pump, 5 feet above surface.
8. Wright Rock Pit, about 4 miles west of Brooksville, sec. 24, T. 22 S., R. 18 E. M. P., top of 5-inch casing, 1 foot above surface.
9. Town of Brooksville, Brooksville; city well 2. D, J. Hilliard. M. P., top of 18-inch casing, 6 inches below surface.
10. Town of Brooksville, Brooksville; well 1. M. P., surface.
11. Camp Rock Co., about 7 miles northeast of Brooksville, sec. 8, T. 22 S., R. 20 E. D., J. O. Edson. M. P., top of 10-inch well flange, 64 feet below surface.
12. Camp Rock Co., about 7 miles northeast of Brooksville, sec. 8, T. 22 S., R. 20 E. D., J. O. Edson. M. P., top of 10-inch well flange, 64 feet below surface.
13. Larry McKeown, Croom. M. P., pump base, 2 feet above surface.
14. J. Butgenback, about 2 miles southwest of Croom at phosphate mine. D., J. Edson. M. P., surface.
15. Miss M. Cotton, Redell. M. P., top of casing, 6 feet below surface.
16. Garden Groves, Inc., about 6 miles south of Brooksville, sec. 17, T. 23 S., R. 19 E. D., J. Hilliard. M. P., surface.
17. A. C. L., Croom; U. S. E. D. 154. M. P., surface.

Highlands County

1. Brighton Valley Hotel, Brighton, about 17 miles west of Okeechobee. M. P., top of 3/4-inch faucet, 4 feet above surface.
2. Town of Sebring, Sebring. M. P., top of casing, 4 feet above surface.
3. McCarthy, Bonners Fishing Camp, west side of Kissimmee River and south of highway 8. M. P., surface.
4. John A. Roebling, about 10 miles south of Lake Placid, sec. 7, T. 38 S., R. 30 E. D., Layne Southeastern Co. M. P., surface.

Hillsborough County

1. Pinellas Water Co., southwest of Cosme, east of road near aerating plant, NW¼NW¼ sec. 34, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
2. Pinellas Water Co., southwest of Cosme, east of road, NW¼NE¼NW¼ sec. 34, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
3. Pinellas Water Co., southwest of Cosme, east of road, NE¼SE¼SW¼ sec. 27, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
4. Pinellas Water Co., southwest of Cosme, north side of road, SE¼NW¼SW¼ sec. 27, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
5. Pinellas Water Co., west of Cosme, NW¼NE¼SW¼ sec. 27, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
6. Pinellas Water Co., west of Cosme, SE¼SE¼NE¼ sec. 27, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
7. Pinellas Water Co., west of Gunn Highway, SW¼NW¼NW¼ sec. 26, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
8. Pinellas Water Co., east of Gunn Highway, NE¼NW¼NW¼ sec. 26, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
9. Pinellas Water Co., west of Gunn Highway, NE¼SE¼NE¼ sec. 27, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
10. Pinellas Water Co., north side of road and east of S. A. L., SE¼SW¼SE¼ sec. 23, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
11. Pinellas Water Co., east of S. A. L., NE¼SW¼SE¼ sec. 23, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
12. Pinellas Water Co., NW¼NE¼SE¼ sec. 23, T. 27 S., R. 17 E. D., W. R. Vaughn. M. P., base of pump over well, 1 foot above surface.
13. Pinellas Water Co., sec. 21, T. 27 S., R. 18 E. D., W. R. Vaughn. M. P., base of pump over well, about 0.5 foot above top of well casing and 1 foot above surface.
14. Florida Public Service Co., Sun City, at power plant on west side of road. D., D. W. Dansby. M. P., top of 2.5-inch pipe, same altitude as surface of road.
15. About 2 miles north of railroad station at Ruskin, west of road, in field near farmhouse. M. P., top of 4-inch tee of well, 6 inches above surface.
16. Town of Port Tampa, Port Tampa. M. P., top of well casing, same altitude as surface.
17. Oldsmar well, SW¼ sec. 18, T. 28 S., R. 17 E. D., R. V. Hill. M. P., surface.

19. Willism Parolina, about ¼ mile northwest of Knights, sec. 6, T. 28 S., R. 22 E. D., William Parolina. M. P., top of 4-inch well tee, 1 foot above surface.
20. William Parolina, about ¼ mile northwest of Knights, sec. 6, T. 28 S., R. 22 E. D., William Parolina. M. P., top of 4-inch well tee, 2 feet below surface.
21. P. H. Varnes, about ½ mile south of Seffner, sec. 11, T. 29 S., R. 20 E. D., William Powell. M. P., surface.
22. L. S. McIntosh, about 1.5 miles west of Dover, sec. 6, T. 29 S., R. 21 E. M. P., top of 4-inch tee, 1.5 feet above surface.
23. Town of Plant City, Plant City; well 1. D., Layne Bowler. M. P., pump base, at surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Hillsborough County - Continued

24. Town of Plant City, Plant City; well 2. M. P., top of concrete pit cover, 4 feet above surface.
25. Town of Plant City, Plant City, well 3. D., R. Neikirk. M. P., top of pump base, 6 inches above surface.
26. American Agricultural Chemical Co., Carmichael well 9, sec. 6, T. 30 S., R. 22 E. D., Layne Southeastern Co. M. P., top of pump base, 0.7 foot above surface.
27. American Agricultural Chemical Co., Carmichael well 1, sec. 18, T. 30 S., R. 22 E. D., Virginia Machinery & Well Drilling Co. M. P., top of 1¼-inch horizontal coupling, 1½ feet above surface.

Indian River County

1. E. H. Every, about 1 mile northeast of Fellsmere, sec. 14, T. 31 S., R. 37 E. D., C. W. Manning. M. P., top of 4-inch valve on well, 1.5 feet above surface.
2. A. W. Crandall, about 1 mile southwest of Fellsmere, sec. 22, T. 31 S., R. 37 E. M. P., top of 3/4-inch faucet, 1.5 feet above surface.
3. L. G. Hardee, Sebastian. D., Frank Young. M. P., top of 2-inch valve, 2 feet above surface.
4. L. G. Hardee, Sebastian. D., John Yorgeson. M. P., top of 5-inch valve, 1 foot above surface.
5. T. G. Joyce, about 6.3 miles west of Vero Beach on north side of road. M. P., top of 4-inch pipe, 2 feet above surface.
6. F. F. Cobb, intersection of road 30 and 37th St., Vero Beach. M. P., top of 4-inch pipe, 2 feet above surface.
7. Town of Vero Beach, Vero Beach, 21st St. and 14th Ave. M. P., top of 3/4-inch pipe, same altitude as surface of road and sidewalk.
8. T. J. Anderson, Fellsmere. D., C. W. Manning. M. P., top of 3/4-inch pipe, 3 feet above surface.
9. Fellsmere Water Co., Fellsmere. M. P., surface.
10. Town of Vero Beach, Vero Beach. M. P., surface.
11. Mrs. Isaac M. Wells, about ½ mile southeast of Vero Beach. D., W. Duncan. M. P., top of 4-inch tee, 3 feet above surface.

Lake County

1. O. K. ice plant, Clermont. M. P., top of concrete well pit, at surface, 11 feet above top of well casing.
2. Town of Clermont, south edge of Sunny Side Lake, Clermont. D., C. B. Hall. M. P., top of casing, same altitude as surface.
3. Town of Clermont, Clermont. D., Gray & Stevens. M. P., top of well casing, same altitude as surface.
4. Town of Clermont, Clermont. D., Gray & Stevens. M. P., top of well casing, same altitude as surface.
5. Town of Groveland, Groveland. D., McCloud & Conant. M. P., top of concrete rim of pump pit, same altitude as surface and 12 feet above top of well casing.
6. About 1.4 miles east of Groveland and north of road and railroad. M. P., top of 4-inch casing, 6 inches above surface.
7. Town of Montverde, about 200 yards north of railroad station at Montverde. D., John R. Matthews. M. P., top of casing, at surface.
8. Florida Public Service Co., 5th Ave. and East Broad St., Tavares. M. P., top of casing, 2 feet above surface.
9. Florida Public Service Co., 5th Ave. and East Broad St., Tavares. M. P., top of casing, 2 feet above surface.
10. Florida Public Service Co., Eustis. M. P., surface.
11. J. Philip Doss, Jr., Astor. M. P., top of concrete rim at well, 10 inches above surface.
12. Astor School, schoolhouse, Astor. M. P., top of 2-inch tee on well, 15 inches above surface.
13. Town of Leesburg, Leesburg. M. P., surface, 8.5 feet above floor of pump pit.
13a. Town of Leesburg, Leesburg; U. S. E. D. 143. M. P., surface.
14. Lake County Clay Co., about 4 miles east of Okahumpka. M. P., top of 6-inch casing, 6.5 feet below surface.
15. Town of Umatilla, Umatilla; U. S. E. D. 163. M. P., surface.
16. C. W. Bayless, Grand Island; U. S. E. D. 160. M. P., surface.

Lee County

1. Western Union Telegraph Co., Punta Rasa. D., Dukes. M. P., top of 3/4-inch valve, 3 feet above surface.
2. E. E. Goodno, about ¼ mile northeast of Punta Rasa. M. P., top of 3/4-inch pipe, 3 feet above surface.
3. E. E. Goodno, about ¼ mile northeast of Punta Rasa. M. P., top of 3/4-inch pipe, 3.5 feet above surface.
4. Joe Maharry, sec. 21, T. 45 S., R. 24 E. D., Joe Maharry. M. P., top of 6-inch tee, 1 foot above surface.
5. John Deen, sec. 21, T. 45 S., R. 24 E. D., Joe Maharry. M. P., top of 2-inch valve, 1 foot above surface.
6. E. Roundtree, sec. 2, T. 45 S., R. 24 E. M. P., top of 3-inch elbow, 6.5 feet above surface.
7. Town of Fort Myers, Fort Myers, at swimming pool. D., Joe Maharry. M. P., top of 3/4-inch plug, 2 feet above surface.
8. Dowling & Camp, Slater, sec. 18, T. 43 S., R. 25 E. M. P., top of 1-inch pipe, 17 feet above surface.
9. Olga School, Olga, sec. 27, T. 43 S., R. 25 E. D., Davidson. M. P., top of 3/4-inch pipe 200 feet north of well, 2 feet above surface.
9a. Olga Garage, Olga. M. P., surface.
10. F. H. Alexander, about 8 miles south of Fort Myers, sec. 35, T. 45 S., R. 24 E. D., Alderman. M. P., top of 4-inch tee, 1 foot above surface.
11. F. H. Alexander, about 8 miles south of Fort Myers, sec. 35, T. 45 S., R. 24 E. D., O. C. Trowbridge. M. P., top of 3/4-inch faucet at well, 1 foot above surface.
12. Flowers Grove, Inc., about 3/4 mile northeast of Estero, sec. 27, T. 46 S., R. 25 E. D., Joe Mahoney. M. P., top of casing, 3 feet above surface.
13. Will Gibson, on Cocoanut road, sec. 8, T. 47 S., R. 25 E. D., Joe Mahoney. M. P., top of 6-inch pipe, 2 feet above surface.
14. W. B. Baker, about 1 mile west of Bonita Springs. M. P., top of 3/4-inch pipe, 2.5 feet above surface.
15. Old sawmill site, sec. 8, T. 47 S., R. 25 E. M. P., top of 1-inch pipe, 2½ feet above surface.
16. B. P. Matheson, about 1 mile southeast of Bonita Springs. M. P., top of 4-inch pipe, 1½ feet above surface.
17. H. M. Thomas, about 1.5 miles southeast of Bonita Springs. D., Barnes. M. P., top of 3-inch pipe, 2 feet above surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Lee County - Continued

18. B. P. Matheson, about 1.7 miles southeast of Bonita Springs. D., J. Maharry. M. P., top of 4-inch pipe, 2 feet above surface.

Levy County

1. Bronson Manufacturing Co., about ½ mile west of Bronson. M. P., top of 8-inch casing, 1 foot above surface.
2. Town of Williston, Williston. D., Rhoades. M. P., pump base, at surface.
3. State Road Department, about ½ mile west of Williston. M. P., top of 3-inch casing, 1 foot above surface.
4. Town of Cedar Keys, Cedar Keys. D., Dunlap. M. P., top of 4-inch plug, 1 foot below surface. Water would rise 6 feet above surface in 1928.
5. S. A. L., about 4 miles east of Cedar Keys. M. P., top of 4-inch ell, 2 feet above surface.
6. Levy County School, Bronson; U. S. E. D. 16. M. P., surface.
7. M. E. Wood, Chiefland; U. S. E. D. 132. M. P., surface.
8. W. S. Yearty, Otter Creek; U. S. E. D. 134. M. P., surface.
9. D. P. Albritton, Lebanon Station, sec. 24, T. 15 S., R. 16 E.; U. S. E. D. 135. M. P., surface.
10. S. A. L., Morriston; U. S. E. D. 10. M. P., top of casing, at surface. Limestone at 15 feet.
11. J. T. Flowers, about 0.5 mile east of Montbrook; U. S. E. D. 11. M. P., top of casing, at surface.
12. Williston Crate Co., about 1 mile east of Williston; U. S. E. D. 12. M. P., top of casing, at surface.
13. U. S. E. D., about 2 miles north of Williston; U. S. E. D. 219. D., U. S. E. D. M. P., surface.
14. Cooper Turpentine Co., Sumner, sec. 36, T. 14 S., R. 13 E.; U. S. E. D. 209. M. P., surface.
15. G. C. Perdue, Wylly, sec. 22, T. 14 S., R. 14 E.; U. S. E. D. 210. M. P., surface.
16. U. S. E. D., about 7 miles southwest of Williston; U. S. E. D. 346. D., U. S. E. D. M. P., surface.
17. U. S. E. D., about 7 miles southeast of Otter Creek; U. S. E. D. 347. D., U. S. E. D. M. P., surface.
18. U. S. E. D., Gulf Rammond; U. S. E. D. 348. D., U. S. E. D. M. P., surface.
19. J. C. Lay, about 8 miles west of Dunnellon, sec. 34, T. 16 S., R. 17 E.; U. S. E. D. 242. M. P., surface.
20. U. S. E. D., near Yankeetown, sec. 5, T. 17 S., R. 16 E.; U. S. E. D. 353. D., U. S. E. D. M. P., surface.
21. U. S. E. D., sec. 5, T. 17 S., R. 17 E.; U. S. E. D. 390. D., U. S. E. D. M. P., top of casing, at surface.
22. R. Hodges, Cedar Keys; U. S. E. D. 208. M. P., surface.

