

QB
275
. 435
no. 183
1934

FILE COPY

U.S. DEPARTMENT OF COMMERCE
DANIEL C. ROPER, Secretary
COAST AND GEODETIC SURVEY
R. S. PATTON, Director

Special Publication No. 183

FIRST-ORDER TRIANGULATION AND TRAVERSE IN LOUISIANA (1927 DATUM)

By
O. P. SUTHERLAND
MATHEMATICIAN

5263
C65



U.S. COAST & GEODETIC SURVEY
LIBRARY AND ARCHIVES
OCT 15 1934
Acc. No. _____

LIBRARY
FEB 10 1992
N.O.A.A.
U.S. Dept. of Commerce

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1934

National Oceanic and Atmospheric Administration

ERRATA NOTICE

One or more conditions of the original document may affect the quality of the image, such as:

Discolored pages

Faded or light ink

Binding intrudes into the text

This has been a co-operative project between the NOAA Central Library and the Climate Database Modernization Program, National Climate Data Center (NCDC). To view the original document, please contact the NOAA Central Library in Silver Spring, MD at (301) 713-2607 x124 or www.reference@nodc.noaa.gov.

LASON

Imaging Contractor

12200 Kiln Court

Beltsville, MD 20704-1387

January 1, 2006

CONTENTS

	Page
General statement.....	1
Readjustment of triangulation.....	1
North American datum of 1927.....	1
Arcs included in this publication.....	2
General description of tables and sketches.....	2
Other publications of value to the engineer.....	3
Classification of triangulation.....	4
Characteristics of first-order triangulation.....	5
Secondary stations.....	6
Use of horizontal control data.....	6
Explanation of tables for polyconic map projection.....	8
Polyconic map projection table.....	9
Conversion table.....	10
Explanation of tables of positions.....	11
Explanation of lengths.....	12
Azimuth and back azimuth.....	12
Geographic positions.....	13
Mississippi River arc, Arkansas State line to Donaldsonville.....	13
Mississippi State line to Donaldsonville.....	25
Gulf coast arc, ninety-fourth meridian to Donaldsonville.....	34
Ninety-fourth meridian arc.....	48
Shreveport-Vicksburg arc.....	53
Mansfield-New Roads traverse.....	60
Descriptions of stations.....	70
Marking of stations.....	70
Standard notes on the marking of stations.....	71
Additional notes on the marking of stations.....	72
Mississippi River arc, Arkansas State line to Donaldsonville.....	72
Mississippi State line to Donaldsonville.....	92
Gulf coast arc, ninety-fourth meridian to Donaldsonville.....	100
Ninety-fourth meridian arc.....	118
Shreveport-Vicksburg arc.....	124
Mansfield-New Roads traverse.....	135
Sketches.....	148
Index.....	161

ILLUSTRATIONS

1. Sketch showing construction of polyconic projection.....	8
2. Standard marks of the United States Coast and Geodetic Survey.....	70
3. Arcs included in the eastern adjustment and loop closures in feet.....	148
4. Index map of Louisiana showing areas covered by each of the following sketches, figures 5-15.....	148
5. First-order triangulation, Mississippi River arc, Arkansas boundary to St. Joseph.....	149
6. First-order triangulation, Mississippi River arc, St. Joseph to New Roads base, and first-order traverse, Bordelonville to New Roads base.....	150
7. First-order triangulation, Mississippi River arc, New Roads base to Gramercy base, and Gulf coast arc, Donaldsonville base to line Oaklawn-Foster.....	151
8. First-order triangulation, Mississippi boundary to New Orleans, and along Mississippi River, New Orleans to Gramercy base.....	152
9. First-order triangulation, vicinity of New Orleans.....	153
10. First-order triangulation, Gulf coast arc, Texas boundary to Lake Arthur.....	154

	Page
11. First-order triangulation, Gulf coast arc, Lake Arthur to line Oaklawn-Foster.....	155
12. First-order triangulation, ninety-fourth meridian arc, Arkansas boundary to Shreveport, and western section of Shreveport-Vicksburg arc.....	156
13. First-order triangulation, ninety-fourth meridian arc, Shreveport southward, and first-order traverse, Mansfield to Victoria.....	157
14. First-order triangulation, eastern section of Shreveport-Vicksburg arc.....	158
15. First-order traverse, Victoria to Bordelonville.....	159

FIRST-ORDER TRIANGULATION AND TRAVERSE IN LOUISIANA (1927 DATUM)

GENERAL STATEMENT

This volume contains the results of all first-order triangulation and traverse in Louisiana that has been executed by the Coast and Geodetic Survey. Data for the subsidiary and intersection stations along the various first-order arcs are also contained herein. All available descriptions of the triangulation stations are included.

This volume is one of a series of publications each of which will contain the geographic positions on the new datum of 1927 and the descriptions and other data for all first-order triangulation of a State or occasionally of two States.

READJUSTMENT OF TRIANGULATION

The triangulation of the United States has been built up by continually adding new arcs to those already measured, and for many years in adjusting the triangulation the method was followed of fitting the new arcs of triangulation to the old ones which had been previously adjusted. This method was the only one that could have been followed up to the time that the western half of the triangulation net of the country had been extended to such a degree that the arcs formed many closed loops, a condition reached in the year 1926.

It then became necessary in order to secure what may be called standard or final geographic positions to the westward of the ninety-eighth meridian, to make an adjustment of the net as a whole. This was done by a method devised in the office of the Coast and Geodetic Survey¹ and the resulting geographic positions for all the western first-order triangulation are now available to surveyors and other engineers who may wish to have final geographic positions for their operations.

Upon the completion of the adjustment of the western half of the country, work was immediately begun upon the eastern half. The adjustment of the main scheme points of this part of the net was finished in August 1932, and final geographic positions on the new datum are now available throughout the United States. In Louisiana, all of the arcs of triangulation were included in the eastern adjustment, the traverse line being adjusted to the triangulation afterwards.

NORTH AMERICAN DATUM OF 1927

The original adjustment of the triangulation of the United States was computed upon the Clarke spheroid of 1866, on what was first called the United States Standard datum and later the North Ameri-

¹ For a description of the method used see Special Publication No. 159.

can datum. In the readjustment of the triangulation on the datum of 1927 the same spheroid was used as surface of reference, but only one station was held in position. This station, Meades Ranch, in Kansas, was assigned the same position that it had in the original datum. This position of Meades Ranch is as follows:

$$\begin{aligned}\phi &= 39^{\circ} 13' 26''.686 \\ \lambda &= 98 32 30 .506\end{aligned}$$

This position was held in the new datum because it had been found to be best in accord with the country as a whole in the extensive investigation that was carried out at the time of the adoption of the original datum. If any are interested in the procedure followed in the establishment of this former datum, an account of it can be found in any of the following publications, which contain triangulation and traverse data based on the datum in use prior to 1927: Special Publications Nos. 11, 13, 16, 17, 19, 24, 30, 31, 43, 46, 54, 62, 70, 74, 76, 78, 79, 86, 88, 101, and 114.

The orientation in the new adjustment is controlled by the various Laplace azimuths distributed throughout the network of arcs. The position of Meades Ranch, together with the Laplace azimuths included in the arcs, serve to define the North American datum of 1927. The date is appended to the name of the new datum to distinguish it from the old North American datum. A station is said to be on this North American datum of 1927 when it is rigidly adjusted to the scheme of the readjusted triangulation.

ARCS INCLUDED IN THIS PUBLICATION

The data included in this volume consists of four first-order arcs of triangulation and one line of first-order traverse. The first arc of triangulation is along the Mississippi River from the Arkansas State line to New Orleans, continuing eastward from New Orleans to the Mississippi State line. The second arc, known as the Gulf coast arc, extends from the ninety-fourth meridian eastward to a junction with the Mississippi River arc in the vicinity of Donaldsonville. The third arc is a portion of the ninety-fourth meridian arc extending from the corner of Arkansas, Texas, and Louisiana southward about 80 miles, at which point it bends westward into Texas. Only the portion of the arc that is in Louisiana is included in this publication. The fourth arc extends from the vicinity of Shreveport eastward to a junction with the Mississippi River arc at Vicksburg. The line of first-order traverse extends from the ninety-fourth meridian arc at Mansfield southeastward to a junction with the Mississippi River arc at New Roads.

GENERAL DESCRIPTION OF TABLES AND SKETCHES

The tables of geographic positions, on pages 13 to 69, also contain the distances between contiguous triangulation stations in meters and feet, the logarithms of the distances in meters, and the azimuths of the lines joining these stations. The distances are corrected for elevation above mean sea level, and the azimuths are referred to the true south. Anyone who wishes to obtain the actual distances between the triangulation stations should use the formula given on page 12, by which the true distance at the mean elevation of the stations can be derived from the distance at sea level. The descriptions

of the stations, given on pages 72 to 147, are designed to enable the engineer to recover and identify the station mark after he has visited the general locality of the station. There will be times when the description, so far as witness and other marks are concerned, will have become out of date from changes by nature or by the work of man. Any engineer who may visit a station and find that the description does not truly represent the present conditions, or who finds the mark destroyed or mutilated, should report the facts to the Director of the Coast and Geodetic Survey at Washington, D.C., in order that the files of this office may be kept up to date. The engineer should realize that the triangulation extended over the country by the Coast and Geodetic Survey is a public survey, made for the use of the people. The stations really belong to the States in which they are located, and the engineer who is so fortunate as to find one of these stations located near his work should help to perpetuate the monuments in order that they may be of continuous service and value to his locality. The Coast and Geodetic Survey officials will, from time to time, visit the stations established and will re-mark and redescribe them if necessary.

At most of the stations there are reference and witness marks that were established to assist in locating the station. The distance and azimuth from the station to each of these additional marks are usually given in the description of the station, and the measurements are supposed to be so carefully made, at least to the reference marks, that if the station mark becomes lost or destroyed the station can be re-located accurately enough for use in third-order and local surveys.