Manatee County

1. Town of Anna Maria, Anna Maria. M. P., surface.
2. Town of Anna Maria, Anna Maria, at City Hall. D., Jim Reddick. M. P., top of 3/4-inch pipe 25 feet from well, 1 foot above surface.
3. Town of Anna Maria, Anna Maria, near City Hall. D., Danielson. M. P., surface.
4. Town of Anna Maria, Anna Maria, at post office. D., Danielson. M. P., surface.
5. Anna Maria.
6. H. C. Ditmas, about 1 mile southeast of Anna Maria. D., T. W. Johnson. M. P., surface.
7. G. M. Stafford, Bradenton Beach, north of Cortez road. M. P., surface.
8. Bradenton Beach bath house, Bradenton Beach. D., R. L. Nixon. M. P., top of 3/4-inch pipe, 1.5 feet above surface.
9. Anna Maria Key, south of Anna Maria. M. P., surface.
10. G. M. Stafford, Bradenton Beach, south of Cortez road. D., T. W. Johnson. M. P., surface.
11. Town of Anna Maria, at south side of Anna Maria. M. P., surface.
12. Bradenton Beach, on east side of road south of bath house. M. P., surface.
13. Pat Green, Cortez, at old club house. M. P., surface.
14. D. S. Fulford, Cortez, on road near Sarasota Pass, south side of road at residence. M. P., top of 3/4-inch pipe near well, 6 feet above surface.
15. Joe Gutherie, Cortez, at Albion Inn Hotel. M. P., top of 3/4-inch pipe near well, same altitude as surface.
16. Cortez Public School, Cortez, at school house. M. P., top of 3/4-inch pipe near well, 1.5 feet above surface.
17. O. E. Plaisted, northeast of Cortez, near Palma Sola Bay. M. P., surface.
18. Southeast of Cortez, near Sarasota Bay. M. P., surface.
19. J. A. Frohock, Inspiration ranch, east of Cortez. M. P., surface.
20. M. Levine, east of Cortez, sec. 8, T. 35 S., R. 17 E.
21. M. Levine, east of Cortez, sec. 8, T. 35 S., R. 17 E.
22. J. C. Courtney, west of Bradenton, Perico Island. M. P., surface.
23. J. T. Fleming, Fleming farm, south of east-west road, ½ mile west of Palma Sola Loop. D., W. T. Reddick. M. P., surface.
24. J. T. Fleming, Fleming farm, south of east-west road, ½ mile west of Palma Sola Loop. D., W. T. Reddick. M. P., surface.
25. J. T. Fleming, Fleming Farm, south of east-west road, ½ mile west of Palma Sola Loop. D., W. T. Reddick. M. P., surface.
26. J. T. Fleming, Fleming Farm, south of east-west road, ½ mile west of Palma Sola Loop. D., W. T. Reddick. M. P., surface.
27. J. T. Fleming, Fleming Farm, south of east-west road, ½ mile west of Palma Sola Loop. D., W. T. Reddick. M. P., surface.
28. R. C. Duffie, south side of Palma Sola Loop. M. P., surface.
29. R. C. Duffie, south side of Palma Sola Loop. D., T. W. Johnson.
30. F. E. Smith, south side of Palma Sola Loop. D., E. J. Pettigrew. M. P., surface.
31. E. H. Van Netwick, west end of Palma Sola Loop. M. P., surface.
32. F. E. Smith, Palma Sola Loop, Lone Palm Preserving Co. M. P., surface.
33. E. S. McDonald, 4th Ave. and 75th St., Bradenton. M. P., surface.
34. E. J. Pettigrew, northwest corner of Palma Sola Loop. D., E. J. Pettigrew. M. P., surface.
34a. Reasoner Bros., southwest corner of Palma Sola Loop, at Reasoner Bros. Nursery. M. P., surface.
35. City of Bradenton, city water plant, Bradenton. D., Virginia Machinery & Well Drilling Co. M. P., top of ½-inch pipe on pump, 2 feet above surface.
36. City of Bradenton, city water plant, Bradenton. D., Virginia Machinery & Well Drilling Co.
37. Excelsior Ice Co., Bradenton.
38. Excelsior Ice Co., Bradenton. D., D. W. Dansby.
38a. Excelsior Ice Co., Bradenton. M. P., surface.
39. City of Bradenton, north side of Central Ave. at east end of Ware Bridge, Bradenton. M. P., pipe on well, 2 feet above surface.
40. R. C. Pemelman, Tamiami Trail, 4 miles south of Bradenton. D., R. C. Pemelman. M. P., top of 3/4-inch pipe at well, 2 feet above surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Manatee County - Continued

41. George Parker, Cortez road and Tamiami Trail. M. P., surface.
42. George Parker, Cortez road and Tamiami Trail.
43. Town of Manatee, city water plant, Manatee. D., R. M. Hudson. M. P., top of 3/4-inch pipe directly over well, 1.5 feet above surface.
44. S. Frank Perkins, 7th St. and Manatee Ave., Manatee. M. P., top of 3/4-inch pipe on well, 4 feet above surface.
45. J. S. Yates, about 1 mile south of Manatee, SW¼ sec. 31, T. 34 S., R. 18 E. M. P., surface.
46. Florida Travertine Corporation, southeast of Manatee, at travertine quarry, sec. 5, T. 36 S., R. 18 E. D., T. W. Johnson. M. P., surface.
47. E. L. Ayres, southeast of Manatee, southeast corner sec. 32, T. 34 S., R. 18 E. M. P., surface.
48. I. W. Whitesell, NE¼ sec. 31, T. 35 S., R. 18 E., Whitesell dairy. D., F. H. Helveston. M. P., surface.
49. H. A. Hayworth, NW¼ sec. 32, T. 35 S., R. 18 E. D., F. H. Helveston. M. P., surface.
50. 100 yards north of Lockwood road and ½ mile east of Matoka railroad station. M. P., surface.
51. Elmo Saunders, Range Line road and Saunders siding, south of Manatee. M. P., top of 3/4-inch pipe, 2 feet above surface.
52. H. R. Hunt, Range Line road and Saunders siding, south of Manatee. D., Powell. M. P., surface.
53. W. K. Jaimson, Range Line road and Saunders siding, south of Manatee. D., Reddick. M. P., surface.
54. Brown estate, Brown place, near Rye. M. P., surface.
55. J. E. McCloud, Myakka City. M. P., surface.
56. E. E. Edge, Myakka City.
57. J. E. Jones, Terra Ceia Island. M. P., surface.
58. W. A. Halsey and Harvey Lewis, Terra Ceia Island. M. P., surface.
59. Pillsbury estate, Snead Island, Pillsbury farm. M. P., top of 3/4-inch pipe at well, 2 feet above surface.
60. Pillsbury estate, Snead Island. M. P., surface.
61. Pillsbury estate, Snead Island. M. P., surface.
62. Mrs. C. Wooten, Snead Island. M. P., surface.
63. Dutton & Singletary, Snead Island. M. P., surface.
64. A. M. Vassel, near city limit of Palmetto, on south side of boulevard to Snead Island. M. P., top of 3/4-inch pipe on well, 5 feet above surface.
65. D. F. Richards, west of Palmetto. M. P., surface.
66. W. E. Robinson, northwest part of Palmetto. M. P., surface.
67. W. E. Robinson, northwest part of Palmetto. M. P., surface.
68. W. E. Robinson, about 50 feet north of well 67. M. P., surface.
69. W. E. Robinson, southeast of well 67. M. P., surface.
70. E. H. Morse and C. J. Heasler, northwest part of Palmetto, east of wells 66 and 67. D., C. Heasler. M. P., top of 4-inch pipe on well, 5 feet above surface.
71. W. E. Robinson, SE¼ sec. 10, T. 34 S., R. 17 E.
72. City of Palmetto, Palmetto, at water plant. M. P., top of 3/4-inch pipe, 1 foot above surface.
73. City of Palmetto, Palmetto, at water plant.
74. Town of Ellenton, Ellenton. D., Styles.
75. J. F. Mixon, east side of road at Mixon residence, north of Rubonia, sec. 18, T. 33 S., R. 18 E. D., J. F. Mixon. M. P., surface.
76. Harold Hahn, east side of road at Hahn residence, north of Rubonia, sec. 18, T. 33 S., R. 18 E. M. P., surface.
77. G. W. Barnes, sec. 7, T. 33 S., R. 18 E. D., Cannon. M. P., top of 3/4-inch pipe over well, 4 feet above surface.
78. J. C. Miley, sec. 29, T. 33 S., R. 18 E. M. P., surface.
79. T. E. Purdon, sec. 7, T. 33 S., R. 18 E. M. P., surface.
80. J. P. Harllee, sec. 31, T. 33 S., R. 18 E. D., E. J. Pettigrew. M. P., surface.
81. Webster & Halsey, Piney Point. D., John Anderson. M. P., top of 2-inch pipe on well, same altitude as crown of road.
82. Piney Point Land Co., Piney Point. D., I. I. Safford.
83. J. P. Harllee, sec. 18, T. 34 S., R. 18 E. D., E. J. Pettigrew. M. P., surface.
84. H. W. Harrison, sec. 3, T. 34 S., R. 17 E. D., John Mitchell. M. P., surface.
85. J. P. Harllee, sec. 30, T. 34 S., R. 18 E. D., E. J. Pettigrew. M. P., surface.
86. W. P. Frier, Parrish. D., D. W. Dansby. M. P., surface.
87. J. A. Howze, SW¼NW¼ sec. 32, south of Parrish. D., D. W. Dansby. M. P., surface.
88. Tamiami Farms, Tamiami Trail, 3.6 miles northeast of Parrish. D., D. W. Dansby. M. P., top of 3/4-inch pipe over well, same altitude as surface.
89. Tamiami Farms, Tamiami Trail, 3.2 miles north of Parrish. D., D. W. Dansby. M. P., top of well casing, same altitude as surface.
90. Eagle Fruit Co., south of Fort Hamer, sec. 19, T. 34 S., R. 19 E. D., Jim Reddick.
91. Eagle Fruit Co., south of Fort Hamer, sec. 19, T. 34 S., R. 19 E. M. P., top of 3/4-inch pipe on well, 1.5 feet above surface.
92. James L. Waterbury, Waterbury. D., D. W. Dansby.
93. S. R. Mason, west side of road at Mason residence, sec. 7, T. 33 S., R. 18 E. M. P., surface.

Marion County

1. State Road Department, about 1.2 miles west of Flemington, sec. 33, T. 12 S., R. 20 E. M. P., top of 6-inch casing, 6 inches above surface.
2. F. R. Williams, Citra. Hamilton. M. P., top of 6-inch casing, 4 feet below surface.
3. Florida Power & Light Co., sec. 32, T. 11 S., R. 24 E. D., U. S. E. D. M. P., top of 4-inch pipe, 4 feet above surface.
4. Judge Wiley, about ¼ mile west of Anthony. M. P., top of 6-inch casing, 1 foot above surface.
5. U. S. E. D., Sharpes Ferry, sec. 11, T. 15 S., R. 23 E. D., U. S. E. D. M. P., top of 3/4-inch pipe, 2 feet above surface.
6. About ½ mile south of town of Lake Weir. D., J. R. Matthews. M. P., top of 6-inch casing, 5 feet above surface.
7. Town of Dunnellon, Dunnellon. D., J. O. Edson. M. P., top of 8-inch pipe, 1 foot below surface.
8. W. O. Brewer, Romeo, SE¼NE¼ sec. 1, T. 15 S., R. 18 E.; U. S. E. D. 9. M. P., surface.
9. Town of Ocala, Ocala; U. S. E. D. 13. M. P., surface.
10. Clark-Ray-Johnson Co., Martel, NE¼SW¼ sec. 13, T. 15 S., R. 20 E.; U. S. E. D. 14. M. P., surface.
11. G. A. Zeller, Oklawaha; U. S. E. D. 61. M. P., surface.
12. Weirsdale packing house, Weirsdale; U. S. E. D. 62. M. P., surface.
13. H. B. Wasson, Santos; U. S. E. D. 64. M. P., surface.
14. M. Blackman, Summerfield; U. S. E. D. 65. M. P., surface.
15. J. Hooper, about 5 miles north of Dunnellon, NE¼NW¼ sec. 1, T. 16 S., R. 18 E.; U. S. E. D. 231. M. P., surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Marion County - Continued

16. U. S. E. D., about 1.3 miles southeast of Dunnellon; U. S. E. D. 363. D., U. S. E. D. M. P., surface.
17. U. S. E. D., about 6 miles east of Dunnellon; U. S. E. D. 367. D., U. S. E. D. M. P., surface.
18. M. O. Jarago, about 3.5 miles west of Martel, NW$\frac{1}{4}$NE$\frac{1}{4}$ sec. 20, T. 15 S., R. 20 E.; U. S. E. D. 247. M. P., surface.
19. W. D. Parker, about 2.5 miles northwest of Leroy, NW$\frac{1}{4}$NW$\frac{1}{4}$ sec. 30, T. 15 S., R. 20 E.; U. S. E. D. 248. M. P., surface.
20. U. S. E. D., about 7 miles northeast of Raleigh, NE$\frac{1}{4}$SW$\frac{1}{4}$ sec. 7, T. 12 S., R. 20 E.; U. S. E. D. 345. D., U. S. E. D. M. P., surface.
21. C. D. Colson, about 3.5 miles east of Williston; U. S. E. D. 320. M. P., surface.
22. J. W. Wilson, Reddick; U. S. E. D. 300. M. P., surface.
23. G. L. Carlton, about 3 miles east of Sparr; U. S. E. D. 310. M. P., surface.
24. N. J. Townsend, Martin, SW$\frac{1}{4}$NW$\frac{1}{4}$ sec. 10, T. 14 S., R. 21 E.; U. S. E. D. 305. M. P., surface.
25. F. W. Weber, Oak; U. S. E. D. 304. M. P., surface.
26. Fort McCoy Lumber Co., about $\frac{1}{2}$ mile west of Fort McCoy; U. S. E. D. 306. M. P., surface.
27. Florida State Road Department, about $\frac{1}{2}$ mile west of Burbank; U. S. E. D. 314. M. P., surface.
28. U. S. E. D., about $\frac{1}{2}$ mile east of Eureka; U. S. E. D. 312. D., U. S. E. D. M. P., surface.
29. A. O. Harper, about $\frac{1}{2}$ mile east of Orange Springs; U. S. E. D. 308. M. P., surface.
30. U. S. E. D., about 3.5 miles northeast of Conners, NE$\frac{1}{4}$SW$\frac{1}{4}$ sec. 17, T. 14 S., R. 24 E.; U. S. E. D. 360. D., U. S. E. D. M. P., surface.
31. U. S. E. D., about $\frac{1}{2}$ mile south of Conners, NE$\frac{1}{4}$NW$\frac{1}{4}$ sec. 36, T. 14 S., R. 23 E.; U. S. E. D. 359. D., U. S. E. D. M. P., surface. No limestone penetrated.
32. U. S. E. D., about 1.5 miles southeast of Lynne, SE$\frac{1}{4}$SE$\frac{1}{4}$ sec. 15, T. 15 S., R. 24 E.; U. S. E. D. 350. D., U. S. E. D. M. P., surface. No limestone penetrated.
33. U. S. E. D., about 11 miles southeast of Ocala, SW$\frac{1}{4}$SE$\frac{1}{4}$ sec. 25, T. 15 S., R. 23 E.; U. S. E. D. 349. D., U. S. E. D. M. P., surface. No limestone penetrated.
34. C. Williams, about 0.8 mile northwest of Silver Springs; U. S. E. D. 291. M. P., surface.
35. T. W. Penuel, about 1.5 miles south of Silver Springs; U. S. E. D. 292. M. P., surface.
36. U. S. E. D., about 5.3 miles northeast of Santos, SE$\frac{1}{4}$SW$\frac{1}{4}$ sec. 20, T. 15 S., R. 23 E.; U. S. E. D. 389. D., U. S. E. D. M. P., surface. No limestone penetrated.
37. U. S. E. D., about 4.3 miles northeast of Santos, NE$\frac{1}{4}$SE$\frac{1}{4}$ sec. 30, T. 15 S., R. 23 E.; U. S. E. D. 388. D., U. S. E. D. M. P., surface. Limestone at 46 feet.
38. U. S. E. D., about 1.3 miles northeast of Santos, SE$\frac{1}{4}$SE$\frac{1}{4}$ sec. 2, T. 16 S., R. 22 E.; U. S. E. D. 385. D., U. S. E. D. M. P., surface. Limestone at 28 feet.
39. U. S. E. D., about 3.8 miles north of Danks Corner, NW$\frac{1}{4}$SE$\frac{1}{4}$ sec. 29, T. 16 S., R. 22 E.; U. S. E. D. 380. D., U. S. E. D. M. P., surface. Limestone at 37 feet.
40. U. S. E. D., about 6.7 miles west of Danks Corner, NE$\frac{1}{4}$NE$\frac{1}{4}$ sec. 5, T. 17 S., R. 21 E.; U. S. E. D. 374. D., U. S. E. D. M. P., surface. Limestone at 34 feet.
41. U. S. E. D., about 3.8 miles northeast of Danks Corner, SW$\frac{1}{4}$SW$\frac{1}{4}$ sec. 36, T. 16 S., R. 21 E.; U. S. E. D. 377. D., U. S. E. D. M. P., surface. Well will flow intermittently. Limestone at 10 feet.
42. U. S. E. D., about 10 miles east of Dunnellon, NE$\frac{1}{4}$NE$\frac{1}{4}$ sec. 3, T. 17 S., R. 20 E.; U. S. E. D. 371. D., U. S. E. D. M. P., surface.
43. J. L. Ross, about 1 mile northeast of Stokes Ferry, NE$\frac{1}{4}$NE$\frac{1}{4}$ sec. 19, T. 17 S., R. 20 E.; U. S. E. D. 295. M. P., surface.
44. H. A. Ross, Stokes Ferry, SE$\frac{1}{4}$SW$\frac{1}{4}$ sec. 19, T. 17 S., R. 20 E.; U. S. E. D. 296. M. P., surface. Limestone at 2 feet.

Martin County

1. J. Zeddingfields, about 6 miles southwest of Stuart, sec. 23, T. 38 S., R. 40 E. M. P., top of 3/4-inch faucet, 2.5 feet above surface.
2. F. A. Harrod, about 6 miles southwest of Stuart, sec. 23 , T. 38 S., R. 40 E. M. P., top of 3$\frac{1}{2}$-inch valve, 2.5 feet above surface.
3. Brown estate, about 1$\frac{1}{2}$ miles west of Stuart. D., Thompson. M. P., top of 3/4-inch pipe, 1$\frac{1}{2}$ feet above surface.
4. W. O. Carnegie, about $\frac{1}{2}$ mile north of Sewells Point. M. P., top of 4-inch well, 1.5 feet above surface.

Monroe County

1. S. O. Johnson, Key West. D., J. T. Brown. M. P., top of 24-inch man hole, 0.5 foot above surface.
2. City of Key West, Key West.
3. Florida East Coast Railway, Marathon Key. D., E. A. Durst. M. P., surface.

Nassau County

1. A. E. Carlton, Kings Ferry. M. P., top of 3/4-inch faucet, 3.5 feet above surface.
2. Dixie Turpentine Still, Leslie, sec. 2, T. 3 N., R. 25 E. M. P., top of 3/4-inch pipe, 1 foot above surface.
3. L. R. Owens, about 2 miles southeast of Leslie, sec. 5, T. 3 N., R. 26 E. M. P., top of 3/4-inch pipe, 1 foot above surface.
4. Gross Turpentine Co., Gross. M. P., top of 1-inch pipe, 1 foot above surface.
5. L. A. Davis & Bros., Crandall. D., Stafford. M. P., top of pipe, 2 feet above surface.
6. Southern States Power Co., Fernandina. M. P., top of pipe, 3 feet above surface.
7. Town of Fernandina, Fernandina Beach. M. P., top of 3-inch valve, 2 feet above surface.
8. H. F. Sahlman, about 1 mile south of Amelia. D., Freeman. M. P., top of 3/4-inch pipe, 1 foot above surface.
9. S. A. L., Yulee. M. P., top of water tank, 26 feet above surface.
10. Mrs. J. A. Flood, Yulee. D., W. Dukes. M. P., top of 3/4-inch pipe, 3 feet above surface.
11. Davis & Son, Yulee. D., Morrow. M. P., top of $\frac{1}{2}$-inch pipe, 3 feet above surface.
12. Shave & Powell, Italia. M. P., top of 3-inch casing, 2 feet above surface.
13. J. C. Pittman, about 3.5 miles northeast of Callahan. D., W. Dukes. M. P., top of 3/4-inch faucet, 1 foot above surface.
14. Wells & Wells, Callahan. D., H. C. Russell. M. P., top of 3/4-inch faucet, 1 foot above surface.
15. C. C. Jones, Callahan. M. P., surface.
16. J. J. O'Connor, Callahan. M. P., top of $\frac{1}{2}$-inch pipe, 1 foot above surface.
17. Bob Wright, Crawford. M. P., top of 1$\frac{1}{4}$-inch pipe, 5 feet above surface.
18. Bryce, Verdie. M. P., top of 1$\frac{1}{2}$-inch well coupling, 6 inches above surface.
19. Alwyn Bryce, Bryceville. M. P., top of 1$\frac{1}{2}$-inch pipe, 1.5 feet above surface.
20. Bryce, Bryceville. M. P., surface.
21. Mrs. Ruth Bryce, about 1 mile south of Bryceville. M. P., surface.
22. Campbell, Hilliard. D., J. W. Wiggins. M. P., top of 8-inch casing, 1 foot above surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Okeechobee County

1. Town of Okeechobee, Okeechobee. M. P., top of 3/4-inch pipe, 1 foot above surface. Original depth 810 feet. Measured depth in 1933 was 718 feet.

Orange County

1. City of Orlando, Orlando, Evans Ave. 100 feet west of Orange Ave. D., J. R. Matthews. M. P., north side of steel rim of manhole over well, same altitude as surface of street.
2. City of Orlando, Orlando, Winter Park Ave., 200 feet west of Orange Ave. D., J. R. Matthews. M. P., north side of steel rim of manhole over well, same altitude as surface of street.
3. City of Orlando, Orlando, Dade St., 100 feet north of Princeton Ave. D., F. J. Raehn. M. P., north side of steel rim of manhole over well, same altitude as surface of street.
4. City of Orlando, Orlando, W. South St. and Garland St. M. P., south side of rim of manhole over well, same altitude as sidewalk.
5. City of Orlando, southwest corner of Division and Carter Sts., Orlando. D., F. J. Raehn. M. P., north side of steel rim of manhole over well, same altitude as surface.
6. City of Orlando, Parramore St. 100 feet north of Long St., Orlando. D., F. J. Raehn. M. P., north side of steel rim of manhole over well, same altitude as surface.
7. City of Orlando, northeast corner of Gore Ave. and Parramore St., Orlando. M. P., steel rim of manhole over well, same altitude as surface.
8. City of Orlando, northwest of intersection of Kentucky Ave. and West Washington St., Orlando. M. P., north side of steel rim of manhole, same altitude as surface.
9. City of Orlando, south side of Lake Davis between Brooksvilla and Summerlin Sts., Orlando. M. P., top of 8-inch casing of well.
10. City of Orlando, southeast edge of Cherokee Lake, Cherokee Drive and Osceola St., Orlando. M. P., steel rim of manhole over well, same altitude as surface.
11. City of Orlando, north side of Delaney St. at E. Harding Ave., Orlando. D., F. J. Raehn. M. P., steel rim of manhole over well, same altitude as surface.
12. City of Orlando, Orlando, northwest edge of Lake Davis. D., Henry Raehn. M. P., surface.
13. City of Orlando, Orlando, Boston Ave. and Long St. D., Henry Raehn. M. P., surface.
14. City of Orlando, Orlando, Princeton Ave. and Northumberland St. M. P., surface.
15. City of Orlando, Orlando, Cornell St. and Spruce Ave. M. P., surface.
16. City of Orlando, Orlando, Pine St. and Eola Drive. D., F. J. Raehn. M. P., surface.
17. City of Orlando, Orlando, on Lake Formosa. D., J. R. Matthews. M. P., surface.
18. City of Orlando, Orlando, Lake of the Woods. D., F. J. Raehn. M. P., surface.
19. City of Orlando, Orlando, South St. and Fern Creek. M. P., surface.
20. City of Orlando, Orlando, Spokane St. and Oregon Ave. D., F. J. Raehn. M. P., surface.
21. City of Orlando, Orlando, South St. between Ohio St. and Texas Ave., at Lake Sunset. D., F. J. Raehn. M. P., surface.
22. City of Orlando, Orlando, east side of Lake Lancaster. D., F. J. Raehn. M. P., surface.
23. City of Orlando, Orlando, Atlanta Ave. north of Miller Ave. D., F. J. Raehn. M. P., surface.
24. City of Orlando, Orlando, McRae St. between Evans and King Aves. D., J. R. Matthews. M. P., surface.
25. City of Orlando, Orlando, Terry and Jefferson Sts. M. P., surface.
26. City of Orlando, Orlando, Harrison St. 500 feet south of Par Ave. D., J. R. Matthews. M. P., surface.
27. City of Orlando, Orlando, Shine and Marks Sts. D., F. J. Raehn. M. P., surface.
28. City of Orlando, Orlando, intersection of Miller and Minnesota Aves. D., F. J. Raehn. M. P., surface.
29. City of Orlando, Orlando, Helen St. D., J. R. Matthews. M. P., surface.
30. City of Orlando, Orlando, Westmoreland Drive and Jefferson St. D., F. J. Raehn. M. P., surface.
31. City of Orlando, Orlando, Sturdevant St. and Lucerne Terrace. D., F. J. Raehn. M. P., surface.
32. City of Orlando, Orlando, Lake Davis. D., F. J. Raehn. M. P., surface.
33. City of Orlando, Orlando, Steele Ave. and Amber St. M. P., surface.
34. City of Orlando, Orlando, Yale Ave. and Westmoreland Drive. D., J. R. Matthews. M. P., surface.
35. Orange County, county well 1, 1 mile west of Pinecastle, on north side of road in ditch, southwest corner NE¼ sec. 23, T. 23 S., R. 29 E. D., J. R. Matthews. M. P., steel rim of manhole over well, same altitude as surface of road.
36. Orange County, county well 2, about 1½ miles southwest of Pinecastle, in ditch on south side of road, NW¼NW¼ sec. 26, T. 23 S., R. 29 E. D., J. R. Matthews. M. P., steel rim of manhole cover over well, same altitude as surface of road.
37. Orange County, county well 3, about 2 miles southwest of Pinecastle, in ditch on south side of road, NW¼NE¼ sec. 27, T. 23 S., R. 29 E. D., J. R. Matthews. M. P., steel rim of manhole over well, same altitude as surface of road.
38. Orange County, county well 4, about ½ mile west of Orlando city limits, in ditch on west side of road, SE¼SE¼NW¼ sec. 33, T. 22 S., R. 29 E. D., J. R. Matthews. M. P., steel rim of manhole over well, 1 foot below surface.
39. Orange County, county well 5, about 4 miles southwest of Orlando, in drainage ditch at edge of swamp east of highway, SE¼SE¼SE¼ sec. 8, T. 23 S., R. 29 E. D., J. R. Matthews. M. P., rim of manhole over well, 4 feet above surface and top of well casing.
40. Orange County, county well 6, 3½ miles southwest of Orlando, SE¼NE¼ sec. 5, T. 23 S., R. 29 E. D., J. R. Matthews. M. P., surface.
41. Orange County, county well 7, about 2 miles south of Pinecastle on north side of road and south edge of lake, SE¼SE¼ sec. 25, T. 23 S., R. 29 E. D., J. R. Matthews. M. P., metal rim of manhole over well.
42. Orange County, county well 8, about 1½ miles east of Conway, west side of road on east side of lake, NE¼NW¼SE¼ sec. 9, T. 23 S., R. 30 E. D., J. R. Matthews. M. P., steel rim of manhole over well, 4.5 feet above surface.
43. Orange County, county well 9, about 0.2 mile north of Conway, west side of road, NE¼NW¼NE¼ sec. 8, T. 23 S., R. 30 E. D., R. L. Smith. M. P., steel rim of manhole over well, same altitude as surface of road.
44. Orange County, county well 10, about 3 miles southwest of Orlando, in drainage ditch east of road and on west side of swamp, SE¼NE¼NE¼ sec. 8, T. 23 S., R. 29 E. D., J. R. Matthews. M. P., top of manhole over well, same altitude as surface of road.
45. Orange County, county well 11, about 1½ miles northeast of Conway, on line of NW¼NW¼ sec. 9, T. 23 S., R. 30 E. D., R. L. Smith. M. P., surface.
46. Orange County, county well 12, about 5 miles southeast of Orlando, at residence on north side of road, SE¼NE¼SW¼ sec. 10, T. 23 S., R. 30 E. D., J. R. Matthews. M. P., top of manhole, same altitude as surface of road.
47. Orange County, county well 13, about 2 miles northwest of Orlo Vista, in sink on west side of road, SE¼NE¼NE¼ sec. 26, T. 23 S., R. 28 E. D., R. L. Smith. M. P., top of 8-inch casing of well, 3.5 feet below surface of road.
48. Orange County, county well 14, about 1.5 miles west of Orlando city limits, in ditch on west side of road, NW¼NE¼ sec. 29, T. 22 S., R. 29 E. D., R. L. Smith. M. P., top of manhole over well, 2 feet below surface of road.

Records of wells in the Florida peninsula - Continued.

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Orange County - Continued

49. Orange County, county well 15, about 2 miles southeast of Orlando, NE¼NE¼ sec. 5, T. 23 S., R. 30 E. D., R. L. Smith. M. P., surface.
50. Orange County, county well 16, 4 miles northeast of Orlo Vista, SW¼SW¼NE¼ sec. 20, T. 22 S., R. 29 E. D., J. R. Matthews. M. P., surface.
51. Orange County, county well 17, about 1 mile west of Fairvilla, in ditch on north side of road, NE¼NW¼ sec. 16, T. 22 S., R. 29 E. D., R. L. Smith. M. P., concrete rim supporting wood manhole cover over well, 2 feet below surface of road.
52. Orange County, county well 18, SE¼NE¼NW¼ sec. 6, T. 23 S., R. 30 E. M. P., concrete rim of manhole, same altitude as road surface.
53. Orange County, county well 19, about 1 mile west of Fairvilla, in ditch on north side of road and west of well 51, NE¼NW¼ sec. 16, T. 22 S., R. 29 E. M. P., concrete rim of manhole over well.
54. Town of Winter Park, Winter Park, southeast corner Center St. and Welborne Ave. D., W. A. Neal. M. P., steel rim of manhole over well, same altitude as sidewalk.
55. Orange County, about 1 mile west of Maitland, on north shore of Lake Sybilla. M. P., steel rim of manhole over well, same altitude as surface.
56. Town of Apopka, Apopka, east side of Highland Ave. 200 feet north of 4th St. M. P., steel rim of manhole over well, same altitude as surface.
57. J. E. Jackson, east shore of Lake Apopka at Fisherman's Paradise, sec. 30, T. 21 S., R. 28 E. D., R. L. Smith. M. P., top of 4-inch well casing, same altitude as surface.
58. Harold Tilden, south end of Lake Apopka, in orange grove just west of old Winter Garden Docks. M. P., 3/4-inch pipe, 3 feet above surface.
59. R. L. Smith, east of Smith residence, Oakland. D., R. L. Smith. M. P., top of concrete wall, 7.45 feet above top of well casing and about same altitude as surface.
60. H. C. Tilden, about 2 miles east of Winter Garden and ¼ mile south of Winter Garden road, NE¼NW¼ sec. 24, T. 22 S., R. 27 E.
61. Winter Garden Hotel, about 2 miles east of Winter Garden, in field on south side of road. M. P., top of concrete wall on south side of well, 8.5 feet above top of casing.
62. W. F. Bennett, about 1 mile northeast of Vineland on west shore of Big Sand Lake, sec. 11, T. 24 S., R. 28 E. M. P., top of concrete manhole over well, same altitude as surface.
63. Orange County (?), NE¼SW¼ sec. 22, T. 24 S., R. 29 E. M. P., top of well casing.
64. Orange County (?), NE¼SE¼ sec. 23, T. 24 S., R. 29 E. M. P., wood manhole cover, 4.35 feet above top of well casing.
65. Town of Bithlo, Bithlo. M. P., top of concrete rim around well pit, 3 feet above surface.
66. About 1.5 miles east of Fort Christmas, on south side of road, NW¼ sec. 35, T. 22 S., R. 33 E. M. P., top of 2-inch pipe on well, 1 foot above surface.