Near the back of this publication will be found a number of sketches which show graphically the approximate locations of the stations, especially with reference to State and county boundaries, and the lines over which the main-scheme observations were made. It is suggested that if one should wish to learn whether there are triangulation stations in the vicinity of his work he should first consult the sketches. He can obtain from them the names of the stations that may be of help to him; then he should turn to the index on page 161 of this volume, from which he can find the pages upon which the descriptions and geographic positions of the stations appear.

OTHER PUBLICATIONS OF VALUE TO THE ENGINEER

If an engineer wishes to compute geographic positions for the stations of any triangulation that he may execute, he should procure a copy of Coast and Geodetic Survey Special Publication No. 8 from the Superintendent of Documents, Washington, D.C. The cost of this publication is 25 cents. If he is interested in knowing the length in meters of the degrees, minutes, and seconds of latitude and longitude in the region in which he is working, he can obtain them from Special Publication No. 5, which can be purchased at a cost of 20 cents from the Superintendent of Documents. Condensed tables for the latitude of Louisiana are shown on pages 9 and 10.

In order to make geodetic control data of greater use to engineers and surveyors, an effort is being made to establish one or more plane-coordinate systems in each of the 48 States. When this work has been completed the data for each triangulation station in a State will include its x and y coordinates as well as its latitude and longitude.

A brief explanation of plane-coordinate systems is contained in serial 562 of this Bureau. A more detailed publication will be issued in the near future.

The Coast and Geodetic Survey has issued a number of manuals on the various classes of its work. The ones that would be of value to an engineer in connection with triangulation, including base measurements, are Special Publication No. 120, Manual of First-Order Triangulation, cost 40 cents; Special Publication No. 145, Manual of Second- and Third-Order Triangulation and Traverse, cost 60 cents; and Special Publication No. 137, Manual of First-Order Traverse, cost 30 cents. An engineer interested in the determination of azimuth to a high degree of accuracy should procure a copy of Special Publication No. 14, Determination of Time, Longitude, Latitude, and Azimuth, cost 35 cents. If he is interested only in the determination of approximate azimuths, he should secure a copy of serial no. 166, Directions for Magnetic Measurements, cost 15 cents.

In computing his triangulation the engineer will find that Special Publication No. 138, Manual of Triangulation Computation and Adjustment, cost 50 cents, will be of great assistance to him. The above-mentioned publications may be secured from the Superintendent of Documents, Washington, D.C.

The reader can secure from the Director of the United States Coast and Geodetic Survey, free of charge, several leaflets which describe geodetic surveying and which also show how triangulation can be used in connection with the boundary surveys of private and public property.

CLASSIFICATION OF TRIANGULATION

Triangulation is divided into different classes according to accuracy. Four classes of triangulation are now defined by the Federal Board of Surveys and Maps, viz., first, second, third, and fourth orders. The first three of these are, respectively, equal in accuracy to the classes primary, secondary, and tertiary as formerly defined and used by the Coast and Geodetic Survey.

The ultimate criterion applied in classifying the different grades of triangulation is the actual error in the length of any line. This is indicated by the discrepancy between the measured length of a base line and its length as computed through the triangulation from the last preceding base. In first-order triangulation such discrepancies must not exceed 1 part in 25,000, in second-order triangulation 1 part in 10,000, and in third-order triangulation 1 part in 5,000. Before making the comparison between the computed and measured lengths the adjustment of the triangulation should be carried to the point where the side and angle equations have been satisfied. It is also necessary to take into consideration the maximum actual error in the measurement of the base lines.

To secure the accuracy indicated above, certain standards are adopted for the field work, the most important one of which relates to the closing errors of the triangles or the discrepancy between the sum of the measured angles in a triangle and 180° plus the spherical excess of the triangle. In first-order triangulation the average closing error of the triangles must not be greatly in excess of 1 second, in second-order it should not be more than 3 seconds, and in third-order not more than about 5 seconds. The shape of the figures in the tri-

angulation scheme, the frequency of bases, the size and type of instrument, and the number and kind of observations are all selected with due regard to the accuracy desired.

Under certain conditions the proportionate error in the length of a line as specified above may be found to be exceeded in any class of triangulation. Where two points are fairly close together as compared with the size of the triangulation scheme, the distance between those points may be in error in excess of that indicated by the class of triangulation of the scheme. The accuracy of the computed length of any line can be estimated by computing the ΣR_1 , in accordance with the formula for the strength of figures as given in Coast and Geodetic Survey Special Publication No. 145. In any class of triangulation the subsidiary stations will be located with a less degree of accuracy than the main-scheme stations.

CHARACTERISTICS OF FIRST-ORDER TRIANGULATION

The triangulation contained in this volume is of the first order. First-order triangulation is done with such accuracy that the average closing error of the triangles is about 1 second or less. In order that the angles may have this high degree of accuracy, large theodolites are used. The theodolite, as is well known, is similar in its appearance to the surveyor's transit. The main differences are in the excellence of the workmanship, the accuracy of graduation of the circle, in having micrometer microscopes for reading this circle, and in having a telescope with a high resolving power. Observations are made either on heliotropes, by which the light of the sun is reflected toward the observer, or on acetylene or electric signal lamps. The heliotrope, or lamp, and the theodolite must be centered directly over the station marks.

At certain intervals, depending upon the shape of the triangles, base lines are measured. A base is necessarily a side of one of the triangles. The ends of the base must be intervisible from the ground or from the towers that may be erected over them. In the early years of the Coast and Geodetic Survey's existence the base lines were measured with metal bars, but near the beginning of the present century steel tape lines began to be used in the measurements. Since 1907 all of the bases of the Survey have been measured with invar tapes. The probable error of a measured base is about 1 part in 1,000,000 of its length. This accuracy meets all the requirements of engineering and science.

The azimuths of the triangulation depend upon what are called Laplace azimuths, or azimuths determined by observations on Polaris, which have been corrected for the deflection of the vertical at each Laplace station. These deflections are due to the attraction of mountain or plateau masses that are comparatively near the place at which the observations are made. The probable error of a Laplace azimuth is about ± 0.3 second.

If one is interested in the accuracy with which the triangulation of the Coast and Geodetic Survey is done and the reliability of the geographic positions which are given in this publication, he should refer to Special Publication No. 178, pages 18 to 21, Geodetic Operations in the United States, January 1, 1930, to December 31, 1932.

SECONDARY STATIONS

In addition to the stations which form the main network of triangles in Louisiana, a number of objects, such as church spires, and schoolhouse cupolas, were observed upon from stations of the main scheme. The geographic positions of these secondary stations have been computed and the data are included in the tables on pages 13 to 69. These stations are shown on the sketches and in the index, but only a few of them are given in the descriptions of stations, as in most cases the name of the object is all the description that is available. Ordinarily the name of the secondary station is sufficient for its accurate identification by the engineer who may wish to use it.

USE OF HORIZONTAL CONTROL DATA

The plan or map for any extensive engineering project, whether or not map construction is the primary object, should have all of its parts properly correlated and should be on the same datum as adjacent surveys. Federal and State mapping organizations have long been aware of the necessity for having all surveys based upon a common datum, but local engineers and surveyors in this country have too often in the past been content, and in many cases compelled to use a local datum for their surveys. The future economic disadvantage of such a system is now becoming recognized, with the result that city and county surveys are being more generally placed upon a permanent basis by connecting them to stations on the North American datum.

One other factor must be taken into consideration by the engineer of today. As the States develop industrially they will undoubtedly follow the lead of one of the Eastern States, Massachusetts, which with splendid foresight has extended its triangulation control over the entire State for the purpose of defining property boundaries in terms of latitude and longitude. The advantage of such a system is well stated in the following extracts from the report on the Maryland oyster survey:

The difficulties of accurately locating and permanently defining the boundaries of a farmer's plantation on land, even with the aid of monuments, public roads, streams of water, and other points of reference, are often great, judging from the disputes frequently arising in connection with boundaries.

There is only one point on the earth's surface at the intersection of any one parallel of latitude and any one meridian of longitude, and therefore there can be no dispute as to the meaning of such a geographic definition of the location of a point even though all the original triangulation station marks used in its determination, together with the chart on which its position was originally plotted, have been totally destroyed.

In the case of the destruction of an original triangulation station mark, or any other point defined by a geographic position, a competent geodetic engineer can reestablish its exact location by means of a new system of triangulation connecting with other distant triangulation marks which have not been destroyed.

There are a number of instances where corporations owning large tracts of land have attempted to make surveys of their boundaries and of subdivisions of property by means of traverse. This method can be used if certain precautions are taken, but most of these corporations have found it advisable to use the method of triangulation for the determination of relative positions of their boundary monuments and of other points which lie within those boundaries. If the triangulation in question is connected with the triangulation system

of the Coast and Geodetic Survey, then true geographic positions can be obtained as well as the relative ones.

In a section of the country covered by adequate geodetic control the data are available to the engineer for any of the following operations, in addition to their possible future use as a basis for cadastral surveys:

1. Extensive mapping.—The topographer needs as initial data for beginning a topographic survey the distance and direction between two points and the geographic position of one of them in latitude and longitude. His local triangulation or traverse, based on this control, will prevent the accumulation of excessive errors as he carries on his mapping operations. In the event that the available first-order triangulation in that region has lines of too great length to join to conveniently, he can measure a base and azimuth at some place visible from a first- or second-order triangulation station and connect his base to the station by triangulation, thus obtaining proper geographic positions for his local surveys. On recent triangulation special azimuth marks have been set. (See p. 12.)

2. Boundary lines.—If it is desired to locate or to delimit accurately and permanently the boundaries of political subdivisions, such as States, counties, or cities, the methods indicated in the preceding paragraph may be followed. Whenever possible, a line of the adjusted triangulation or traverse should be used as a basis for local surveys rather than a point, since a line gives the three essentials of position, length, and direction.