Osceola County

1. S. G. Sligh, about 1.5 miles northeast of Loughman. D., Jim Dribble. M. P., top of 4-inch pipe, 1 foot above surface.
2. Gilbert Park, Gilbert Park, about 1 mile southwest of Kissimmee. D., Jim Dribble. M. P., concrete rim of pool, 5 feet above surface.
3. A. P. Tate, about 1 mile southwest of Kissimmee. M. P., top of 2-inch pipe, 1 foot above surface.
4. Kissimmee. M. P., surface.
5. Kissimmee. M. P., surface.
6. St. Cloud. M. P., surface.
7. St. Cloud. M. P., surface.
8. G. M. Griffin, Holopaw. M. P., surface.

Palm Beach County

1. Hulls Grove, about 6 miles west of Jupiter. M. P., top of 2-inch well casing, 1.5 feet above surface.
2. Seminole Golf Course, Jupiter. D., R. F. Hair. M. P., pump-house floor, 1 foot above surface.
3. Seminole Golf Course, Jupiter. D., R. F. Hair. M. P., top of 6-inch well casing, 1.5 feet above surface.
4. Florida Power & Light Co., West Palm Beach. D., Layne Southeastern Co. M. P., top of ½-inch valve on pump, 2 feet above surface.
5. Florida Power & Light Co., West Palm Beach. D., R. F. Hair. M. P., surface.
6. Town of Lake Worth, Lake Worth. D., Gray. M. P., surface.
7. Town of Lake Worth, Lake Worth. M. P., surface.
8. Colonel Brasford, about 1 mile east of Lantana, sec. 3, T. 45 S., R. 43 E. D., R. F. Hair. M. P., surface.
9. Town of Boca Raton, Boca Raton. M. P., surface.
10. Experiment Station, Florida University, Everglades Experiment Station, near Belle Glade. D., Gray Artesian Well Co. M. P., top of pipe, 3 feet above surface.
11. U. S. Sugar Corporation, SW¼ sec. 12, T. 42 S., R. 18 E., south side of Conners highway and 3 miles southeast of Canal Point. M. P., top of 6-inch pipe, 2 feet above surface.

Pasco County

1. Cummer Cypress Lumber Co., Lacoochee. M. P., top of 6-inch casing, 0.3 foot above surface.
2. Aripeka Lumber Co., about 1/8 mile southeast of Fivay. M. P., top of 8-inch well casing, 2 feet above surface.
3. Fivay School, Fivay Junction. D., C. Glass. M. P., top of 1½-inch casing, 4 feet above surface.
4. R. J. St. John, Darby, sec. 36, T. 24 S., R. 19 E. D., C. Glass. M. P., surface.
5. Town of San Antonio, San Antonio. D., M. R. Vaughn. M. P., floor of pump house, 1 foot above surface.
6. Joe Bartel, San Antonio. M. P., pump base, 2 feet above surface.
7. St. Leo's School, about ½ mile south of St. Leo. M. P., floor of pump house, 1 foot above surface.
8. Town of Dade City, Dade City. M. P., surface.
9. Ice plant, Tampa Electric Co., about ½ mile north of Dade City. M. P., top of 6-inch tee, 1.5 feet above surface.
10. Ice plant, Tampa Electric Co., about ½ mile north of Dade City. M. P., top of 6-inch casing, 4.5 feet below surface.
11. W. A. LaHeup, sec. 16, T. 25 S., R. 21 E., LaHeup Hill. M. P., pump base, 1 foot above surface.
12. George Tucker, Grear, sec. 23, T. 25 S., R. 21 E. M. P., top of 9-inch casing.
13. Ehren, sec. 31, T. 25 S., R. 19 E. M. P., top of 6-inch casing, 0.8 foot above surface.
14. Casper Mueller, sec. 12, T. 26 S., R. 18 E., 3 miles north of Denham. D., Charles Glass. M. P., top of 1½-inch casing, 1.5 feet above surface.
15. Westley Chapel School, sec. 8, T. 26 S., R. 20 E., about 9 miles northeast of Denham. D., Charles Glass. M. P., top of 1½-inch casing, 1.5 feet above surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Pasco County - Continued

16. P. C. Pobb, about 2 miles north of Zephyr Hills. D., M. R. Vaughn. M. P., surface.
17. S. E. Reecker, about 2 miles north of Zephyr Hills. D., May Bros. M. P., surface.
18. Town of Zephyr Hills, Zephyr Hills. M. P., surface.
19. Town of New Port Richey, New Port Richey. M. P., surface.
20. Town of Elfers, Elfers. M. P., surface.

Pinellas County

1. City of St. Petersburg, city well 7, Mirror Lake Drive on west side of Mirror Lake, St. Petersburg. M. P., top of well casing, same altitude as surface.
2. City of St. Petersburg, city well 8, Mirror Lake Drive on west side of Mirror Lake, St. Petersburg. M. P., top of concrete rim of base of pump house, same altitude as surface.
3. City of St. Petersburg, city well 9, Mirror Lake Drive, north side of Mirror Lake, St. Petersburg. M. P., top of concrete rim of base of pump house, same altitude as surface, 2.3 feet above top of casing
4. Don-Ce-Sar Hotel, Pass-a-Grille Beach, at Don-Ce-Sar Hotel. M. P., top of 4-inch pipe, 2 feet above surface.
5. City of Clearwater, city well 12, east of Stephenson Creek and north of Cleveland St., Clearwater. M. P., top of well casing.
6. City of Clearwater, city well 13, Park St. and Missouri Ave., Clearwater. M. P., surface.
7. City of Clearwater, city well 11, Cleveland St. and Missouri Ave., Clearwater. M. P., surface.

Polk County

1. Speth Grove, about 3.5 miles northeast of Kathleen, sec. 9, T. 27 S., R. 23 E. D., R. Neikirk. M. P., pump base, at surface. During construction of well driller reported water level 40 feet below surface until he reached rock at 138 feet; then water level stood 78 feet below surface.
2. Town of Polk City, Polk City. D., H. Chase. M. P., top of 8-inch casing, 1 foot above surface.
3. Everglades Cypress Lumber Co., Loughman. M. P., top of 6-inch tee, 1.5 feet above surface.
4. H. E. Strohme, about 2½ miles northwest of Davenport. D., J. B. Whatley. M. P., top of 6-inch pipe, 3 feet above surface.
5. Town of Davenport, Davenport. M. P., pump base, same altitude as surface.
6. Town of Haines City, Haines City. D., Perry Bros. M. P., top of well pit, 1 foot above surface.
7. Town of Haines City, Haines City. D., Perry Bros. M. P., top of 3/4-inch plug in 6-inch ell, 5.6 feet below surface.
8. A. C. L., Haines City. M. P., top of 6-inch casing, 12 feet below surface.
9. Federal Ice Co., Lakeland. D., Ohio Well Drilling Co. M. P., surface.
10. Federal Ice Co., Lakeland. D., Rigler. M. P., pump base, at surface.
11. Southern Utilities Co. ice plant, North Dakota St. and railroad, Lakeland. D., Hilliard. M. P., top of 1-inch plug in 8-inch casing, 3 feet above surface.
12. Town of Lakeland, Lakeland. D., G. Southard. M. P., pump base, at surface.
13. Town of Lakeland, Lakeland. D., R. Neikirk. M. P., pump base, 1 foot below surface.
14. Town of Auburndale, Auburndale. M. P., surface.
15. Town of Auburndale, Auburndale. D., R. M. Perry. M. P., top of 12-inch casing, 6 inches above surface.
16. Town of Lake Alfred, Lake Alfred. D., J. B. Whatley. M. P., top of 10-inch casing, 12.4 feet below surface.
17. C. D. Page, sec. 24, T. 28 S., R. 25 E., about 3 miles northwest of Winter Haven. M. P., top of stone wall at well, 6 inches above surface.
18. Yates, about 3 miles northwest of Winter Haven. M. P., top of 5-inch casing, 2 feet below surface.
19. Town of Winter Haven, Florence Villa. M. P., top of 6-inch casing, 7 feet below surface.
20. Town of Winter Haven, Winter Haven. M. P., top of 10-inch casing, 13 feet below surface.
21. Town of Winter Haven, Winter Haven. M. P., top of 12-inch casing, 6 inches below surface.
22. Town of Eagle Lake, Eagle Lake. D., T. S. Whatley. M. P., pump base, at surface.
23. Town of Lake Hamilton, Lake Hamilton. M. P., top of 6-inch casing, 6 inches above pump-house floor and surface.
24. International Agricultural Chemical Phosphate Co., well 3, about 2 miles west of Mulberry. M. P., top of 10-inch casing, 1 foot below surface.
25. International Agricultural Chemical Phosphate Co., well 2, about 2 miles west of Mulberry. M. P., top of 2½-inch tee on top of 10-inch casing, 3 feet above surface.
26. International Agricultural Chemical Phosphate Co., well 1, about 2 miles west of Mulberry. M. P., top of 10-inch casing, 0.5 foot above surface.
27. Florida Phosphate Co., International Agricultural Chemical Phosphate Co. well 23, about 1 mile east of Mulberry. M. P., top of 12-inch casing, 1 foot above surface.
28. A. B. McLain, about 3 miles northwest of Bartow, sec. 36, T. 29 S., R. 24 E. D., T. S. Whatley. M. P., top of 6-inch casing, 0.7 foot above surface.
29. Frost & Harper, about 2.5 miles northwest of Bartow. M. P., surface.
30. Armour Fertilizer Co., about 1.5 miles west of Bartow. D., Boland. M. P., floor of engine room, 1 foot above surface.
31. Town of Bartow, Bartow. D., Virginia Machinery & Well Drilling Co. M. P., surface.
32. Mountain Lake Corporation, well 1, about 2 miles north of Lake Wales. M. P., pump base, 3 feet below surface.
33. Mountain Lake Corporation, well 2, about 2 miles north of Lake Wales. M. P., pump base, 6 feet below surface.
34. Florida Public Service Co., Lake Wales. D., R. J. Neikirk. M. P., top of 12-inch casing, 5.5 feet below surface.
35. American Agricultural Chemical Co., well 6, sec. 31, T. 30 S., R. 24 E., Pierce. M. P., top of 30-inch casing, 1 foot above surface.
36. Amalgamated Phosphate Co., Brewster. M. P., top of 15-inch casing, 1 foot above surface.
37. Amalgamated Phosphate Co., Brewster. M. P., top of 18-inch casing, 7 feet above surface.
38. American Agricultural Chemical Co., well 7, South Pierce, NE¼SE¼SE¼ sec. 36, T. 31 S., R. 24 E. D., Virginia Machinery & Well Drilling Co. M. P., top of 30-inch casing, at surface.
39. K. O. Varnes, about 1 mile northeast of Fort Meade. D., C. M. Boland. M. P., top of 4-inch pipe, 3 feet above surface.
40. About 2 miles west of Fort Meade. M. P., top of 3/4-inch faucet 6 inches above surface, at gasoline station.
41. Town of Frostproof, Frostproof. M. P., top of 3/4-inch valve on top of 12-inch casing, 1 foot above surface.
42. Town of Fort Meade, Fort Meade. M. P., surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Putnam County

1. P. D. Watkins, sec. 1, T. 9 S., R. 23 E., Putnam Hall. M. P., top of 2½-inch casing, 2.5 feet above surface.
2. R. J. Hancock, about 1.2 miles north of Bostwick, sec. 19, T. 8 S., R. 27 E. D., Ralph Willis. M. P., top of 4-inch well tee, 1.5 feet above surface.
3. R. J. Hancock, Bostwick. M. P., surface.
4. R. W. Varnes, about 1 mile south of Bostwick. D., Ace. M. P., top of 3/4-inch faucet, 1 foot above surface.
5. E. J. Cameron, about 1 mile south of Bostwick. M. P., top of 4-inch casing, 0.5 foot above surface.
6. Appleby's dairy, about 4 miles south of Bostwick. M. P., top of 4-inch casing, 3 feet above surface.
7. W. R. Sellards, about 1 mile south of Federal Point. D., Ed Benedict. M. P., top of 3/4-inch faucet at well, 2 feet above surface.
8. Esperanto-Grove Winnemesset Park Co., about 3 miles north of East Palatka. M. P., top of 3/4-inch faucet, 2 feet above surface.
9. Esperanto-Grove Winnemesset Park Co., about 3 miles north of East Palatka. D., Ed Benedict. M. P., top of ½-inch faucet on lock, 3 feet above surface.
10. J. C. Townsend, Orange Mills. D., N. H. Monck. M. P., top of 3/4-inch faucet, 2 feet above surface.
11. Louis Broer, East Palatka, near A. C. L. station. M. P., top of 3/4-inch faucet, 2 feet above surface.
12. Town of Palatka, Palatka. M. P., top of 3/4-inch faucet, 1 foot above surface.
13. Rheads, Laurel and 2d Sts., Palatka. M. P., top of 3/4-inch faucet, 1 foot above surface.
14. Town of Interlachen, Interlachen. D., Layne Southeastern Co. M. P., pump base, at surface.
15. A. C. L., sec. 27, T. 10 S., R. 26 E., St. Johns River and railroad bridge. D., J. Mervin. M. P., top of 1¼-inch valve, in south house on bridge.
16. George Wangbickler, Saratoga Landing, T. 11 S., R. 26 E. M. P., top of 3/4-inch faucet near dock, 0.5 foot above surface.
17. Florida State Road Department, east side of Dunns Creek Bridge and north side of highway southwest of San Mateo. D., Ed Benedict. M. P., top of 3/4-inch faucet, 6 feet above surface.
18. F. Board, about ½ mile north of Welaka, sec. 33, T. 11 S., R. 26 E. D., Ed Benedict. M. P., top of 2-inch casing, 0.5 foot above surface.
19. Mrs. B. Hayes, Pomona. M. P., top of 2-inch casing, 1.5 feet below surface.
20. A. C. L., Huntington. M. P., top of 2½-inch casing, 1.5 feet above surface.
21. Blanchard, about 2 miles south of Georgetown on Lake George. M. P., top of 3½-inch casing, 1 foot above surface.
22. William McElroy, about ½ mile north of boat landing on Drayton Island. M. P., surface.
23. H. Rehberg, about ¼ mile south of boat landing on Drayton Island. M. P., on 3/4-inch faucet, 1 foot above surface.
24. Town of Crescent City, Crescent City. M. P., top of 6-inch valve at well, 6 inches above surface.
25. Florida State Fish Hatchery, near Welaka. D., J. W. Hurst. M. P., top of casing, 6 inches above surface.
26. Florida State Fish Hatchery, near Welaka. D., J. W. Hurst. M. P., top of casing, 1.5 feet above surface.