3. Local intensive surveys.—The necessity for such surveys arises most frequently in connection with extensive improvements over a considerable area or as a basis for city planning, where the needs of a city are being anticipated for a number of years. Here the requirements are somewhat different from those in the two preceding operations, for it is often necessary to extend first- or second-order control in considerable detail over the entire area affected, third-order triangulation or traverse then being used to furnish additional points for the survey. Such a control survey should invariably be started from a line of adjusted triangulation or traverse.

While it may be noted in the preceding paragraphs that the azimuth and length of one line and the geographic position of one end of that line constitute the essential data for the complete utilization of old work as a basis for new work, there is always grave danger in depending upon this minimum of data. There may be failure to identify the true station mark, or the mark, though genuine, may have been tampered with or otherwise disturbed in position. This will, of course, introduce an error into the new work based on these stations. It is the present practice in this survey, unless unusual conditions render it unnecessary, to establish the integrity of the recovered points by using at least 3 old stations as a basis for new work, the third station serving as a check for the 2 stations on which the new work may actually depend.

In local surveys where the area is of limited extent it is usually desirable to use a system of plane coordinates. Such systems are now being established for each of the States. (See p. 3.) The Coast and Geodetic Survey will be glad to give advice on any problem arising out of the use of its control points or on any proposed extension of triangulation or traverse from them.

EXPLANATION OF TABLES FOR POLYCONIC MAP PROJECTION

The engineer or surveyor who makes use of the data in this publication may find it desirable to construct a map covering the territory he is surveying. He may wish to show on this map the meridians and parallels so as to be able to plot the positions of the triangulation stations included in the area and show the details of this survey in the correct geographic positions. To enable him to do this with the least possible difficulty, the following table, reprinted in an abbreviated form from Coast and Geodetic Survey Special Publication No. 5, has been inserted. This table may also be used to interpret in terms of degrees, minutes, and seconds of arc any relatively short distance measured along a meridian or parallel. The method of using the table is described below.

To make a projection for a large-scale map (1 to 20,000 and larger), first draw a straight line for a central meridian and a construction

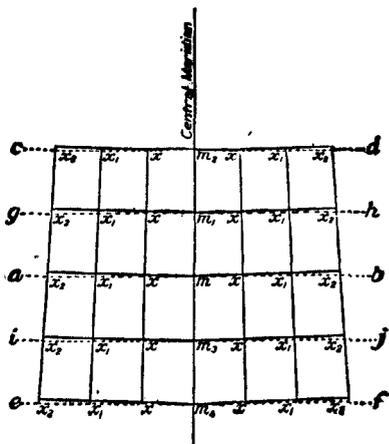


FIGURE 1.—Sketch showing construction of polyconic projection

NOTE.—In this figure the angles made at the central meridian by the parallels are grossly exaggerated. In an actual projection the parallels appear practically as straight lines.

line ab perpendicular thereto, each to be as central to the sheet as the selected interval of latitude and longitude will permit. (See fig. 1.) On the central meridian lay off, on the desired scale, the distances m , m_2 , and m , m_4 , using the length of 1 minute along the meridian for the latitude of m , as given in the table in the column headed "Arc of the meridian, 1'", and multiplying this length by the number of minutes for the interval between the central parallel and the extreme parallels. Through m_2 and m_4 draw straight lines, cd and ef , parallel to the line ab . On the lines ef , ab , and cd lay off to the scale of the map the distances $m_4 x_2$, $m x_2$, and $m_2 x_2$ on both sides of the central meridian, taking the values from the column headed "Arc of the parallel, 1'", corresponding to the latitude of m_4 , m , and m_2 , respectively. The value of 1 minute as taken from the table must be multiplied by the number of minutes out from the central meridian. Draw straight lines through the points thus determined for the extreme meridians—that is, through the x_2 points.

At the two points designated x_2 on the line ab lay off along the meridians the value of Y as given in the table under "Y coordinate of curvature", using as argument the interval in minutes between the central meridian and the extreme meridian. Draw straight lines from these points to the point m for the middle parallel, and from the points of intersection with the extreme meridians lay off distances along these meridians, above and below, equal to the distances m , m_2 , and m , m_4 to locate points in the extreme parallels.

Subdivide each of the 3 meridians and 3 parallels already determined into parts corresponding with the projection interval and join

Through m_2 and m_4 draw straight lines, cd and ef , parallel to the line ab . On the lines ef , ab , and cd lay off to the scale of the map the distances $m_4 x_2$, $m x_2$, and $m_2 x_2$ on both sides of the central meridian, taking the values from the column headed "Arc of the parallel, 1'", corresponding to the latitude of m_4 , m , and m_2 , respectively. The value of 1 minute as taken from the table must be multiplied by the number of minutes out from the central meridian. Draw straight lines through the points thus determined for the extreme meridians—that is, through the x_2 points.

the corresponding points of subdivision by straight lines to complete the projection.

The method outlined above may be used for all large-scale maps regardless of the number of meridians and parallels shown. For small-scale maps the method is somewhat more complicated, and it becomes necessary to make use of Special Publication No. 5, which may be obtained for 20 cents from the Superintendent of Documents, Washington, D.C.

Polyconic map projection table

Latitude	Arc of the parallel		Arc of the meridian		Interval of longitude from central meridian	Y coordinate of curvature, latitude 29°
	1"	1'	1"	1'		
° /	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	° /	<i>Meters</i>
29 00	27.067	1,624.0	30.787	1,847.19	0 01	0.1
05	27.045	1,622.7	30.787	1,847.22	03	1.0
10	27.023	1,621.4	30.787	1,847.24	05	2.9
15	27.001	1,620.1	30.788	1,847.26	07	5.6
20	26.980	1,618.8	30.788	1,847.29	10	11.5
25	26.958	1,617.5	30.788	1,847.31	15	25.8
30	26.936	1,616.1	30.789	1,847.33	20	45.8
35	26.913	1,614.8	30.789	1,847.36	25	71.6
40	26.891	1,613.5	30.790	1,847.38	30	103.1
45	26.869	1,612.1	30.790	1,847.40	40	183.2
50	26.847	1,610.8	30.790	1,847.43	50	286.3
55	26.825	1,609.5	30.791	1,847.45	1 00	412.2

Latitude	Arc of the parallel		Arc of the meridian		Interval of longitude from central meridian	Y coordinate of curvature, latitude 30°
	1"	1'	1"	1'		
° /	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	° /	<i>Meters</i>
30 00	26.802	1,608.1	30.791	1,847.47	0 01	0.1
05	26.780	1,606.8	30.792	1,847.50	03	1.1
10	26.757	1,605.4	30.792	1,847.52	05	2.9
15	26.735	1,604.1	30.792	1,847.55	07	5.7
20	26.712	1,602.7	30.793	1,847.57	10	11.7
25	26.690	1,601.4	30.793	1,847.59	15	26.3
30	26.667	1,600.0	30.794	1,847.62	20	46.8
35	26.644	1,598.6	30.794	1,847.64	25	73.1
40	26.621	1,597.3	30.794	1,847.66	30	105.3
45	26.598	1,595.9	30.795	1,847.69	40	187.1
50	26.576	1,594.5	30.795	1,847.71	50	292.4
55	26.553	1,593.2	30.796	1,847.74	1 00	421.0

Latitude	Arc of the parallel		Arc of the meridian		Interval of longitude from central meridian	Y coordinate of curvature, latitude 31°
	1"	1'	1"	1'		
° /	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	° /	<i>Meters</i>
31 00	26.530	1,591.8	30.796	1,847.76	0 01	0.1
05	26.506	1,590.4	30.796	1,847.79	03	1.1
10	26.483	1,589.0	30.797	1,847.81	05	3.0
15	26.460	1,587.6	30.797	1,847.83	07	5.8
20	26.437	1,586.2	30.798	1,847.85	10	11.9
25	26.413	1,584.8	30.798	1,847.88	15	26.8
30	26.390	1,583.4	30.798	1,847.91	20	47.7
35	26.367	1,582.0	30.799	1,847.93	25	74.5
40	26.343	1,580.6	30.799	1,847.96	30	107.3
45	26.320	1,579.2	30.800	1,847.98	40	190.8
50	26.296	1,577.8	30.800	1,848.00	50	298.1
55	26.272	1,576.3	30.800	1,848.03	1 00	429.3

Polyconic map projection table—Continued

Latitude	Arc of the parallel		Arc of the meridian		Interval of longitude from central meridian	Y coordinate of curvature, latitude 32°
	1"	1'	1"	1'		
° /	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	° /	<i>Meters</i>
32 00	26.249	1,574.9	30.801	1,848.05	0 01	0.1
05	26.225	1,573.5	30.801	1,848.08	03	1.1
10	26.201	1,572.1	30.802	1,848.10	05	3.0
15	26.177	1,570.6	30.802	1,848.13	07	6.0
20	26.153	1,569.2	30.803	1,848.15	10	12.1
25	26.129	1,567.8	30.803	1,848.18	15	27.3
30	26.105	1,566.3	30.803	1,848.20	20	48.6
35	26.081	1,564.9	30.804	1,848.23	25	75.9
40	26.057	1,563.4	30.804	1,848.25	30	109.3
45	26.033	1,562.0	30.805	1,848.28	40	194.2
50	26.008	1,560.5	30.805	1,848.30	50	303.5
55	25.984	1,559.0	30.805	1,848.33	1 00	437.0