St. Johns County

1. G. H. Hodges, about 1 mile north of Switzerland, sec. 6, T. 5 S., R. 26 E. M. P., top of 3/4-inch faucet, 2 feet above surface.
2. G. H. Klingberg, about ¼ mile west of Switzerland. M. P., top of 6-inch casing, 1 foot above surface.
3. Frank Hale, sec. 35, T. 4 S., R. 27 E., about 5 miles southwest of Bayard. D., Shaeffer. M. P., top of 6-inch pipe, 2 feet above surface.
4. St. Johns race track, sec. 4, T. 5 S., R. 28 E., south of Bayard. M. P., top of 6-inch valve, 1 foot above surface.
5. St. Johns race track, sec. 4, T. 5 S., R. 28 E., near race track. M. P., top of 6-inch valve, at surface.
6. Mrs. E. Mickler, about 3 miles southeast of Palm Valley. D., H. Walker. M. P., top of 4-inch tee, 3 feet above surface.
7. George Oesterricker, Canal drawbridge, sec. 28, T. 4 S., R. 29 E. D., Gray. M. P., top of 3/4-inch pipe, 2 feet above surface.
8. Florida State Road Department, about 7 miles north of Vilano Beach. M. P., top of 3/4-inch pipe, 3 feet above surface.
9. Florida State Road Department, about 12 miles north of Vilano Beach. M. P., top of 3/4-inch pipe, 4 feet above surface.
10. Mill Creek School, about 9 miles east of Strands Bridge, sec. 20, T. 6 S., R. 28 E. M. P., top of 3/4-inch pipe, 2 feet above surface.
11. Riverdale Land Co., Riverdale. D., R. C. Walker. M. P., top of 3/4-inch pipe, at surface.
12. Casper Ruger, about ½ mile south of Riverdale. D., Gray & Stevens. M. P., top of 3/4-inch pipe, 1 foot above surface.
13. Sam Altavilla, about 1¼ miles south of Riverdale. D., Gray & Stevens. M. P., top of 3/4-inch faucet, 2 feet above surface.
14. F. Usina, about 2 miles north of Vilano Beach. D., Call. M. P., top of 3/4-inch pipe at house, 1 foot above surface.
15. P. J. Manucy, sec. 8, T. 7 S., R. 30 E., Vilano Bridge on North River. M. P., top of 3/4-inch faucet, 2.5 feet above surface.
16. Mrs. J. M. Middleton. Elkton. D., Walker. M. P., top of 3/4-inch faucet, 1 foot above surface.
17. F. D. Wattels, Anastasia Island, 100 yards west of St. Augustine Beach. D., Charles Mervin. M. P., top of 3/4-inch faucet, 1 foot above surface.
18. Mrs. E. Vail, sec. 8, T. 8 S., R. 30 E., Moultrie Creek and Matanzas River. M. P., top of 3/4-inch faucet, 1 foot above surface.
19. V. J. Mickler, about 1.5 miles north of Crescent Beach. D., V. J. Mickler. M. P., top of 4-inch tee, 1 foot above surface.
20. W. A. Cubbedge, Crescent Beach. D., Gray & Stevens. M. P., top of 4-inch tee, 2.5 feet above surface.
21. Corbet estate, Matanzas Inlet. D., H. Walker. M. P., top of 4-inch valve, 3 feet above surface.
22. F. Rawson, about 3 miles northwest of Hastings. D., Ed Benedict. M. P., top of 3/4-inch faucet, 1 foot above surface.
23. J. B. McCollum, about 2 miles northwest of Hastings. D., Ed Benedict. M. P., top of 3/4-inch faucet, 1 foot above surface.
24. J. J. Brown, Hastings. D., J. Wilson. M. P., top of 3/4-inch faucet, 1.5 feet above surface.
25. Fannie K. Stewart, Hastings. M. P., top of 3/4-inch faucet, 1.5 feet above surface.
26. A. C. Gray, 24 Grant St., St. Augustine. D., A. C. Gray. M. P., top of 3/4-inch pipe, 3 feet above surface.
27. Ponce De Leon Hotel, St. Augustine. M. P., top of 3/4-inch pipe, 4 feet above surface.
28. City of St. Augustine, well 2, St. Augustine. M. P., surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

St. Lucie County

1. Municipal plant, Fort Pierce. M. P., top of 3/4-inch valve at 4-inch well tee, 2.5 feet above surface.
2. Floyd Johnson, about 9 miles west of Fort Pierce, sec. 32, T. 35 S., R. 39 E. D., Floyd Johnson. M. P., top of 3-inch pipe, 1.5 feet above surface.
3. J. W. Shipe, about 3.7 miles west of Fort Pierce railroad station, south side of highway. M. P., top of 4-inch outlet, 1 foot above surface.

Sarasota County

1. Town of Sarasota, west well at city plant, North Orange Ave., Sarasota. D., C. L. Thompson. M. P., top of ½-inch outlet on top of pump, same altitude as surface. Analysis of water included in Sarasota report.
2. Town of Sarasota, East Chester Drive, Sapphire Heights, Sarasota; well 4 of Sarasota report. D., C. L. Thompson. M. P., top of ½-inch pipe on pump, 3.2 feet above surface. Analysis of water included in Sarasota report.
3. Town of Sarasota, south of Ringling circus quarters, Sarasota; well 5 of Sarasota report. D., C. L. Thompson. M. P., top of 3/4-inch pipe, 4 feet above surface. Analysis of water included in Sarasota report.
4. Ringling estate, west of Bird Key on Ringling causeway, Sarasota; well 28 of Sarasota report. D., W. Adams. M. P., top of 3/4-inch pipe, 3 feet above surface. Analysis of water included in Sarasota report.
5. R. M. Canty, about 12 miles east of Sarasota, in sec. 19, T. 36 S., R. 20 E.; well 46 of Sarasota report. M. P., top of casing, 1 foot above surface.
6. City water plant, Venice; well 54 of Sarasota report. M. P., top of 3/4-inch pipe, 2 feet above surface. Analyses of water included in Sarasota report.
7. Palmer Corporation, sec. 23, T. 36 S., R. 18 E., Palmer Farms; well P-1 of Sarasota report. D., C. L. Thompson. M. P., top of 3/4-inch pipe, same altitude as surface.
8. Bell Bros., sec. 30, T. 36 S., R. 19 E., Palmer Farms; well P-19 of Sarasota report. D., C. L. Thompson. M. P., top of valve stem on west outlet at pump house, 1.5 feet above surface. Analysis of water included in Sarasota report.
9. Palmer Corporation, sec. 20, T. 36 S., R. 19 E., Palmer Farms; well P-100 of Sarasota report. D., C. L. Thompson.

Seminole County

1. Seminole County (?), SW¼ sec. 21, T. 20 S., R. 30 E., on west side of road to Lake Mary. M. P., top of 2-inch casing, same altitude as surface.
2. J. D. Wicks, SW¼ sec. 35, T. 20 S., R. 30 E., on south side of road about 0.4 mile west of Wagner. D., M. E. Miller. M. P., top of 3-inch pipe, 1 foot above surface.
3. J. E. Parten, SW¼ sec. 34, T. 20 S., R. 31 E., about 2.5 miles north of Oviedo. D., A. R. Arie.
4. Town of Oviedo, Oviedo, in sink hole on south side of road to Orlando. D., A. R. Arie. M. P., top of 4-inch casing, same altitude as surface of ground in sink hole and 10 feet below surface of road.
5. One mile north of Oviedo along Sanford road, on east side of road. M. P., top of 3-inch casing, 2 feet above surface.
6. Alex Leinhart, SW¼ sec. 34, T. 20 S., R. 31 E., about 2 miles north of Oviedo. D., McCollough. M. P., top of 2-inch pipe, 1 foot above surface.
7. Max Leinhart, lot 225, NE¼ sec. 2 , T. 21 S., R. 31 E. M. P., top of 2-inch pipe, 2 feet above surface.
8. A. R. Arie, about 0.2 mile north of Oviedo, at Arie residence. D., A. R. Arie. M. P., top of 6-inch casing, 1.4 feet above surface.
9. C. F. Flesher, about 0.2 mile north of Oviedo, at Flesher residence. M. P., top of 2-inch pipe, same altitude as surface.
10. SE¼ sec. 4, T. 21 S., R. 31 E., north side of road 0.7 mile west of turn in road to Sanford. M. P., top of 2-inch pipe, 1.5 feet above surface.
11. S. L. Murphy, lot 50, SE¼ sec. 6, T. 21 S., R. 32 E., north side of road to Geneva. M. P., top of 3-inch casing, 0.7 foot below surface.
12. Luther Mills, lot 2, NE¼ sec. 12, T. 21 S., R. 31 E., north side of Geneva road west of Varnsdale St. M. P., top of 2-inch pipe, 2 feet above surface.
13. H. E. Cole estate, SE¼ sec. 12, T. 21 S., R. 31 E. M. P., top of 3-inch casing, same altitude as surface.
14. L. A. Mos, about 0.1 mile northeast of Slavia, east of road at Mos residence. D., McCollough. M. P., top of 3-inch pipe, 2 feet above surface.
15. Andrew Duda, SW¼ sec. 16, T. 21 S., R. 31 E., near Slavia. D., A. R. Arie. M. P., surface.
16. Martin Stanko, Slavia. M. P., surface.
17. J. E. Partin, 0.3 mile east of Econlockhatchee River, on south side of Oviedo-Chuluota road. M. P., surface.
18. About 2.5 miles north of Oviedo, in canal leading to Lake Jessup. D., A. R. Arie.
19. NW¼SE¼ sec. 25, T. 20 S., R. 31 E. (tract 376), east side of Stone Ave.
20. About 300 yards north of well 19.
21. H. O. Crippen, lot 5, SW¼NW¼ sec. 16, T. 20 S., R. 31 E., Sipes Ave.
22. 200 yards north of well 21, on east side of Sipes Ave. M. P., surface.
23. James Allen, NE¼SE¼ sec. 24, T. 20 S., R. 30 E., Allen Corner, south of Sanford. D., Fred Jones. M. P., surface.
24. Brady, E. First St., Sanford. M. P., top of 2-inch pipe, 2.7 feet above surface.
25. North side of Celery Ave. and west of St. Johns River bridge, Sanford. M. P., surface.
26. L. I. Frazier, Celery Ave., Sanford, near Frazier residence. M. P., top of 3/4-inch faucet, 1 foot above surface.
27. Union and Mellonville Aves., Sanford. M. P., surface.
28. About 0.4 mile east of Wagner on north side of road. M. P., surface.
29. City of Sanford, city well 1, 3.7 miles south of Sanford city hall along highway 3 to Orlando. D., F. J. Raehn. M. P., surface.
30. E. Tenner, sec. 1S, T. 21 S., R. 33 E. M. P., surface.
31. Woodruff, NE¼ sec. 19, T. 19 S., R. 30 E., 1.6 miles west of Lake Monroe railroad station. M. P., surface.
32. J. E. Johnson, SE¼ sec. 16, T. 19 S., R. 30 E., Lake Monroe. M. P., top of 2-inch pipe, 1 foot above surface.
33. Carl Carlson, southwest intersection of 1st St. and road to Lake Monroe. M. P., surface.
34. George McCrum, sec. 28, T. 19 S., R. 30 E., 1st St., Sanford. M. P., surface.

Records of wells in the Florida peninsula - Continued

Owners, location, and drillers of the wells, description of the measuring points, and remarks - Continued

Sumter County

1. J. M. Brown, Oxford. D., W. Hamilton. M. P., top of 3-inch casing, 0.1 foot above surface.
2. O. L. Bogue, Oxford. M. P., surface.
3. Town of Wildwood, Wildwood. M. P., top of 4-inch casing, 1 foot above surface.
4. Standard Oil Co., Wildwood. M. P., top of 2-inch casing, 0.2 foot above surface.
5. Russ Crate Co., Coleman. M. P., top of 2-inch casing, at surface.
6. S. Stephens, about 6 miles north of Bushnell. D., S. Stephens. M. P., top of 10-inch casing, 0.7 foot above surface. Flows during part of year.
7. S. Stephens, about 6 miles north of Bushnell. D., S. Stephens. M. P., top of 1-inch plug in 6-inch coupling, 1.6 feet above surface.
8. Town of Bushnell, Bushnell. M. P., top of 6-inch ell, 0.5 foot above surface.
9. Bushnell Ice Co., Bushnell. M. P., top of 4-inch tee on well, 0.5 foot above surface.
10. Town of Webster, Webster. M. P., top of 12-inch casing, 0.7 foot above surface.
11. George P. Parrish, about 4 miles northeast of Richloam. M. P., top of 3-inch well tee, 1 foot above surface.
12. A. C. L., St. Catherine; U. S. E. D. 155. M. P., surface.
13. F. D. Smith, Center Hill; U. S. E. D. 157. M. P., surface.
14. J. N. Lee, Linden; U. S. E. D. 152. M. P., surface.
15. L. S. Brinson, sec. 25, T. 22 S., R. 22 E.; U. S. E. D. 153. M. P., surface.

Suwannee County

1. Town of Live Oak, well 3, Live Oak. M. P., surface.
2. Town of Live Oak, well 2, Live Oak. D., W. McGrew. M. P., surface.
3. Town of Live Oak, well 1, Live Oak. M. P., surface.
4. Suwannee County, about 3.5 miles south of Live Oak. M. P., top of casing, same altitude as surface.
5. Town of Branford, Branford. M. P., surface.
6. H. H. Hair, about 3.5 miles north of Live Oak, SW¼SE¼ sec. 36, T. 1 S., R. 13 E.; U. S. E. D. 89. M. P., surface.
7. J. Johnson, about 5.5 miles north of Live Oak, sec. 19, T. 1 S., R. 14 E.; U. S. E. D. 90. M. P., surface.
8. J. W. Lassiter, Newburn; U. S. E. D. 82. M. P., surface.
9. F. M. Prevall, about 0.3 mile north of McAlpin, SW¼SE¼ sec. 7, T. 4 S., R. 14 E.; U. S. E. D. 69. M. P., surface.
10. Standard Lumber Co., Dowling Park; U. S. E. D. 75. M. P., surface.
11. E. N. Poole, about 2 miles east of Dowling Park; U. S. E. D. 76. M. P., surface.
12. State Road Dept., sec. 33, T. 2 S., R. 14 E. Top of 5-inch well coupling, 0.5 foot above surface.

Union County

1. Florida State Farm, about 3 miles north of Raiford. M. P., surface.
2. Florida State Farm, Raiford. D., Ohio Well Drilling Co. M. P., base of water tank, 1 foot above surface.
3. Florida State Farm, Raiford. M. P., surface.
4. U. S. E. D., about 3.5 miles northeast of Raiford at New River Bridge. D., U. S. E. D. M. P., surface.
5. U. S. E. D., Worthington Springs; U. S. E. D. 338. D., U. S. E. D. M. P., surface.
6. Goethe sawmill, Danville, sec. 2, T. 6 S., R. 19 E. M. P., top of 2½-inch casing, 1 foot above surface.
7. J. W. Townsend, Lake Butler. M. P., top of 6-inch casing, same altitude as surface.

Volusia County

1. Town of De Land, in rear of post office, De Land. M. P., top of pump pit, 21 feet above top of well casing and same altitude as surface.
2. Town of De Land, at city water plant, De Land. D., Layne Southeastern Co. M. P., surface.
3. Town of Lake Helen, Lake Helen. D., Gray Artesian Well Co. M. P., surface.
4. Orange City Mineral Spring Co., Orange City. M. P., rim of pump pit, about same altitude as surface and 13.5 feet above top of casing.
5. W. J. Webber, about 3 miles northeast of Samsula, on south side of road to New Smyrna. D., Wilson. M. P., surface.
6. J. B. Somerset, Oak Hill. M. P., surface.
7. T. B. Lynch, east side of road to Sanford, 0.6 mile north of St. Johns River. M. P., top of 2-inch pipe on well, 3 feet above surface.
8. Mrs. S. A. Baker, about 2 miles south of Seville, on west side of railroad and road. D., Ralph Willis. M. P., top of 4-inch pipe, 3 feet above surface.
9. City of Daytona Beach, Daytona Beach. D., Melton. M. P., top of 2-inch valve, 1 foot above surface. Reported loss of head is 8 feet since 1888.
10. Town of Port Orange, Port Orange. D., S. Wilson. M. P., top of 6-inch valve, 1.5 feet above surface.
11. Experimental farm, about 2.5 miles west of New Smyrna. M. P., top of 2-inch valve, 3 feet above surface.
12. Power plant of New Smyrna, New Smyrna. M. P., top of 4-inch casing, same altitude as concrete floor and surface.
13. Oak Hill Citrus Growers Association, Oak Hill. D., S. Wilson. M. P., top of 2-inch tee, at surface.

Measurements of pressure heads and water levels in wells in the Florida peninsula

[Numbers designating the wells are the same as those in the table of well records. The pressure heads and water levels are expressed in feet above or below the measuring point. A description of the measuring points is given in the notes following the table of well records.]