Latitude	Arc of the parallel		Arc of the meridian		Interval of longitude from central meridian	Y coordinate of curvature, latitude 33°
	1"	1'	1"	1'		
° /	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	° /	<i>Meters</i>
33 00	25.960	1,557.6	30.806	1,848.35	0 01	0.1
05	25.935	1,556.1	30.806	1,848.38	03	1.1
10	25.911	1,554.7	30.807	1,848.40	05	3.1
15	25.886	1,553.2	30.807	1,848.43	07	6.0
20	25.862	1,551.7	30.808	1,848.45	10	12.3
25	25.837	1,550.2	30.808	1,848.48	15	27.8
30	25.812	1,548.7	30.808	1,848.50	20	49.4
35	25.788	1,547.3	30.809	1,848.53	25	77.1
40	25.763	1,545.8	30.809	1,848.55	30	111.0
45	25.738	1,544.3	30.810	1,848.58	40	197.4
50	25.713	1,542.8	30.810	1,848.60	50	308.4
55	25.688	1,541.3	30.810	1,848.63	1 00	444.2

Latitude	Arc of the parallel		Arc of the meridian		Interval of longitude from central meridian	Y coordinates of curvature	
	1"	1'	1"	1'		Lat. 34°	Lat. 35°
° /	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	<i>Meters</i>	° /	<i>Meters</i>	<i>Meters</i>
34 00	25.663	1,539.8	30.811	1,848.65	0 01	0.1	0.1
05	25.638	1,538.3	30.811	1,848.68	03	1.1	1.1
10	25.613	1,536.8	30.812	1,848.70	05	3.1	3.2
15	25.588	1,535.3	30.812	1,848.73	07	6.1	6.2
20	25.562	1,533.7	30.813	1,848.75	10	12.5	12.7
25	25.537	1,532.2	30.813	1,848.78	15	28.2	28.6
30	25.512	1,530.7	30.813	1,848.81	20	50.1	50.8
35	25.486	1,529.2	30.814	1,848.83	25	78.3	79.3
40	25.461	1,527.6	30.814	1,848.86	30	112.7	114.2
45	25.435	1,526.1	30.815	1,848.88	40	200.4	203.1
50	25.410	1,524.6	30.815	1,848.91	50	313.1	317.3
55	25.384	1,523.0	30.816	1,848.93	1 00	450.8	456.9
60	25.358	1,521.5	30.816	1,848.96			

CONVERSION TABLE

In nearly all recent triangulation publications of this Bureau, complete tables have been printed for the conversion of feet to meters and meters to feet. As these tables require eight pages, it seemed advisable in the interests of economy to substitute for them the condensed table shown below. This table can be used readily for converting rather large number of one unit to the corresponding number

in the other unit by simply taking the conversion value for each digit of the first number, moving the decimal point if necessary and adding the values together. For example, to convert 24.6 feet to meters we take from the table the value in meters corresponding to 2 feet and move the decimal point one number to the right. We then take the value for 4 feet as given in the table, and next the value for 6 feet, and move the decimal point one number to the left. This gives, by rounding off the third decimal place, $6.096 + 1.219 + 0.183 = 7.498$ meters.

Meters	Feet	Feet	Meters
1	3.280333	1	0.3048006
2	6.561667	2	0.6096012
3	9.842500	3	0.9144018
4	13.123333	4	1.2192024
5	16.404167	5	1.5240030
6	19.685000	6	1.8288037
7	22.965833	7	2.1336043
8	26.246667	8	2.4384049
9	29.527500	9	2.7432055
10	32.808333	10	3.0480061

EXPLANATION OF TABLE OF POSITIONS

In the tables of positions the latitude and longitude of each point are given on the North American datum of 1927, and there are also given the length and azimuth of each line observed over, whether in one or both directions. No lengths and azimuths are repeated, and for a given line the length and azimuth will be found opposite the position of one or the other of the two stations involved.

To aid in the use of the tables, a column of the logarithms of the lengths in meters is given. It must be remembered that it is the logarithm which is derived first from the computation, the lengths given in the table being then derived from the corresponding logarithms. A final column gives these lengths reduced to feet, the reduction being made from the lengths in meters.

The rule followed in recent publications of this office has been to give the latitudes and longitudes of the stations to thousandths of seconds for all points, the positions of which are fixed by fully adjusted triangulation. Points the positions of which are given to hundredths of seconds only are marked by footnotes as being without check (not occupied and observed from two stations only) or checked by verticals only.

In the columns giving azimuths, distances, and logarithms of distances the accuracy is indicated to a certain extent by the number of decimal places given, it being understood that in each case some of the final figures are doubtful. In some cases there is very little doubt of the correctness of the second figure from the right, while in a few cases some doubt may exist as to the correctness of even the third figure from the right.

The tables may be conveniently consulted by using as finders the sketches and the index at the end of this publication. In the third column of the index will be found for each point a reference to the page on which its description is given and in the fourth column the number of the sketch on which it appears.

EXPLANATION OF LENGTHS

The lengths as given in the tables are all reduced to sea level. If the actual length of a line on the ground reduced only to the horizontal is desired—that is, its length in its actual elevation on the surface of the earth—it may be obtained by adding to the sea-level length as given in meters the following correction,

$$\text{Cor.} = \frac{Sh_m}{6,370,000},$$

in which S is the length of the line in meters and h_m is the mean elevation of the two ends of the line in meters. The correction for the length in feet can also be found by the same formula if S is taken in feet, but h_m must still be kept in meters, since the denominator is the approximate length of the radius of the earth in meters.

AZIMUTH AND BACK AZIMUTH

The azimuth of a line of triangulation is its true direction reckoned clockwise from true south. The cardinal points of the compass on this system are as follows: South is 0° (or 360°), west 90° , north 180° , and east 270° .

Because of the convergence of the meridians, the azimuth and the back azimuth of a line do not differ by exactly 180° , the amount of the divergence varying with the latitude and the difference of longitude of the two ends of the line. To illustrate from the tables on page 13, the azimuth from Wilman to Gate is $185^\circ 26' 03''.74$, while the back azimuth, or the azimuth from Gate to Wilman is $5^\circ 26' 27''.74$.

The azimuths of the triangulation lines offer a very convenient and accurate means of testing the deflection of the magnetic needle on a surveyor's transit, and even the azimuth over such short distances as those between a station mark and its reference mark may be used for this purpose with fair accuracy, provided the distance is greater than 100 feet. On all recent triangulation, a special azimuth mark has been set for each station at a distance of not less than one-fourth mile. The azimuth of the line from the station to this mark has been very accurately determined and may be used as the starting azimuth for traverse lines and other local surveys.

GEOGRAPHIC POSITIONS

Mississippi River arc, Arkansas State line to Donaldsonville

427 65° 34' 2"

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
											Logarithm (meters)	Meters	Feet
<i>Principal points</i>													
	°	'	"	°	'	"	°	'	"				
Weise (Arkansas), 1929.....	33	01	41.082										
	91	10	26.415										
Hanna (Arkansas), 1929.....	33	05	29.306	308	41	13.61	128	44	18.07	Weise.....	4.0508295	11,241.64	36,881.9
	91	16	04.541										
Gage, 1929.....	32	56	38.718	161	30	39.61	341	28	44.75	Hanna.....	4.2364474	17,236.43	56,549.9
	91	12	33.764	199	32	03.33	19	33	12.66	Weise.....	3.9949331	9,884.01	32,427.8
Kilbourne, 1929.....	32	58	40.135	192	38	38.07	12	39	37.51	Hanna.....	4.1112157	12,918.61	42,383.8
	91	17	53.582	244	18	56.19	64	22	59.76	Weise.....	4.1098146	12,877.00	42,247.3
				294	13	06.68	114	16	00.69	Gage.....	3.9594883	9,109.37	29,886.3
Gate, 1929.....	32	50	53.855	137	17	21.93	317	12	44.28	Kilbourne.....	4.2913811	19,560.55	64,174.9
	91	09	22.619	154	57	06.29	334	55	24.47	Gage.....	4.0692171	11,727.81	38,477.0
Bennett, 1929.....	32	51	07.708	158	29	04.60	338	27	09.60	Kilbourne.....	4.1755914	14,982.74	49,155.9
	91	14	21.964	195	24	34.08	15	25	32.85	Gage.....	4.0243838	10,577.52	34,703.1
				273	06	55.90	93	09	38.28	Gate.....	3.8918572	7,795.74	25,576.5
Wilman, 1929.....	32	44	20.640	152	07	55.74	332	05	37.60	Bennett.....	4.1518973	14,187.22	46,545.9
	91	10	06.933	185	26	03.74	5	26	27.74	Gate.....	4.0852078	12,167.68	39,920.1
Goode, 1929.....	32	46	04.377	193	24	40.51	13	25	26.94	Bennett.....	3.9825557	9,606.29	31,516.6
	91	15	47.650	228	17	40.80	48	21	09.42	Gate.....	4.1274634	13,411.07	43,999.5
				289	47	17.35	109	50	21.69	Wilman.....	3.9743995	9,427.57	30,930.3
Homestead, 1929.....	32	41	53.151	123	40	50.89	303	36	49.42	Goode.....	4.1451088	13,967.18	45,824.0
	91	08	21.098	148	45	55.22	328	44	58.01	Wilman.....	3.7254174	5,313.95	17,434.2
Elliott, 1929.....	32	41	15.923	152	29	28.88	332	27	52.74	Goode.....	4.0008482	10,019.55	32,872.5
	91	12	49.844	216	41	50.98	36	43	19.02	Wilman.....	3.8511195	7,097.73	23,286.5
				260	40	37.30	80	43	02.46	Homestead.....	3.8508884	7,093.95	23,274.1
Loop, 1929.....	32	36	47.135	147	18	34.17	327	16	44.11	Elliott.....	3.9929888	9,839.86	32,282.9
	91	09	25.839	190	08	32.60	10	09	07.54	Homestead.....	3.9812003	9,576.36	31,418.4

GEOGRAPHIC POSITIONS—Continued

Mississippi River arc, Arkansas State line to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
	°	'	"	°	'	"	°	'	"		Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>													
Alsatia, 1929.....	32	36	45.038	179	24	31.02	359	24	29.24	Elliott.....	3.9214166	8,344.81	27,377.9
	91	12	46.538	216	03	57.06	36	06	20.29	Homestead.....	4.0698328	11,744.45	38,531.6
				269	16	41.24	89	18	29.41	Loop.....	3.7187630	5,233.15	17,169.1
Henderson, 1929.....	32	33	37.430	122	59	35.50	302	56	31.50	Alsatia.....	4.0261268	10,620.06	34,842.6
	91	07	04.900	147	50	24.83	327	49	08.92	Loop.....	3.8390713	6,903.53	22,649.3
Sondheimer, 1929.....	32	32	54.668	153	32	37.25	333	31	24.31	Alsatia.....	3.8991118	7,927.05	26,007.3
	91	10	31.085	193	21	47.75	13	22	22.88	Loop.....	3.8668927	7,360.25	24,147.8
				256	13	31.94	76	15	22.89	Henderson.....	3.7433669	5,538.18	18,169.8
Talla, 1929.....	32	29	39.382	333	56	24.11	153	57	06.66	Millikin.....	3.6731996	4,711.94	15,459.1
	91	07	33.636	10	09	22.17	190	08	50.73	Tallulah.....	3.9384814	8,679.23	28,475.1
				142	25	16.13	322	23	40.73	Sondheimer.....	3.8803419	7,591.75	24,907.3
				185	50	14.54	5	50	29.99	Henderson.....	3.8675235	7,370.95	24,182.9
Bena, 1929.....	32	28	58.903	179	06	19.41	359	06	17.07	Sondheimer.....	3.8611320	7,263.27	23,829.6
	91	10	26.739	211	32	03.95	31	33	52.46	Henderson.....	4.0029303	10,067.70	33,030.4
				254	33	48.02	74	35	21.00	Talla.....	3.6710143	4,688.29	15,381.5
				294	21	30.05	114	23	45.53	Millikin.....	3.8594457	7,235.12	23,737.2
				337	41	53.58	157	42	55.03	Tallulah.....	3.8968520	7,885.91	25,872.4
King, 1929.....	32	14	31.501										
	91	07	22.346										
Culley (Mississippi), 1929.....	32	12	48.072	100	27	55.35	280	22	02.38	King.....	4.2460242	17,620.74	57,810.7
	90	56	20.467										
Callman, 1929.....	32	19	28.973	311	56	55.98	132	01	35.87	Culley.....	4.2662105	18,459.10	60,561.2
	91	05	04.713	21	28	04.65	201	26	51.14	King.....	3.9932240	9,845.19	32,300.4
Mounds southeast base, 1929.....	32	19	05.432	1	55	23.15	181	55	15.20	Culley.....	4.0655817	11,630.05	38,156.3
	90	56	05.564	64	34	33.28	244	28	31.84	King.....	4.2926471	19,617.66	64,362.3
				92	59	00.51	272	54	12.25	Callman.....	4.1498648	14,120.98	46,328.6
Mounds northwest base, 1929.....	32	20	20.293	285	30	30.33	105	33	20.02	Mounds, southeast base.....	3.9350697	8,611.320	28,252.31
	91	01	22.787	330	22	54.98	150	25	36.42	Culley.....	4.2046471	16,019.43	52,557.1
				74	46	52.59	254	44	53.90	Callman.....	3.7792797	6,015.61	19,736.2
Johnson, 1929.....	32	21	12.024	289	41	39.25	109	43	10.27	Mounds, northwest base.....	3.6744382	4,725.40	15,503.2
	91	04	12.910	23	06	59.41	203	06	31.70	Callman.....	3.5379768	3,451.25	11,323.0
Duck, 1929.....	32	22	12.644	307	13	58.43	127	16	33.55	Mounds, southeast base.....	3.9789098	9,525.98	31,253.2
	91	00	55.515	337	29	52.80	157	32	19.74	Culley.....	4.2746294	18,820.42	61,746.7
				11	38	41.96	191	28	27.36	Mounds, northwest base.....	3.5481931	3,533.40	11,592.5
				52	17	25.71	232	15	12.38	Callman.....	3.9158687	8,238.89	27,030.4
				70	07	26.78	250	05	41.12	Johnson.....	3.7394381	5,488.30	18,006.2
Tallulah, 1929.....	32	25	02.029	316	15	00.17	136	17	19.05	Johnson.....	3.9914313	9,804.63	32,167.4
	91	08	32.208	332	07	01.51	152	08	52.60	Callman.....	4.0646391	11,604.84	38,073.5
Junction, 1929.....	32	25	50.410	330	31	22.11	150	32	39.81	Duck.....	3.8867410	7,704.44	25,277.0
	91	03	20.534	9	04	26.24	189	03	58.18	Johnson.....	3.9387028	8,683.66	28,459.6
				13	03	27.22	193	02	31.43	Callman.....	4.0813761	12,060.80	39,569.5
				79	39	08.28	259	36	21.17	Tallulah.....	3.9179476	8,278.42	27,160.1
Millikin, 1929.....	32	27	21.958	301	49	35.32	121	51	08.58	Junction.....	3.7279874	5,345.49	17,537.7
	91	06	14.380	344	25	28.06	164	26	33.15	Johnson.....	4.0729456	11,828.93	38,808.7
				39	53	01.90	219	51	47.97	Tallulah.....	3.7494455	5,616.24	18,425.9
McMellin, 1929.....	32	07	17.337	205	14	30.11	25	16	38.40	King.....	4.1698770	14,786.89	48,513.3
	91	11	23.210	246	37	54.10	66	45	54.72	Culley.....	4.4108305	23,753.16	84,491.8
Tyler (Miss.), 1929.....	32	01	54.877	126	56	24.61	306	51	56.78	McMellin.....	4.2185582	16,540.86	54,267.8
	91	02	58.880	163	30	53.59	343	28	33.44	King.....	4.3857260	24,306.70	79,746.2
				207	24	14.97	27	27	46.82	Culley.....	4.3554235	22,668.54	74,371.7
Peek, 1929.....	32	00	27.864	172	04	45.08	352	04	09.54	McMellin.....	4.1049608	12,733.88	41,777.7
	91	10	16.270	256	49	31.18	76	53	23.09	Tyler.....	4.0714087	11,787.15	38,671.7
B.M. Point Pleasant (M.R.C.), 1929.....	32	06	23.253	324	56	03.46	144	58	00.84	Tyler.....	4.0042084	10,097.37	33,127.8
	91	06	39.962	27	25	00.40	207	23	05.59	Peek.....	4.0909506	12,329.64	40,451.5
				102	39	54.99	282	37	24.41	McMellin.....	3.8813983	7,610.24	24,967.9
Trim (Miss.), 1929.....	31	54	31.806	182	47	46.15	2	47	56.95	Peek.....	4.0405986	10,979.91	36,023.3
	91	10	36.678	221	20	25.81	41	24	28.20	Tyler.....	4.2597357	18,185.94	59,665.0
Osceola, 1929.....	31	58	05.232	239	49	17.53	59	51	50.10	Peek.....	3.9417511	8,744.82	28,690.3
	91	15	04.293	249	34	04.56	69	40	28.96	Tyler.....	4.3077617	20,312.42	66,641.7
				313	03	43.42	133	06	04.99	Trim.....	3.9833588	9,624.07	31,575.0
Joseph, 1929.....	31	54	48.596	165	44	10.84	345	43	39.82	Osceola.....	3.7958289	6,249.26	20,502.8
	91	14	05.654	275	21	54.72	95	23	45.19	Trim.....	3.7415406	5,514.94	18,093.6
Bang, 1929.....	31	54	34.057	231	54	23.31	51	57	10.56	Osceola.....	4.0231786	10,548.21	34,606.9
	91	20	20.447	267	22	07.16	87	25	25.28	Joseph.....	3.9937633	9,857.42	32,340.6
				270	12	57.87	90	18	06.44	Trim.....	4.1857802	15,338.41	50,322.8