No.	Date of measurement	Water level (feet)
Alachua County		
	1934	
1	Apr. 17	-12.0
	Sept.29	- 9.0
	Nov. 17	-10.6
	1934	
2a	Sept.29	- 7.53
	Nov. 17	- 9.06
	1935	
	Mar. 23	-10.20
	1934	
6	Apr. 25	-11.0
	Sept.29	- 6.7
	Nov. 17	- 7.48
	1935	
	Mar. 23	- 9.85
	1934	
14	Nov. 17	-95.8
	1935	
	Mar. 23	-97.7
	1934	
15	Apr. 22	-14.0
	Nov. 17	-14.03
	1935	
	Mar.	-16.1
	1934	
16	Apr. 22	-62.8
	Nov. 16	-61.8
	1934	
17	Apr. 22	-69.2
	Nov. 17	-68.3
Brevard County		
	1934	
10	Aug. 16	+24.0
	Nov. 29	+24.-
	1934	
12	Aug. 15	+37.0
	Nov. 29	+36.0
	1934	
26	Aug. 9	+35.0
	Nov. 29	+36.0
Citrus County		
	1934	
3	Nov. 15	- 2.0
	1935	
	Mar. 31	- 5.5
	1934	
4	Jan. 19	-13.5
	Nov. 14	-13.75
	1935	
	Mar. 31	-14.9
	1933	
12	May 15	-14.2
	22	-14.4
	29	-14.5
	June 8	-14.8
	17	-15.1
	24	-15.3
	July 2	-15.6
	11	-15.6
	18	-13.1
	28	-12.4
	Aug. 7	-12.4
	15	-12.6
	21	-12.8
	28	-12.5
	Sept. 5	- 2.6
	14	- 0.9
	22	- 0.5
	30	+ 3.7
	Oct. 7	+ 3.3
	1933	
13	May 15	- 7.2
	22	- 6.9
	29	- 7.6
	June 8	- 7.9
	17	- 8.0
Citrus County - Cont'd.		
	1933	
13	June 24	- 8.1
	July 2	- 8.3
	11	- 8.3
	18	- 5.8
	28	- 5.3
	Aug. 7	- 5.2
	15	- 5.4
	21	- 4.2
	28	- 4.0
	Sept. 5	+ 1.2
	14	+ 0.4
	22	+ 0.3
	30	+ 0.1
	Oct. 7	- 0.1
	1933	
14	May 7	-11.7
	15	-11.9
	22	-12.0
	29	-12.2
	June 8	-12.5
	17	-12.6
	24	-12.8
	July 2	-13.0
	11	-13.2
	28	-11.9
	Aug. 7	-11.0
	15	-10.9
	28	-10.4
	Sept. 5	-10.5
	14	- 5.9
	22	- 6.4
	30	- 6.7
	Oct. 7	- 6.9
	1933	
15	May 7	-16.3
	15	-15.8
	22	-15.6
	29	-15.5
	June 8	-15.6
	17	-17.0
	24	-17.2
	July 2	-17.4
	11	-17.5
	18	-17.1
	28	-16.4
	Aug. 7	-16.0
	15	-16.0
	21	-16.0
	28	-15.6
	Sept. 5	-15.4
	14	- 9.5
	22	- 9.0
	30	- 9.1
	Oct. 7	- 9.2
	1933	
16	May 7	-64.0
	15	-63.8
	22	-63.8
	29	-63.8
	June 8	-63.8
	17	-63.7
	24	-63.7
	July 2	-63.7
	11	-63.7
	18	-63.5
	28	-63.3
	Aug. 7	-63.1
	15	-63.9
	21	-63.7
	28	-62.5
	Sept. 5	-62.3
	14	-59.6
	22	-55.7
	30	-53.9
	Oct. 7	-52.4
	1933	
17	May 7	-41.9
	15	-41.8
	22	-41.6
	29	-41.4
	June 8	-41.2
	17	-41.2
	24	-41.2
	July 2	-41.3
	11	-41.5
	18	-41.3
Citrus County - Cont'd.		
	1933	
17	July 28	-41.5
	Aug. 7	-41.7
	15	-41.4
	21	-40.8
	28	-40.4
	Sept. 5	-40.1
	14	-36.0
	22	-31.7
	30	-31.1
	Oct. 7	-30.9
	1933	
18	May 7	- 9.1
	15	- 9.1
	22	- 9.1
	29	- 9.2
	June 8	- 9.3
	17	- 9.3
	24	- 9.4
	July 2	- 9.6
	11	- 9.7
	18	- 8.7
	28	- 8.4
	Aug. 7	- 7.6
	15	- 7.8
	21	- 7.8
	28	- 7.3
	Sept. 5	- 7.4
	14	- 1.9
	22	- 1.4
	30	- 1.2
	Oct. 7	- 0.9
	1933	
19	Feb. 28	-15.0
	May 15	-13.4
	22	-13.8
	29	-14.0
	June 8	-14.4
	17	-14.7
	24	-14.9
	July 2	-15.1
	11	-15.4
	18	-14.4
	28	-13.3
	Aug. 7	-12.0
	15	-11.9
	21	-12.1
	28	-11.9
	Sept. 5	-11.8
	14	- 6.7
	22	- 7.0
	30	- 7.2
	Oct. 7	- 7.6
	1933	
20	Feb. 28	- 3.0
	May 15	- 3.4
	22	- 3.9
	29	- 4.5
	June 8	- 5.2
	17	- 5.6
	24	- 6.0
	July 2	- 6.4
	11	- 6.7
	18	- 3.2
	28	- 2.2
	Aug. 7	- 2.1
	15	- 2.5
	21	- 2.1
	28	- 1.9
	Sept. 5	- 2.1
	14	- 1.1
	22	- 1.9
	30	- 2.4
	Oct. 7	- 2.9
Clay County		
	1934	
3	May 16	+45.-
	Dec. 18	+45.5
	1934	
12	June 6	+41.5
	Nov. 1	+42.0
	1934	
13	June 7	+18.0
	Aug. 31	+20.0
Clay County - Cont'd.		
	1934	
13	Nov. 2	+18.75
	Dec. 18	+18.5
	1935	
	Mar. 22	+18.0
	1934	
15	Nov. 11	-75.2
	Dec. 18	-75.6
	1935	
	Mar. 22	-76.55
	1934	
16	June 6	-10.2
	Nov. 2	- 9.95
	Dec. 18	-10.25
	1935	
	Mar. 22	-11.25
	1934	
17	Nov. 2	- 4.95
	Dec. 18	- 5.23
	1935	
	Mar. 22	- 6.20
	1934	
18	June 5	- 9.0
	Aug. 31	- 7.8
	Nov. 2	- 8.23
	Dec. 18	- 8.50
	1935	
	Mar. 22	- 9.37
	1934	
20	June 6	-20.2
	Nov. 2	-18.0
	Dec. 18	-18.25
	1935	
	Mar.	-19.2
	1934	
22	June 6	+21.5
	Nov. 2	+22.0
	Dec. 18	+22.-
	1935	
	Mar. 22	+21.0
Collier County		
	1934	
4	Feb. 20	+27.5
	Nov. 25	+29.5
	1934	
7	Feb. 15	+30.5
	Nov. 25	+32.0
Columbia County		
	1934	
1	Nov. 7	-42.15
	Dec. 20	-42.65
	1935	
	Mar. 22	-44.1
	1934	
5	Nov. 17	-18.7
	Apr. 26	-17.9
Duval County		
	1930	
2	Oct. 8	+44.
	1931	
	Feb. 25	+46.
	July 10	+43.
	1932	
	July 25	+43.
	1930	
4	Aug. 13	+ 3.68
	Oct. 8	+ 2.8
	1931	
	May 8	+ 3.4
	1934	
	June 15	+ 1.3
	1930	
6	Aug. 13	+37.2
	1931	
	May 8	+36.5

Measurements of pressure heads and water levels in wells in the Florida peninsula - Continued

No.	Date of measurement	Water level (feet)
Duval County - Cont'd.		
	1930	
7	Aug. 4	+39.
	Oct. 11	+36.25
	1931	
	May 11	+38.
	1934	
	June 15	+35.7
	1930	
11	Aug. 19	+43.7
	Oct. 9	+43.
	1931	
	May 9	+42.5
	1930	
12	Aug. 22	+39.5
	Oct. 9	+38.
	1931	
	May 11	+35.5
	1930	
13	Aug. 22	+47.7
	Oct. 13	+45.5
	1934	
	June	+46.2
	1934	
19	Apr. 10	+43.0
	Dec. 17	+41.5
	1934	
21	Apr. 18	- 7.0
	Sept.27	- 5.1
	Nov. 5	- 5.8
	1934	
22	May 16	+38.0
	June 15	+38.0
	Nov. 3	+41.0
	Dec. 18	+40.5
	1934	
26	Nov. 3	+36.+
	Dec. 18	+35.0
Gilchrist County		
	1934	
2	Apr. 25	-42.5
	Sept.29	-39.75
	Nov. 17	-40.92
	1935	
	Mar. 23	-43.0
Hamilton County		
	1934	
4	Apr. 12	-76.7
	June 15	-76.8
	Aug. 31	-76.5
	Nov. 7	-77.48
	Dec. 20	-77.7
	1935	
	Mar. 22	-78.4
Hendry County		
	1934	
2	Feb. 12	+28.0
	Nov. 11	+27.5
Hernando County		
	1934	
1	Jan. 25	-38.5
	1935	
	Mar. 23	-38.4
	1934	
4	Jan. 26	-65.4
	Mar. 2	-65.0
	Sept.17	-61.85
	Dec. 1	-63.5
	1934	
8	Mar. 3	-107.
	Sept.22	-103.07
	28	-103.12
	Dec. 1	-104.0
	1934	
9	Jan. 1	-100.+
	Sept.17	-97.75
	28	-97.7
	Dec. 1	-98.43
Hernando County - Cont'd.		
	1935	
9	Mar. 23	-101.0
Hillsborough County		
	1930	
1	June 20	- 6.8
	1934	
	Dec. 29	-13.2
	1930	
2	June 20	- 7.8
	1934	
	Dec. 29	-11.6
	1930	
3	June 20	-11.1
	1934	
	Dec. 29	-14.9
	1930	
4	June 20	-10.7
	1934	
	Dec. 29	-16.2
	1930	
5	June 20	-10.5
	1934	
	Dec. 29	-14.8
	1930	
6	June 20	-11.39
	1934	
	Dec. 29	-16.0
	1930	
7	June 20	-16.27
	1934	
	Dec. 29	-21.9
	1930	
8	June 20	-13.65
	1934	
	Dec. 22	-18.4
	1930	
9	July 2	-15.58
	1934	
	Dec. 29	-20.9
	1930	
10	June 20	-12.01
	1934	
	Dec. 29	-16.5
	1930	
11	June 20	-17.63
	1934	
	Dec. 29	-22.5
	1930	
12	July 20	-15.35
	1934	
	Dec. 22	-19.8
	1930	
13	Oct. 2	- 7.0
	1934	
	Nov. 2	- 9.0
	1934	
23	Sept.21	-36.9
	28	-34.9
	Nov. 27	-36.1
	1935	
	Mar. 26	-38.2
	1934	
26	Nov. 21	-20.8
	1935	
	Mar. 28	-18.6
	1934	
27	Nov. 21	+ 3.25
	1935	
	Mar. 28	+ 1.75
Lake County		
	1934	
5	Jan. 12	-16.0
	June 27	-14.1
	1934	
6	Jan. 12	- 5.5
	June 27	- 3.5
Lee County		
	1934	
1	Feb. 10	+11.6
	July 16	+11.8
	Nov. 24	+10.75
	1934	
5	Feb. 10	+27.5
	July 16	+27.5
	Nov. 24	+27.2
	1934	
6	Feb. 10	+21.0
	Nov. 25	+21.0
	1934	
12	Feb. 22	+28.0
	July 17	+28.2
	Nov. 25	+28.-
	1934	
13	Feb. 22	+23.0
	July 17	+25.0
	Nov. 25	+24.5
	1934	
16	July 17	+22.0
	Nov. 25	+20.0
	1934	
18	Feb. 22	+22.0
	July 17	+22.0
	Nov. 25	+21.2
Levy County		
	1934	
1	Apr. 24	-14.2
	Sept.29	-11.67
	Nov. 15	-12.55
	1935	
	Mar. 23	-15.0
	1934	
2	Sept.29	-54.8
	Nov. 15	-55.7
	1935	
	Mar. 28	-58.3
	1934	
4	Apr. 24	-10.5
	Nov. 14	-14.9
	1932	
10	Sept.30	-21.0
	1933	
	Mar. 31	-21.3
	May 15	-18.2
	22	-18.3
	29	-18.3
	June 8	-18.4
	17	-18.5
	24	-18.6
	July 2	-18.7
	11	-18.7
	18	-17.0
	28	-16.0
	Aug. 7	-16.0
	15	-16.1
	21	-16.0
	28	-16.0
	Sept. 5	-12.4
	14	-11.0
	22	-11.0
	30	-11.2
	Oct. 7	-11.5
	1932	
11	Sept.30	-25.5
	1933	
	May 15	-23.1
	22	-23.1
	29	-23.0
	June 8	-23.0
	17	-23.1
	24	-23.2
	July 2	-23.3
	11	-23.4
	18	-21.2
	28	-20.8
	Aug. 7	-21.1
	15	-21.2
	21	-21.0
	28	-21.0
	Sept. 5	-19.0
	14	-17.6
	22	-17.1
Levy County - Cont'd.		
	1933	
11	Sept.30	-17.0
	Oct. 7	-17.1
	1932	
12	Sept.30	-26.5
	1933	
	Jan. 31	-28.0
	May 15	-25.4
	22	-25.3
	29	-25.3
	June 8	-25.3
	17	-25.4
	24	-25.5
	July 2	-25.7
	11	-25.8
	18	-25.1
	28	-24.5
	Aug. 7	-24.4
	15	-24.4
	21	-24.3
	28	-24.3
	Sept. 5	-23.8
	14	-22.8
	22	-21.8
	30	-21.3
	Oct. 7	-21.1
	1933	
21	July 28	- 2.1
	Aug. 7	- 2.2
	15	- 1.8
	21	- 1.1
	28	- 1.5
	Sept. 5	- 1.7
	14	- 1.6
	22	- 2.1
	30	- 2.4
	Oct. 7	- 2.8
Manatee County		
	1930	
8	Sept.26	+18.
	1931	
	Mar. 30	+18.6
	June 10	+17.4
	11	+17.7
	11	+17.4
	1934	
	Jan. 23	+16.3
	1931	
15	May 28	+11.5
	June 10	+10.3
	1931	
16	May 28	+17.9
	June 10	+17.2
	11	+17.2
	11	+17.4
	1930	
35	Sept.24	+ 1.0
	1932	
	June 10	+ 1.0
	1930	
39	Sept.27	+ 1.4
	1931	
	June 10	+ 2.35
	1931	
40	Apr. 7	+ 6.3
	June 15	+ 3.7
	1932	
	Jan. 8	+ 5.9
	1930	
43	Sept.30	+ 9.5
	1931	
	Apr. 8	+ 9.8
	June 10	+ 6.7
	1932	
	Jan. 8	+ 8.0
	Feb. 11	+ 5.4
	Mar. 11	+ 5.4
	Apr. 7	+ 3.6
	June 9	+ 7.2
	July 7	+ 7.6
	1931	
51	May 29	+ 8.3
	1932	
	Jan. 8	+ 3.0
	Feb. 11	+ 4.3

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Measurements of pressure heads and water levels in wells in the Florida peninsula - Continued