GEOGRAPHIC POSITIONS—Continued

Mississippi River arc, Arkansas State line to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
											Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>													
Jones (Miss.), 1929	31 44 50.133	91 15 35.070	157 22 16.44 203 37 53.19	337 19 45.94 23 40 30.56	Bang Trim	4.2897643 4.2913402	19,487.87 19,558.71	63,936.5 64,168.9					
Waterproof, 1929	31 48 14.191	91 22 57.101	199 22 49.11 239 05 13.95 288 21 10.75	19 24 11.79 59 11 44.74 118 25 03.52	Bang Trim Jones	4.0935482 4.3555536 4.1212430	12,403.61 22,675.33 13,220.35	40,694.2 74,394.0 43,373.8					
Stout (Miss.), 1929	31 41 52.497	91 20 39.229	162 51 22.81 235 38 08.62	342 50 10.26 55 40 48.55	Waterproof Jones	4.0900227 3.9866934	12,303.33 9,698.25	40,365.2 31,818.3					
Smith, 1929	31 44 58.740	91 26 20.519	221 37 33.04 270 50 48.47 302 31 46.27	41 39 20.16 90 56 28.10 122 34 45.73	Waterproof Jones Stout	3.9060761 4.2302011 4.0277592	8,055.20 16,990.30 10,660.05	26,427.8 55,742.3 34,973.8					
Car, 1929	31 40 48.802	91 29 20.078	211 32 35.53 261 49 23.70	31 34 09.92 81 53 57.31	Smith Stout	3.9558707 4.1416720	9,033.80 13,857.09	29,638.4 45,462.8					
Natchez (Miss.), 1929	31 36 06.463	91 23 42.007	134 19 58.90 165 43 22.02 204 18 12.26	314 17 01.55 345 41 58.78 24 19 48.17	Car Smith Stout	4.0951309 4.2283258 4.0680047	12,448.90 16,917.10 11,695.12	40,842.8 55,502.2 38,369.7					
Ferriday, 1929	31 37 17.733	91 33 01.696	221 54 53.01 278 25 20.03	41 56 49.30 98 30 13.39	Car Natchez	3.9414188 4.1736255	8,738.14 14,915.08	28,668.4 48,933.9					
P.B.M., LXIII (M.R.C.)=east base (C. & G. S.), 1878.	31 33 44.634	91 25 16.099	118 09 58.64 153 48 38.19 209 35 16.15	298 05 54.73 333 46 30.27 29 36 05.42	Ferriday Car Natchez	4.1436256 4.1631846 3.7010095	13,919.56 14,560.78 5,023.54	45,667.8 47,771.5 16,481.4					
Willets, 1929	31 30 02.744	91 31 50.185	171 59 31.72 228 56 29.26 236 39 11.90	351 58 54.29 49 00 44.70 56 42 38.00	Ferriday Natchez P.B.M., LXIII (M.R.C.)=east base (C. & G. S.)	4.1312730 4.2321543 4.0948698	13,529.23 17,066.89 12,441.42	44,387.1 55,993.6 40,818.2					
Minor (Miss.), 1929	31 27 22.847	91 25 29.256	116 07 17.05 146 57 07.63 189 56 36.78	296 03 58.14 326 53 10.97 9 57 32.86	Willets Ferriday Natchez	4.0490713 4.3397722 4.2141275	11,196.22 21,866.15 16,372.97	36,732.9 71,739.2 53,717.0					
Boger (Miss.), 1929	31 28 05.030	91 16 55.800	84 33 45.68 144 10 25.52	264 29 17.69 324 06 53.06	Minor Natchez	4.1341041 4.2623168	13,617.71 18,294.34	44,677.4 60,020.7					
Ratcliff (Miss.), 1929	31 33 25.577	91 15 13.485	15 18 01.62 55 32 06.26 110 19 08.31	195 17 08.15 235 26 44.47 290 14 42.01	Boger Minor Natchez	4.0100787 4.2948786 4.1551724	10,234.79 19,718.71 14,294.61	33,578.6 64,693.8 46,898.2					
Foster (Miss.), 1929	31 17 47.866	91 16 00.238	139 42 22.63 175 35 14.21	319 37 26.37 355 34 45.28	Minor Boger	4.3660620 4.2802132	23,230.68 19,063.97	76,216.0 62,545.7					
Helena (Miss.), 1929	31 10 37.599	91 27 08.418	184 50 01.84 206 37 04.23 233 06 16.53	4 50 53.08 26 42 22.70 53 12 03.03	Minor Boger Foster	4.4923414 4.5574653 4.3443257	31,070.01 36,066.52 22,066.61	101,935.5 118,426.7 72,495.3					
Red Bug (Miss.), 1929	31 15 52.104	91 15 57.020	61 27 21.60 178 37 56.82	241 21 33.59 358 37 55.15	Helena Foster	4.3061866 3.5522053	20,238.88 3,566.20	66,400.4 11,700.1					
Grimes (Miss.), 1929	31 05 49.729	91 26 40.204	175 10 58.32 217 24 32.54 222 30 26.65	355 10 43.73 37 30 04.03 42 35 59.65	Helena Foster Red Bug	3.9492387 4.4449873 4.4011154	8,896.90 27,860.40 25,183.46	29,189.2 91,405.3 82,622.7					
Woodville (Miss.), 1929	31 06 15.661	91 17 56.686	86 44 35.17 188 13 13.02 190 06 40.37	266 40 04.75 8 14 13.34 10 07 42.33	Grimes Foster Red Bug	4.1429212 4.3332372 4.2560727	13,897.00 21,539.58 18,033.19	45,593.7 70,667.8 59,163.9					
Ferguson (Miss.), 1929	31 01 59.587	91 26 34.014	178 40 26.98 240 03 47.49	358 40 23.79 60 08 14.47	Grimes Woodville	3.8506116 4.1921445	7,089.43 15,820.29	23,259.2 51,903.7					
Walker, 1929	30 58 57.757	91 17 24.859	111 03 55.91 130 47 04.45 176 25 16.32	290 59 13.01 310 42 18.10 356 24 59.91	Ferguson Grimes Woodville	4.1933131 4.2886571 4.1307257	15,606.77 19,438.25 13,512.19	51,203.2 63,773.7 44,331.2					
Brown, 1929	30 56 18.240	91 30 20.129	209 41 55.08 256 31 00.43	29 43 51.49 76 37 39.27	Ferguson Walker	4.0829179 4.3253983	12,103.69 21,154.28	39,710.2 69,403.7					
Allain, 1929	30 53 19.931	91 21 06.778	110 35 56.39 151 40 53.75 209 43 37.01	290 31 13.13 331 38 06.43 29 45 32.12	Brown Ferguson Walker	4.1941266 4.2596568 4.0785338	15,636.14 18,182.76 11,982.12	51,299.6 59,654.6 39,311.3					
Barrow, 1929	30 51 46.375	91 27 21.625	150 29 36.19 253 45 14.07	330 28 04.52 73 48 25.41	Brown Allain	3.9832283 4.0134599	9,621.18 10,314.78	31,565.5 33,841.1					
Bradley, 1929	30 47 34.601	91 22 57.982	137 54 51.37 143 57 39.33 195 15 19.50	317 52 36.27 323 53 52.50 15 16 15.49	Barrow Brown Allain	4.0191334 4.2999487 4.0423132	10,450.41 19,950.27 11,023.34	34,286.1 65,453.5 36,165.7					
New Roads, west base, 1929	30 42 54.584	91 33 10.030	190 19 41.02 209 28 11.14 242 02 45.27	10 21 08.09 29 31 09.48 62 07 58.24	Brown Barrow Bradley	4.4006640 4.2745004 4.2633293	25,157.30 18,814.84 18,421.68	82,536.9 61,728.4 60,438.5					

GEOGRAPHIC POSITIONS—Continued

Mississippi River arc, Arkansas State line to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
											Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>													
New Roads, east base, 1929	30 41 55.062	99 40 17.44	279 36 50.52	New Roads, west base			4.0389093	10,937.280	35,883.39				
	91 26 24.820	175 15 43.55	355 15 14.48	Barrow			4.2617640	18,271.07	59,944.3				
		207 44 24.31	27 46 10.05	Bradley			4.0724111	11,814.38	38,761.0				
Hudson, 1929	30 40 25.526	100 35 23.47	280 30 39.52	New Roads, east base			4.1779255	15,063.49	49,420.8				
	91 17 08.432	144 53 17.02	324 50 18.38	Bradley			4.2083731	16,157.46	53,009.9				
Chenal, 1929	30 36 26.661	153 56 25.69	333 54 50.93	New Roads, east base			4.0515234	11,259.61	36,940.9				
	91 23 18.953	181 33 09.78	1 33 20.49	Bradley			4.3133715	20,576.50	67,508.1				
		233 16 06.01	53 19 14.85	Hudson			4.0901377	12,306.59	40,375.9				
Samuel, 1929	30 36 43.070	88 01 06.75	267 56 32.81	Chenal			4.1565178	14,338.96	47,043.7				
	91 14 20.977	146 57 04.64	326 55 39.29	Hudson			3.9124207	8,173.74	26,816.7				
Devall, 1929	30 32 26.741	144 30 01.39	324 28 20.74	Chenal			3.9579195	9,076.52	29,778.5				
	91 20 01.086	197 18 44.27	17 20 12.18	Hudson			4.1887713	15,444.41	50,670.5				
		228 55 13.85	48 58 06.86	Samuel			4.0798374	12,018.14	39,429.5				
Barrowza, 1929	30 29 57.591	143 22 20.03	323 21 14.97	Devall			3.7576752	5,723.68	18,778.4				
	91 17 52.978	204 19 56.61	24 21 44.39	Samuel			4.1368842	13,705.16	44,964.3				
Scott, 1929	30 31 15.670	76 06 05.14	256 03 00.48	Barrowza			3.9906301	9,991.49	32,780.4				
	91 11 49.273	99 30 40.91	279 26 31.06	Devall			4.1236035	13,292.40	43,610.1				
		158 09 37.98	338 08 20.83	Samuel			4.0859206	10,862.27	35,637.3				
Baker, 1929	30 36 01.995	18 03 47.00	198 02 52.17	Scott			3.9672541	9,273.72	30,425.5				
	91 10 01.422	100 23 08.16	280 20 56.01	Samuel			3.8468783	7,028.75	23,060.2				
Hooper, 1929	30 32 00.396	82 41 42.49	262 38 18.58	Scott			4.0330399	10,790.46	35,401.7				
	91 05 07.832	120 36 12.21	300 31 30.86	Samuel			4.2334553	17,118.09	56,161.6				
		133 34 46.77	313 32 17.46	Baker			4.0332772	10,796.36	35,421.1				
Hooper ecc., 1929	30 32 00.285	82 42 53.61	262 39 29.65	Scott			4.0331225	10,792.51	35,406.4				
	91 05 07.738	120 36 32.43	300 31 51.03	Samuel			4.2335543	17,121.99	56,174.4				
		133 35 01.24	313 32 31.88	Baker			4.0334453	10,800.53	35,434.7				
		143 49 17.98	323 49 17.93	Hooper			0.6280823	4.247	13.93				
Babin, 1929	30 28 14.042	171 16 54.23	351 16 37.91	Scott			3.7526948	5,658.42	18,564.3				
	91 11 17.103	234 40 52.29	54 43 59.72	Hooper			4.0815070	12,064.44	39,581.4				
		234 42 04.89	54 45 12.37	Hooper ecc.			4.0815095	12,064.51	39,581.6				
Connell, 1929	30 25 54.056	115 20 38.54	295 17 45.47	Babin			4.0034289	10,079.27	33,068.4				
	91 05 35.615	134 50 40.01	314 47 30.50	Scott			4.1476926	14,050.53	46,097.4				
		183 45 22.58	3 45 36.67	Hooper			4.0532796	11,305.23	37,090.6				
		183 46 12.34	3 46 26.48	Hooper ecc.			4.0531545	11,301.98	37,079.9				
Gianelloni, 1929	30 22 03.247	150 43 30.21	330 41 28.69	Babin			4.1170034	13,091.92	42,952.4				
	91 07 17.104	200 51 31.35	20 52 22.71	Connell			3.8311665	7,606.18	24,954.6				
Brusle, 1929	30 23 23.168	210 17 58.17	30 19 37.56	Babin			4.0160097	10,375.52	34,040.4				
	91 14 33.342	252 01 26.49	72 05 58.69	Connell			4.1785720	15,085.93	49,494.4				
		281 53 59.87	101 57 40.48	Gianelloni			4.0757177	11,904.68	39,057.3				
Burtville, 1929	30 19 54.487	121 44 16.85	301 41 00.00	Brusle			4.0872546	12,225.16	40,108.7				
	91 08 03.895	197 29 26.87	17 29 50.51	Gianelloni			3.6187984	4,157.18	13,639.0				
Plaquemine, 1929	30 17 33.812	175 48 07.00	355 47 52.05	Brusle			4.0328871	10,786.66	35,389.2				
	91 14 03.765	232 36 03.34	52 39 28.69	Gianelloni			4.1357385	13,669.06	44,845.9				
		245 43 19.54	65 46 21.17	Burtville			4.0230762	10,545.72	34,598.7				
St. Gabriel, 1929	30 15 27.764	106 41 11.46	286 37 06.70	Plaquemine			4.1317549	13,544.25	44,436.4				
	91 05 58.274	157 46 39.01	337 45 35.64	Burtville			3.9480542	8,872.67	29,109.8				
		309 14 02.70	129 16 21.57	Geismar			3.9788522	9,524.72	31,249.0				
		340 17 21.13	160 19 05.44	McCall			4.2166102	16,466.84	54,025.0				
Whitecastle, 1929	30 10 08.893	147 56 52.51	327 54 10.85	Plaquemine			4.2086565	16,168.01	53,044.5				
	91 08 42.689	183 17 20.95	3 17 40.49	Burtville			4.2567579	18,061.67	59,257.3				
		204 06 47.85	24 08 10.58	St. Gabriel			4.0317488	10,758.43	35,296.6				
		252 07 19.25	72 11 00.60	Geismar			4.0924638	12,372.68	40,592.7				
		299 42 27.12	119 45 33.85	McCall			4.0592510	11,461.75	37,604.1				
Winchester, 1930	30 03 21.102												
	90 54 48.755												
Wilton, 1929	30 05 07.809	59 15 12.21	239 13 28.94	Winchester			3.8078149	6,424.14	21,076.5				
	90 51 22.645												
Donaldsonville, 1929	30 06 26.446	280 43 15.18	100 47 13.93	Wilton			4.1131661	12,976.76	42,574.6				
	90 59 18.768	308 15 47.68	128 18 03.02	Winchester			3.9643472	9,211.86	30,222.6				
Miles, 1929	30 09 39.608	323 33 42.95	143 35 38.72	Wilton			4.0170686	10,400.84	34,123.4				
	90 55 13.331	356 46 01.61	176 46 13.94	Winchester			4.0671988	11,673.44	38,298.6				
		47 51 35.90	227 49 32.69	Donaldsonville			3.9475284	8,861.93	29,074.5				
McCall, 1929	30 07 04.278	247 45 02.47	67 48 42.13	Miles			4.1020333	12,648.33	41,497.1				
	91 02 30.815	282 45 10.26	102 46 46.61	Donaldsonville			3.7219587	5,271.80	17,295.9				
Geismar, 1929	30 12 12.041	295 23 46.29	115 26 51.86	Miles			4.0387753	10,933.90	35,872.3				
	91 01 22.452	342 42 50.66	162 43 52.79	Donaldsonville			4.0470569	11,144.41	36,563.0				
		10 55 49.63	190 55 15.28	McCall			3.9845880	9,651.57	31,665.2				

GEOGRAPHIC POSITIONS—Continued

Mississippi River arc, Arkansas State line to Donaldsonville—Continued

Station	Latitude and longitude	Azimuth	Back azimuth	To station	Distance		
					Logarithm (meters)	Meters	Feet
<i>Supplementary points</i>							
B.M. 83/4 (M.R.C.) (Ark.), 1929.....	33 01 43.646 91 10 25.448	17 37 46.4	197 37 45.9	Weise.....	1.918528	82.89	271.9
B.M. Gage 89 (M.R.C.), 1929.....	32 56 29.512 91 12 44.088	223 23 56.0	43 24 01.6	Gage.....	2.591431	390.33	1,280.6
Lake Providence, water tank (M.R.C.), 1929.....	32 48 06.957 91 10 22.948	356 34 38.3 65 56 42.6 131 52 00.0	176 34 46.9 245 53 46.8 311 49 50.4	Wilman..... Goode..... Bennett.....	3.844109 3.966374 3.921470	6,984.1 9,254.9 8,345.8	22,914 30,364 27,381
Lake Providence, north base 2, 1929.....	32 48 04.441 91 10 24.556	208 22	28 22	Lake Providence, water tank (M.R.C.).....	1.944808	88.07	288.9
P.B.M. Vista (M.R.C.), 1929.....	32 33 38.151 91 07 05.669	317 55 43.4	137 55 43.8	Henderson.....	1.476005	29.92	98.2
Delta southwest base (C. & G.S.) (P.B.M. 107/3 (M.R.C.)), 1878.....	32 19 06.578 90 56 11.000	283 56 11.3	103 56 14.2	Mounds, southeast base.....	2.165887	146.52	480.7
P.B.M. St. Joseph (M.R.C.), 1929.....	31 54 47.696 91 14 05.984	197 22 24.2	17 22 24.4	Joseph.....	1.462892	29.03	95.2
Primary traverse station no. 78 (U.S.G.S.), 1909.....	31 54 47.521 91 14 06.054	197 36 42.4	17 36 42.6	Joseph.....	1.540692	34.73	113.9
South Meridian (G.L.O.), 1929.....	31 54 47.481 91 14 07.215	230 03 16.4	50 03 17.2	Joseph.....	1.728435	53.51	175.6
B.M. Courthouse (M.R.C.), 1929.....	31 54 50.869 91 14 11.695	293 48 21.5	113 48 24.7	Joseph.....	2.239234	173.47	569.1
P.B.M. LXXI (C. & G.S.), 1929.....	31 48 16.559 91 22 56.523	11 45 52.9	191 45 52.6	Waterproof.....	1.872226	74.51	244.5

Deer Park (M.R.C.), 1929.....	31 24 56.700 91 34 47.330	206 22 39.3 252 58 34.7 335 19 29.6	26 24 11.8 73 03 25.8 155 23 28.1	Willetts..... Minor..... Helena.....	4.022105 4.187793 4.464028	10,522.2 15,409.7 29,109.0	34,522 50,557 95,502
B.M. Gage 43 (M.R.C.), 1929.....	30 43 41.476 91 32 28.229	37 36 20.9	217 35 59.5	New Roads, west base.....	3.260706	1,822.66	5,979.8
Arbroth, 1929.....	30 36 34.228 91 18 57.865	88 05 58.0 202 14 33.2 267 51 58.3 12 28 08.5	268 03 45.0 22 15 28.9 87 54 19.3 192 27 36.4	Chenal..... Hudson..... Samuel..... Devall.....	3.842522 3.886247 3.868080 3.892377	6,958.6 7,695.7 7,380.4 7,805.1	22,830 25,248 24,214 25,607
B. M. Arbroth (M.R.C.), 1929.....	30 36 33.803 91 18 57.946	189 24 34	9 24 34	Arbroth.....	1.122674	13.26	43.5
P.B.M. Poplar Grove, ecc. (M.R.C.).....	30 29 35.183 91 12 05.308	187 51 58.0 332 46 03.8	7 52 06.1 152 46 28.2	Scott..... Babin.....	3.494681 3.448708	3,123.8 2,810.0	10,249 9,219
P.B.M. Poplar Grove (M.R.C.), 1929.....	30 29 35.127 91 12 08.884	268 57 32.4	88 57 34.2	P.B.M. Poplar Grove, ecc.....	1.979507	95.39	313.0
P.B.M. St. Gabriel (M.R.C.), 1929.....	30 15 26.521 91 05 58.171	175 52 24.9	355 52 24.8	St. Gabriel.....	1.583992	38.37	125.9
P.B.M. New River (M.R.C.), 1929.....	30 12 14.014 91 01 22.010	11 00 41.7	191 00 41.5	Geismar.....	1.791620	61.89	203.1
B.M. Donaldsonville (M.R.C.), 1929.....	30 06 23.722 90 59 17.071	151 33 28.8	331 33 27.9	Donaldsonville.....	1.979548	95.40	313.0
Hymel, 1929.....	30 04 07.334 90 51 47.204	109 32 14.1 151 40 26.3 199 27 10.8	289 28 27.8 331 38 42.9 19 27 23.1	Donaldsonville..... Miles..... Wilton.....	4.108176 4.065373 3.295534	12,828.5 11,624.6 1,974.8	42,088 38,138 6,479
Tallulah, La., Power & Light Co., water tank, 1929.....	32 24 26.943 91 11 20.359	189 29 16.0 211 35 16.1 235 58 52.8	9 29 44.7 31 37 17.7 56 01 36.9	Bena..... Talla..... Millikin.....	3.929086 4.053081 3.984151	8,493.5 11,300.1 9,641.6	27,866 37,074 31,632
Tallulah, aviation beacon, 1929.....	32 24 44.286 91 09 00.964	164 03 49.2 194 04 46.6 221 50 57.5	344 03 03.2 14 05 33.5 41 52 26.9	Bena..... Talla..... Millikin.....	3.911517 3.971817 3.814333	8,156.7 9,371.7 6,521.3	26,761 30,747 21,395
Tallulah, Chicago Mill & Lumber Co., concrete stack, 1929.....	32 24 47.889 91 12 03.402	242 28 38.3 265 28 17.0 311 52 32.6	62 31 45.5 85 30 10.2 131 56 16.7	Millikin..... Tallulah..... Callman.....	4.011952 3.743166 4.167540	10,279.0 5,535.6 14,707.5	33,724 18,161 48,253
Vicksburg, National Park, Union Navy Memorial (Miss.), 1929.....	32 22 34.769 90 51 50.065	46 02 08.4 74 34 48.9 74 39 36.5	225 59 51.7 254 29 42.4 254 32 31.3	Mounds, southeast base..... Mounds, northwest base..... Callman.....	3.967793 4.191364 4.333496	9,285.2 15,536.9 21,552.4	30,463 50,974 70,710
Vicksburg, west standpipe (Miss.), 1929.....	32 20 41.530 90 52 54.581	59 21 45.2 83 22 42.7 87 13 11.5	239 20 03.0 263 16 12.2 267 08 39.6	Mounds, southeast base..... Callman..... Mounds, northwest base.....	3.763887 4.283875 4.124050	5,806.1 19,225.4 13,306.1	19,049 63,075 43,655