No.	Date of measurement	Water level (feet)
Manatee County - Cont'd.		
	1932	
51	Mar. 11	+ 6.6
	Apr. 7	+ 4.7
	June 9	+ 7.1
	July 7	+ 8.4
	Sept. 9	+ 8.2
	1930	
59	Sept.26	+12.0
	1931	
	Apr. 9	+11.0
	June 19	+ 5.6
	22	+ 8.6
	1931	
64	May 29	+11.6
	1932	
	Jan. 8	+11.7
	Mar. 11	+11.5
	Apr. 7	+12.6
	1930	
72	Sept.24	+ 5.6
	1931	
	Mar. 30	+ 8.4
	June 10	+ 1.8
	1932	
	Jan. 8	+ 4.1
	Feb. 11	+ 4.1
	Mar. 11	+ 6.9
	Apr. 7	+ 4.7
	June 9	+ 7.3
	July 7	+ 7.9
	Aug. 7	+ 8.3
	Sept. 7	+ 5.4
	1931	
77	June 2	+13.8
	1934	
	Jan. 22	+12.0
	1931	
88	June 11	+ 5.6
	1932	
	Jan. 8	+ 4.7
	Feb. 11	+ 4.1
	Mar. 11	+ 3.3
	Apr. 7	+ 2.7
	June 9	+ 3.6
	July 7	+ 4.6
	Aug. 4	+ 4.6
	Sept. 9	+ 6.0
	1931	
89	June 3	- 0.1
	Dec. 4	- 0.29
	1932	
	Jan. 8	0.0
	Feb. 11	- 0.7
	Mar. 11	- 1.05
	Apr. 7	- 1.11
	July 7	- 0.1
	Aug. 4	- 0.5
	Sept. 9	- 0.7
Marion County		
	1934	
1	Mar.	-34.8
	Aug. 25	-33.2
	Sept.29	-33.7
	Nov. 15	-34.45
	1935	
	Mar. 23	-36.45
	1934	
2	Mar. 30	-13.9
	Sept.24	-11.45
	Nov. 15	-12.95
	1935	
	Mar. 27	-15.0
	1934	
3	May 8	+ 5.0
	Nov. 16	+ 7.5
	1934	
4	Mar. 30	-42.0
	Sept.24	-39.15
	Nov. 15	-40.25
	1935	
	Mar. 27	-42.95

No.	Date of measurement	Water level (feet)
Marion County - Cont'd.		
	1934	
5	Jan. 6	+ 8.0
	Feb. 3	+ 7.0
	Mar. 3	+ 6.0
	Apr. 7	+ 5.3
	May 5	+ 5.75
	Nov. 16	+ 9.0
	1934	
6	May 7	-13.05
	Sept.24	- 8.55
	Nov. 20	- 9.4
	1935	
	Mar.	-12.58
	1933	
9	Mar. 31	-74.4
	May 15	-73.2
	22	-73.2
	29	-73.2
	June 8	-73.2
	17	-73.3
	24	-73.3
	July 2	-73.4
	11	-74.0
	18	-73.2
	28	-72.7
	Aug. 7	-72.2
	15	-72.5
	21	-71.3
	28	-71.0
	Sept. 5	-68.3
	14	-66.2
	22	-65.9
	30	-66.0
	Oct. 7	-66.4
	1932	
10	Sept.30	-30.0
	1933	
	Mar. 31	-31.1
	May 15	-29.8
	22	-29.8
	29	-29.7
	June 8	-29.8
	17	-29.8
	24	-29.9
	July 2	-30.0
	11	-30.1
	18	-29.9
	28	-29.1
	Aug. 7	-28.1
	15	-27.7
	21	-27.5
	28	-27.4
	Sept. 5	-27.2
	1933	
16	May 29	-22.8
	June 8	-23.0
	17	-23.2
	24	-23.4
	July 2	-23.6
	11	-23.8
	18	-23.8
	28	-23.0
	Aug. 7	-22.4
	15	-22.4
	21	-22.5
	28	-22.3
	Sept. 5	-21.7
	14	-13.2
	22	-12.9
	30	-13.3
	Oct. 7	-13.5
	1933	
17	June 8	-12.3
	17	-12.4
	24	-12.6
	July 2	-12.8
	11	-12.9
	18	-10.4
	28	- 9.5
	Aug. 7	- 9.4
	15	- 9.4
	21	- 9.6
	28	- 8.9
	Sept. 5	- 8.6
	14	- 1.4
	22	- 1.7
	30	- 2.1
	Oct. 7	- 2.2

No.	Date of measurement	Water level (feet)
Marion County - Cont'd.		
	1933	
21	Apr. 30	-47.5
	May 15	-46.9
	22	-46.7
	29	-46.7
	June 8	-46.6
	17	-46.6
	24	-46.7
	July 2	-46.9
	11	-46.9
	18	-46.4
	28	-45.9
	Aug. 7	-45.7
	15	-45.6
	21	-45.6
	28	-45.6
	Sept. 5	-45.1
	14	-44.2
	22	-43.3
	30	-43.1
	Oct. 7	-42.6
	1932	
22	Sept.30	-39.0
	1933	
	Mar. 31	-39.0
	May 15	-38.3
	22	-38.6
	29	-38.2
	June 8	-38.4
	17	-38.4
	24	-38.5
	July 2	-38.7
	11	-39.0
	18	-38.7
	28	-37.7
	Aug. 7	-36.3
	15	-36.1
	21	-35.9
	28	-35.9
	Sept. 5	-33.5
	14	-29.8
	22	-29.0
	30	-28.5
	Oct. 7	-29.9
	1933	
23	Apr. 30	-18.0
	May 15	-19.0
	22	-19.0
	29	-19.2
	June 8	-19.4
	17	-19.6
	24	-19.8
	July 2	-19.7
	11	-19.2
	18	-18.1
	28	-18.2
	Aug. 7	-18.0
	15	-18.0
	21	-17.9
	28	-17.8
	Sept. 5	-12.7
	14	-12.5
	22	-12.7
	30	-13.0
	Oct. 7	-13.2
	1932	
24	Sept.30	-46.6
	1933	
	Apr. 30	-45.9
	May 15	-45.3
	22	-45.2
	29	-45.1
	June 8	-45.2
	17	-45.2
	24	-45.3
	July 2	-45.4
	11	-45.5
	18	-45.3
	28	-44.9
	Aug. 7	-43.2
	15	-43.9
	21	-43.6
	28	-43.4
	Sept. 5	-42.6
	14	-38.9
	22	-37.4
	30	-36.9
	Oct. 7	-37.0

No.	Date of measurement	Water level (feet)
Marion County - Cont'd.		
	1933	
25	Apr. 18	-45.1
	30	-45.0
	May 15	-44.6
	22	-44.6
	29	-44.6
	June 8	-44.7
	17	-44.8
	24	-44.9
	July 2	-44.9
	11	-45.0
	18	-44.7
	28	-44.1
	Aug. 7	-43.5
	15	-43.4
	21	-42.9
	28	-42.7
	Sept. 5	-40.7
	14	-37.6
	22	-37.5
	30	-37.7
	Oct. 7	-38.1
	1933	
26	Apr. 30	-18.8
	May 15	-18.9
	22	-18.6
	29	-18.6
	June 8	-18.9
	17	-19.1
	24	-19.1
	July 2	-19.1
	11	-18.8
	18	-18.1
	28	-17.3
	Aug. 7	-17.2
	15	-17.2
	21	-16.6
	28	-16.7
	Sept. 5	-15.8
	14	-15.0
	30	-14.6
	Oct. 7	-14.9
	1933	
27	Apr. 30	-26.2
	May 15	-26.0
	22	-29.5
	29	-26.0
	June 8	-26.1
	17	-26.2
	24	-26.2
	July 2	-26.2
	11	-26.2
	18	-25.5
	28	-25.0
	Aug. 7	-24.9
	15	-24.8
	21	-24.4
	28	-24.3
	Sept. 5	-23.0
	14	-21.6
	22	-20.5
	30	-20.3
	Oct. 7	-20.4
	1932	
28	Nov. 30	- 1.4
	Dec. 31	- 1.0
	1933	
	Apr. 30	- 2.7
	May 15	- 2.9
	22	- 2.8
	29	- 1.9
	June 8	- 2.1
	1933	
28	June 17	- 2.1
	24	- 2.2
	July 2	- 2.0
	11	- 2.1
	18	- 2.0
	28	- 2.0
	Aug. 7	- 1.9
	15	- 2.0
	21	- 1.9
	28	+ 0.1
	Sept. 5	+ 0.1
	14	+ 0.1
	22	+ 0.1
	30	+ 0.1
	Oct. 7	+ 0.1

Measurements of pressure head and water levels in wells in the Florida peninsula - Continued

No.	Date of measurement	Water level (feet)
	Marion County - Cont'd.	
	1933	
36	July 11	0.0
	18	+ 0.2
	28	+ 0.6
	Aug. 7	+ 0.9
	15	+ 1.2
	21	+ 1.2
	28	+ 1.9
	Sept. 5	+ 2.3
	14	+ 2.5
	22	+ 2.5
	30	+ 2.5
	Oct. 7	+ 2.5
	1933	
37	July 11	-27.5
	18	-27.4
	28	-26.7
	Aug. 7	-26.5
	15	-26.3
	21	-26.1
	28	-25.5
	Sept. 5	-25.1
	14	-20.6
	22	-19.9
	30	-20.0
	Oct. 7	-20.2
	1933	
38	June 27	-33.9
	July 2	-33.8
	11	-33.9
	18	-33.9
	28	-33.5
	Aug. 7	-33.0
	15	-32.7
	21	-32.4
	28	-31.7
	Sept. 5	-31.3
	14	-26.6
	22	-25.6
	30	-25.6
	Oct. 7	-25.0
	1933	
39	July 2	-30.0
	11	-30.1
	18	-30.0
	28	-29.4
	Aug. 7	-28.6
	15	-28.4
	21	-28.1
	28	-27.1
	Sept. 5	-26.8
	14	-21.6
	22	-20.9
	30	-20.9
	Oct. 7	-21.1
	1933	
40	June 24	-38.7
	July 2	-38.8
	11	-38.9
	18	-38.3
	28	-37.4
	Aug. 7	-36.3
	15	-36.0
	21	-36.0
	28	-35.8
	Sept. 5	-35.2
	14	-26.0
	22	-26.9
	30	-27.8
	Oct. 7	-28.4
	1933	
41	June 24	- 1.2
	July 2	- 1.2
	11	- 1.4
	18	- 1.1
	28	- 0.1
	Aug. 7	+ 0.7
	15	+ 1.0
	21	+ 1.2
	28	+ 2.0
	Sept. 5	+ 2.3
	14	+ 5.3
	22	+ 8.3
	30	+ 8.6
	Oct. 7	+ 8.5
	1933	
42	June 17	- 3.6
	24	- 3.9
	July 2	- 3.5
	11	- 3.6
	Marion County - Cont'd.	
	1933	
42	July 18	- 0.9
	28	- 0.4
	Aug. 7	- 0.7
	15	- 0.8
	21	- 0.6
	29	0.0
	Sept. 5	- 0.2
	14	+ 4.7
	22	+ 4.1
	30	+ 4.4
	Oct. 7	+ 4.5
	1933	
44	Apr. 5	- 6.4
	30	- 6.9
	May 7	- 6.0
	15	- 6.0
	22	- 6.4
	29	- 6.4
	June 8	- 6.5
	17	- 6.5
	24	- 6.8
	July 2	- 6.4
	11	- 5.6
	18	- 3.7
	28	- 2.2
	Aug. 7	- 2.0
	15	- 2.2
	21	- 1.3
	28	- 1.9
	Sept. 5	+ 2.2
	14	+ 1.9
	22	+ 3.1
	30	+ 3.8
	Oct. 7	+ 3.4
	Martin County	
	1934	
3	Mar. 2	+42.0
	Nov. 29	+45.0
	Nassau County	
	1934	
8	Mar. 16	+42.0
	Dec. 18	+42.0
	1934	
9	Mar. 5	- 4.3
	Dec. 17	- 4.0
	1934	
12	Mar. 17	+46.0
	Dec. 18	+45.0
	1934	
16	Apr. 17	+42.0
	Dec. 18	+43.2
	Okeechobee County	
	1933	
1	Apr. 24	+12.0
	1934	
	Feb. 15	+18.0
	Orange County	
	1930	
1	Aug. 4	-29.2
	8	-29.57
	21	-31.0
	25	-30.0
	Sept. 2	-31.4
	8	-30.7
	15	-30.5
	1931	
	May 13	-32.03
	July 14	-34.3
	18	-34.35
	Aug. 8	-34.70
	14	-34.55
	15	-34.55
	1932	
	Jan. 6	-36.0
	Feb. 9	-36.6
	Mar. 9	-36.8
	Apr. 5	-37.29
	June 16	-36.53
	July 4	-36.99
	Aug. 2	-37.03
	Sept. 7	-36.89
	10	-37.1
	Nov. 18	-37.34
	Orange County - Cont'd.	
	1933	
1	May 11	-38.75
	25	-38.9
	Nov. 28	-34.7
	1934	
	Jan. 4	-35.8
	Mar. 21	-36.3
	May 17	-34.2
	June 18	-27.9
	19	-28.4
	1930	
2	Aug. 5	-30.7
	8	-30.9
	21	-31.5
	25	-31.8
	Sept. 2	-32.8
	8	-32.1
	15	-32.8
	1931	
	July 14	-35.8
	Aug. 8	-36.2
	1933	
	May 11	-40.2
	1930	
3	Aug. 4	-31.0
	8	-31.37
	21	-32.0
	25	-32.0
	Sept. 2	-33.2
	8	-32.4
	15	-33.10
	1931	
	Aug. 8	-36.5
	1930	
4	Aug. 6	-38.4
	8	-37.48
	21	-39.0
	25	-38.7
	Sept. 2	-40.0
	8	-39.0
	15	-39.9
	1931	
	July 13	-43.6
	Aug. 8	-43.95
	14	-43.70
	15	-43.70
	1932	
	Jan. 6	-44.9
	Feb. 9	-46.2
	Mar. 9	-45.6
	Apr. 5	-45.41
	Sept.10	-45.6
	June 16	-45.04
	July 14	-45.51
	Aug. 2	-45.78
	Sept. 7	-45.86
	Nov. 18	-47.1
	1933	
	May 11	-47.5
	1930	
5	Aug. 5	-35.71
	8	-36.03
	21	-37.8
	25	-37.35
	Sept. 2	-38.7
	8	-39.1
	1931	
	July 13	-42.4
	Aug. 8	-42.75
	14	-42.40
	15	-42.35
	Sept.10	-45.00
	1933	
	May 11	-46.6
	1930	
6	Aug. 5	-39.0
	8	-37.58
	1931	
	July 13	-44.0
	21	-43.6
	Aug. 8	-44.3
	1930	
7	Aug. 5	-38.6
	8	-38.15
	21	-39.6
	Sept. 2	-40.7
	8	-39.9
	15	-40.7
	1931	
	July 13	-44.75
	Orange County - Cont'd.	
	1931	
7	July 21	-44.30
	Aug. 8	-45.00
	14	-44.70
	15	-44.70
	1932	
	Sept.10	-47.55
	1933	
	May 11	-49.2
	25	-49.4
	Nov. 27	-45.0
	1934	
	May 18	-43.9
	June 16	-31.7
	18	-35.7
	19	-36.5
	20	-37.2
	21	-37.7
	23	-37.8
	26	-38.7
	1930	
8	Aug. 8	-35.00
	Sept. 2	-37.5
	8	-38.0
	15	-37.55
	1931	
	July 13	-41.3
	20	-40.65
	Aug. 8	-41.50
	14	-41.25
	15	-41.20
	1933	
	May 10	-45.85
	1934	
	June 18	-35.
	26	-35.1
	1930	
9	Aug. 8	- 1.20
	15	- 0.4
	Sept. 2	- 4.0
	15	- 3.8
	1930	
10	Aug. 4	- 3.53
	8	- 4.73
	Sept. 2	- 7.50
	8	- 5.50
	15	- 7.30
	1931	
	May 1	- 9.1
	13	- 8.9
	15	- 9.42
	July 10	-11.6
	13	-11.8
	29	-11.45
	31	-11.58
	Aug. 5	-11.8
	7	-11.85
	8	-11.9
	14	-11.2
	15	-11.4
	18	-11.7
	1932	
	Jan. 6	-13.23
	Feb. 9	-14.05
	Apr. 5	-13.95
	June	-14.20
	July 14	-13.9
	Aug. 2	-13.±
	Sept. 7	-13.±
	10	-14.1
	Nov. 18	-14.57
	1933	
	May 11	-15.9
	25	-16.0
	Nov. 24	-11.8
	28	-12.0
	1934	
	Jan. 4	-12.4±
	June 5	-11.3
	19	- 2.5
	26	- 4.7
	1930	
11	Aug. 5	-32.8
	8	-32.57
	21	-34.3
	Sept. 2	-35.1
	1931	
	Aug. 8	-39.25
	14	-38.90
	15	-38.90
	1932	
	Feb. 9	-41.4

Measurements of pressure head and water levels in wells in the Florida peninsula - Continued

No.	Date of measurement	Water level (feet)
	Orange County - Cont'd.	
	1932	
11	Mar. 9	-41.2
	Apr. 16	-41.68
	June 16	-40.41
	July 14	-41.31
	Aug. 2	-41.25
	Sept. 7	-41.21
	10	-41.5
	Nov. 10	-41.72
	1933	
	May 11	-43.1
	25	-43.2
	Nov. 28	-39.1
	1930	
35	Aug. 9	-29.65
	28	-31.10
	Oct. 4	-32.9
	1931	
	Mar. 23	-33.85
	May 13	-32.82
	July 10	-35.33
	Aug. 7	-35.65
	1932	
	Sept. 9	-37.65
	1933	
	Nov. 22	-35.45
	1934	
	May 14	-36.9
	15	-35.5
	June 20	-27.9
	1930	
36	Aug. 9	-31.08
	28	-32.55
	Oct. 4	-34.42
	1931	
	Mar. 23	-35.30
	May 13	-34.33
	July 10	-36.90
	Aug. 7	-37.25
	1932	
	Sept. 9	-39.25
	1933	
	May 11	-40.9
	Nov. 22	-37.1
	1934	
	Mar. 12	-38.±
	May 14	-38.5
	22	-34.8
	June 4	-36.5
	1930	
37	Aug. 9	-31.00
	28	-32.50
	Oct. 4	-34.48
	1931	
	Mar. 23	-35.55
	May 13	-34.39
	July 10	-36.90
	Aug. 17	-37.25
	1932	
	Sept. 9	-39.25
	1933	
	May 10	-41.0
	Nov. 2	-37.1
	1930	
38	Aug. 9	-28.40
	28	-30.30
	29	-30.6
	Oct. 4	-32.9
	1931	
	Mar. 23	-33.75
	May 13	-32.6
	15	-33.1
	July 10	-35.9
	14	-35.91
	18	-35.95
	20	-35.60
	Aug. 3	-36.15
	7	-36.25
	14	-36.1
	1932	
	Sept. 9	-38.5
	1933	
	May 10	-40.35
	Nov. 21	-35.8
	27	-35.7
	Dec. 28	-37.1
	1934	
	Jan. 4	-37.3
	Feb. 26	-37.7
	Mar. 12	-37.3
	21	-37.9
	1934	
38	May 14	-37.6
	15	-35.7
	16	-36.2
	17	-34.5
	22	-32.8
	29	-32.9
	31	-33.9
	June 5	-34.9
	8	-35.2
	18	(a)
	19	-26.0
	20	-26.3
	21	-27.0
	1931	
39	Aug. 3	-34.1
	7	-34.15
	1932	
	Sept. 9	-36.1
	1933	
	May 10	-38.1
	Nov. 21	-33.95
	1934	
	Mar. 12	-35.5
	1931	
41	July 10	-31.75
	27	-32.00
	Aug. 7	-32.25
	1932	
	Sept. 9	-34.0
	1933	
	May 10	-35.5
	1931	
42	Aug. 7	-40.1
	1933	
	Nov. 22	-40.1
	1934	
	May 18	-39.6
	June 19	-34.6
	21	-35.3
	22	-35.5
	26	-36.0
	1930	
43	Aug. 9	-37.82
	28	-39.0
	Oct. 5	-40.74
	1931	
	Mar. 23	-41.60
	May 13	-40.52
	July 10	-42.87
	Aug. 7	-43.25
	1932	
	Sept. 9	-45.3
	1933	
	May 11	-46.9
	Nov. 21	-43.1
	1934	
	Mar. 12	-44.3
	May 18	-42.5
	June 4	-43.0
	19	-37.3
	21	-38.2
	22	-38.1
	26	-38.9
	1930	
44	Aug. 28	-25.50
	Oct. 4	-27.3
	1931	
	Mar. 23	-28.14
	May 13	-26.95
	July 10	-30.2
	21	-30.0
	Aug. 7	-30.45
	1932	
	Sept. 9	-32.85
	1933	
	May 10	-34.8
	Nov. 21	-30.4
	1930	
46	Aug. 9	-31.79
	28	-32.85
	Oct. 5	-34.4
	1931	
	Mar. 23	-35.8
	May 13	-34.42
	July 10	-36.70
	Aug. 7	-37.00
	1932	
	Sept. 9	-38.9
	1933	
46	May 11	-40.5
	Nov. 22	-36.9
	1930	
47	Sept.	+ 6.±
	1931	
	July 9	+ 2.
	14	+ 2.5
	15	+ 2.5
	17	+ 2.33
	19	+ 2.25
	22	+ 2.26
	29	+ 2.3
	Aug. 9	+ 2.0
	12	+ 1.9
	13	+ 1.8
	16	+ 1.9
	1932	
	Jan. 6	- 3.75
	Feb. 9	- 4.89
	Mar. 8	- 5.45
	Apr. 5	- 6.06
	June 16	- 4.96
	July 14	- 5.95
	Sept. 9	- 3.3
	Nov. 18	- 6.48
	1933	
	May 10	-10.0
	1930	
48	Aug. 29	-28.1
	Oct. 4	-31.85
	1930	
51	Aug. 28	-29.40
	Oct. 4	-30.90
	1931	
	Mar. 22	-32.±
	May 13	-29.1
	July 10	-33.15
	22	-32.8
	Aug. 8	-33.6
	11	-33.55
	1932	
	Sept. 9	-36.35
	1931	
52	Mar. 23	-34.6±
	July 10	-36.0
	18	-36.05
	Aug. 7	-36.3
	14	-36.4±
	1932	
	Sept. 9	-38.5
	1933	
	May 11	-40.2
	1934	
	May 18	-35.6
	22	-34.9
	June 19	-30.±
	21	-30.8
	26	-31.5
	1931	
53	Mar. 22	-31.78
	May 13	-30.50
	July 10	-32.97
	1932	
	Sept. 9	-36.2
	1933	
	May 10	-38.2
	Nov. 22	-33.4
	27	-33.5
	1934	
	May 18	-34.5±
	22	-32.9
	June 7	-33.8
	18	- 9.5
	20	-27.4
	26	-28.7
	1931	
54	July 16	-25.35
	Aug. 15	-25.45
	1932	
	Sept.10	-28.1
	1933	
	May 10	-29.7
	Nov. 22	-25.65
	1934	
	Mar. 21	-27.3
	May 18	-25.0
	1931	
55	July 16	-15.7
	1932	
	Sept.10	-19.0
	1933	
	May 10	-20.6
	Nov. 22	-16.55
	1934	
	May 18	-16.0
	June 18	-10.0
	1931	
56	July 17	-59.4
	31	-59.7
	1932	
	Jan. 6	-61.9
	Feb. 9	-63.0
	Mar. 8	-63.1
	Apr. 4	-63.31
	June 16	-63.82
	July 14	-63.70
	Aug. 29	-64.00
	Sept. 7	-64.11
	10	-64.0
	Nov. 18	-64.53
	1933	
	May 10	-64.0
	Nov. 27	-60.9
	1934	
	May 18	-62.3
	June 7	-61.9
	29	-58.6
	1931	
57	Aug. 13	- 1.0
	1932	
	Jan. 6	- 2.66
	Feb. 9	- 3.±
	1931	
58	July 14	+ 9.3
	1932	
	Jan. 6	+ 8.4
	Apr. 4	+ 3.4
	June 16	+ 5.9
	July 14	+ 4.6
	Aug. 2	+ 5.7
	Sept. 7	+ 4.7
	1931	
59	Aug. 12	-21.3±
	1933	
	Dec. 18	-22.8
	1931	
61	July 14	-40.4
	1932	
	Jan. 6	-42.8
	Feb. 9	-45.2
	Apr. 4	-46.0
	June 10	-44.10
	July 14	-44.91
	Aug. 2	-45.3±
	Sept. 7	-43.12
	9	-44.2
	1933	
	May 10	-47.15
	25	-46.8
	Nov. 23	-42.1
	1934	
	June 5	-32.5
	6	-36.4
	1931	
62	Aug. 8	-19.1
	1933	
	May 11	-24.3
	1934	
	June 2	- 1.9
	1931	
63	Aug. 5	-15.15
	1933	
	May 11	-17.6
	Nov. 24	-14.6
	1934	
	June 4	- 8.2
	1931	
64	Aug. 5	-21.8
	1933	
	May 11	-24.2
	Nov. 24	-21.25
	1934	
	June 4	- 5.±

a/ Well spouting.

Measurements of pressure head and water levels in wells in the Florida peninsula - Continued

No.	Date of measurement	Water level (feet)
Orange County - Cont'd.		
	1933	
65	May	-22.6
	1933	
66	Nov. 28	+ 7.1
Pasco County		
	1934	
9	Jan. 16	-15.8
	Sept.17	-10.1
	28	-10.4
	1934	
10	Jan. 16	- 9.3
	Sept.17	- 3.6
	1934	
13	Mar. 14	- 7.75
	Sept.28	- 5.35
Polk County		
	1934	
3	Mar. 16	-18.0
	July 20	-16.9
	Sept.14	-17.17
	26	-17.47
	Nov. 20	-18.4
	1935	
	Mar. 25	-19.6
	1934	
4	Mar. 17	-24.0
	July 20	-19.0
	Sept.14	-18.75
	26	-18.90
	Nov. 20	-19.90
	1935	
	Mar. 25	-21.43
	1934	
7	Jan. 10	- 6.3
	July 20	- 5.0
	Sept.14	- 5.78
	1934	
8	July 20	- 7.1
	Sept.14	- 7.85
	26	- 8.35
	Nov. 20	- 9.95
	1935	
	Mar. 25	-12.5
	1934	
11	Mar. 15	-97.0
	July 19	-95.3
	Sept.12	-95.75
	19	-95.17
	28	-95.27
	Nov. 22	-97.78
	1935	
	Mar. 25	-99.50
	1934	
15	Mar. 15	-13.0
	July 19	-11.1
	Sept.14	-11.7
	19	-11.73
	26	-12.13
	Nov. 20	-13.5
	1935	
	Mar. 28	-14.75
	1934	
18	July 20	- 7.1
	Sept.14	- 7.5
	28	- 7.9
	Nov. 20	- 9.05
	1935	
	Mar. 25	-10.8
	1934	
22	July 23	-50.15
	Sept.15	-50.5
	26	-50.6
	Nov. 21	-52.13
	1935	
	Mar. 26	-54.17
	1934	
24	Sept.13	-14.25
	25	-14.57
	Nov. 21	-16.53
	1935	
	Mar. 28	-18.4
Polk County - Cont'd.		
	1934	
27	Sept.13	-29.5
	26	-29.35
	Nov. 21	-31.3
	1935	
	Mar. 26	-34.4
	1934	
28	July 24	-33.4
	Sept.15	-33.85
	26	-33.95
	Nov. 22	-34.3
	1935	
	Mar. 25	-36.0
	1934	
32	Sept.20	- 6.15
	26	- 6.90
	Nov. 21	- 8.65
	1935	
	Mar. 26	- 9.66
	1934	
34	July 26	- 2.3
	Sept.15	- 2.45
	25	- 2.82
	1935	
	Mar. 26	- 6.25
	1934	
35	Nov. 22	-62.77
	1935	
	Mar. 26	-64.7
	1934	
36	Jan. 9	-47.0
	July 23	-44.0
	Sept.13	-44.25
	26	-44.6
	Nov. 21	-48.2
	1935	
	Mar. 25	-48.9
	1934	
37	Jan. 9	-42.8
	July 23	-39.8
	Sept.13	-40.03
	26	-40.4
	Nov. 21	-41.98
	1935	
	Mar. 25	-44.70
	1934	
38	Nov. 22	-49.81
	1935	
	Mar. 25	-52.2
	1934	
39	Jan. 5	+11.2
	Sept.20	+13.3
	26	+12.9
	Nov. 21	+11.4
	1935	
	Mar. 25	+ 9.0
	1934	
41	Sept.21	+ 1.1
	Nov. 21	+ 0.25
Putnam County		
	1934	
12	May 8	+20.0
	Dec. 1	+20.0+
	1935	
	Mar. 22	+20.0-
	1934	
14	Apr. 22	-34.3
	Nov. 16	-30.05
	1935	
	Mar. 22	-31.5
	1934	
20	May 9	-20.8
	Nov. 30	-19.8
St. Johns County		
	1934	
10	Aug. 31	+20.0
	Nov. 4	+19.5
St. Lucie County		
	1934	
1	Mar. 13	+31.0
	1935	
	Mar. 28	+27.5
	1934	
2	Mar. 23	+26.0
	Nov. 29	+28.25
	1935	
	Mar. 28	+25.
Seminole County		
	1933	
1	May 13	+ 4.25
	Dec. 4	+ 7.80
	29	+ 6.6
	1934	
	June 4	+ 7.2
	1933	
2	May 18	+ 0.9
	30	+ 2.2
	1933	
4	May 18	- 8.75
	30	- 7.9
	Dec. 5	- 6.4
	1933	
5	May 19	+ 7.0
	Dec. 4	+ 9.0
	1933	
6	May 15	+14.
	1933	
7	May 18	+10.0
	30	+15.0
	1933	
8	May 18	- 3.7
	30	- 2.4
	1933	
9	May 28	+ 0.65
	30	+ 1.4
	1933	
10	May 26	+ 9.0
	30	+ 8.5
	1933	
11	May 15	+ 0.7
	30	+ 1.3
	Dec. 5	+ 1.5
	1933	
12	May 26	+ 4.8
	30	+ 5.5
	Dec. 5	+ 5.5
	1933	
13	May 26	+ 3.6
	30	+ 4.6
	Dec. 5	+ 5.25
	1933	
14	May 30	+ 5.4
	Dec. 5	+ 7.0
	1933	
24	May 24	+10.0
	26	+10.0
	1930	
28	Aug. 25	+15.5
	1931	
	May 13	+14.1
	Aug. 15	+12.6
	1932	
	Jan. 5	+11.5
	Feb. 8	+10.0
	Mar. 7	+11.5
	Apr. 4	+10.5
	June 15	+12.0
	July 14	+12.0
	Aug. 1	+11.0
	Sept. 6	+11.0
	1933	
32	May 26	+15.25
Sumter County		
	1934	
1	Mar. 29	-76.5
	Nov. 25	-74.34
	1935	
	Mar. 27	-77.95
	1934	
3	Mar. 27	-10.75
	Sept.22	- 7.2
	Nov. 20	- 7.64
	1935	
	Mar. 27	-10.63
	1934	
7	Mar. 27	-15.9
	Sept.22	-11.87
	Nov. 20	-14.00
	1934	
10	Mar. 26	-10.5
	Sept.22	- 6.77
	Nov. 20	- 8.6
	1935	
	Mar. 28	-10.6
Suwannee County		
	1934	
4	Apr. 26	-66.1
	May 25	-87.0
	Nov. 7	-62.0
	17	-62.18
	Dec. 21	-64.0
	1935	
	Mar. 3	-64.7
	1934	
12	Aug. 27	- 5.2
	Oct. 28	- 6.5
Union County		
	1934	
2	Nov. 26	-79.67
	Dec. 21	-80.3
	1935	
	Mar. 22	-80.8
	1934	
7	Nov. 7	-58.6
	Dec. 20	-59.3
	1935	
	Mar. 22	-59.87
Volusia County		
	1934	
8	May 23	+ 9.5
	Dec. 3	+ 8.33