GEOGRAPHIC POSITIONS—Continued
Mississippi River arc, Arkansas State line to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
	°	'	"	°	'	"	°	'	"		Logarithm (meters)	Meters	Feet
<i>Supplementary points—Continued</i>													
Vicksburg National Park, Illinois Memorial, dome (Miss.), 1929.	32	21	34.618	29	35	44.3	209	32	36.4	Culley.....	4.270621	18,647.5	61,179
	90	50	28.794	62	28	14.6	242	25	14.4	Mounds, southeast base.....	3.997120	9,933.9	32,591
				82	25	24.6	262	19	34.7	Mounds, northwest base.....	4.236880	17,253.6	56,606
Vicksburg, Vicksburg Hotel, penthouse (Miss.), 1929 ¹ .	32	21	19.20	55	28	05	235	26	02	Mounds, southeast base.....	3.861253	7,265.3	23,836
	90	52	16.75	80	27	43	260	20	52	Callman.....	4.308953	20,368.2	66,825
Vicksburg, courthouse cupola (Miss.), 1929 ¹ .	32	21	07.37	54	40	45	234	38	56	Mounds, southeast base.....	3.812533	6,494.3	21,307
	90	52	42.99	83	56	56	263	52	17	Mounds, northwest base.....	4.135760	13,669.7	44,848
Vicksburg, transmission tower, west side of river (Miss.), 1929 ¹ .	32	19	15.87	82	31	27	262	30	37	Mounds, southeast base.....	3.392668	2,400.8	8,103
	90	54	31.94	100	29	35	280	25	56	Mounds, northwest base.....	4.038493	10,926.9	35,849
Waterproof, silver water tank, 1929.....	31	48	26.085	288	18	33.4	108	18	55.6	Waterproof.....	3.066680	1,166.0	3,825
	91	23	39.183	338	38	47.1	158	40	21.8	Stout.....	4.114435	13,014.7	42,699
				33	37	28.1	213	36	03.1	Smith.....	3.884702	7,668.4	25,159
Waterproof, black water tank, 1929 ¹	31	48	13.61	263	06	22	83	06	25	Waterproof.....	2.175806	149.9	492
	91	23	02.76	40	56	20	220	54	36	Smith.....	3.900010	7,943.5	26,061
Willetts, Fisher Lumber Co., water tank, 1929 ¹ .	31	30	52.37	301	57	16	122	00	40	Minor.....	4.085762	12,183.2	39,971
	91	32	00.78	349	38	07	169	38	12	Willetts.....	3.191399	1,553.8	5,098
Ferriday Power & Light Co., silver water tank, 1929.	31	37	58.539	228	37	44.9	48	39	43.6	Car.....	3.899645	7,936.8	26,039
	91	33	06.209	352	12	14.5	172	12	54.3	Willetts.....	4.169982	14,790.5	48,525
				354	35	38.2	174	35	40.6	Ferriday.....	3.101202	1,262.4	4,142
Ferriday Compress Co., red water tank, 1929.	31	36	59.397	354	25	15.2	174	25	40.0	Willetts.....	4.110368	12,893.4	42,301
	91	32	37.684	131	44	39.6	311	44	27.0	Ferriday.....	2.928493	848.2	2,783
				216	22	20.8	36	24	04.5	Car.....	3.943329	8,776.7	28,795
Ferriday, Fisher Lumber Co., silver water tank, 1929.	31	37	13.801	224	03	33.9	44	05	41.6	Car.....	3.964611	9,217.5	30,241
	91	33	23.434	258	03	46.3	78	03	57.7	Ferriday.....	2.767599	585.6	1,921
				349	29	55.0	169	30	43.8	Willetts.....	4.130394	13,501.9	44,297
Ferriday, Interstate Gas Co., light water tank, 1929.	31	36	53.758	275	13	36.2	95	18	50.2	Natchez.....	4.200246	15,857.9	52,027
	91	33	41.062	323	32	32.3	143	36	49.7	Minor.....	4.339484	21,851.6	71,691
				346	59	03.5	167	00	01.6	Willetts.....	4.113678	12,992.1	42,625
Natchez, St. Patricks Church, spire (Miss.), 1929.	31	33	30.732	62	28	40.6	242	24	37.3	Willetts.....	4.141351	13,846.9	45,429
	91	24	04.861	187	09	34.1	7	09	46.1	Natchez.....	3.684310	4,834.0	15,860
				270	36	37.5	90	41	15.6	Ratcliff.....	4.146595	14,015.1	45,981
Natchez, municipal water tank (Miss.), 1929.	31	33	44.540	61	28	13.5	241	24	04.8	Willetts.....	4.154928	14,286.6	46,872
	91	23	54.538	184	19	42.5	4	19	49.1	Natchez.....	3.641827	4,383.6	14,382
				272	23	44.6	92	28	17.3	Ratcliff.....	4.138446	13,754.5	45,126
Natchez, J. W. Sanders Co., water tank (Miss.), 1929.	31	33	42.172	60	36	59.8	240	33	02.1	Willetts.....	4.138606	13,759.6	45,143
	91	24	15.863	92	44	15.0	272	43	43.5	P. B. M., LXIII.....	3.201501	1,590.4	5,218
				191	21	20.8	11	21	38.5	Natchez.....	3.656365	4,532.8	14,871
Vidalia, municipal water tank, 1929.....	31	33	39.857	213	16	43.3	33	17	42.2	Natchez.....	3.732516	5,401.5	17,721
	91	25	34.439	253	04	44.9	73	04	54.6	P. B. M., LXIII.....	2.703773	505.6	1,659
				56	01	30.2	235	58	13.7	Willetts.....	4.077630	11,957.2	39,230
Woodville, municipal water tank (Miss.), 1929.	31	06	14.717	356	35	57.3	176	36	12.8	Walker.....	4.129704	13,480.4	44,227
	91	17	54.996	60	18	34.1	240	14	06.3	Ferguson.....	4.199885	15,844.7	51,984
				86	52	23.4	266	47	52.1	Grimes.....	4.144267	13,940.1	45,735
Woodville, Wilkinson County Courthouse, dome (Miss.), 1929.	31	06	12.564	356	27	16.6	176	27	32.7	Walker.....	4.127625	13,416.1	44,016
	91	17	56.126	60	27	52.4	240	23	25.2	Ferguson.....	4.198271	15,786.0	51,791
				87	08	20.6	267	03	49.9	Grimes.....	4.143226	13,906.8	45,626
St. Francisville, water tank, 1929 ¹	30	46	32.30	67	33	49	247	28	38	New Roads, west base.....	4.243907	17,535.0	57,529
	91	23	00.90	182	18	59	2	19	01	Bradley.....	3.283309	1,920.0	6,299
St. Francisville, courthouse, dome, 1929 ¹	30	46	30.46	67	24	33	247	19	27	New Roads, west base.....	4.237410	17,274.7	56,675
	91	23	10.62	189	39	00	9	39	07	Bradley.....	3.301801	2,003.6	6,573
New Roads, water tank, 1929.....	30	41	33.524	102	30	38.1	282	27	01.7	New Roads, west base.....	4.062613	11,550.8	37,896
	91	26	06.227	204	13	48.9	24	15	25.1	Bradley.....	4.086174	12,194.8	40,009
				278	17	03.5	98	21	37.9	Hudson.....	4.160370	14,466.7	47,463
Wall, sugar refinery, stack, 1929.....	30	32	44.451	285	13	39.6	105	16	50.6	Scott.....	4.016661	10,391.1	34,091
	91	18	05.334	356	19	50.5	176	19	56.7	Barrowza.....	3.711706	5,148.8	16,892
				79	59	02.6	259	53	03.8	Devahl.....	3.495989	3,133.2	10,280
Baker, Leland Negro College, water tank, 1929.	30	35	38.333	12	06	10.6	192	05	37.6	Scott.....	3.917617	8,272.1	27,139
	91	10	44.219	109	03	45.3	289	01	54.9	Samuel.....	3.785942	6,108.6	20,041
				237	24	52.5	57	25	14.3	Baker.....	3.131328	1,353.1	4,439
Scotts Bluff, water tank, 1929.....	30	31	25.286	10	53	01.1	190	53	00.0	Scott.....	2.479356	301.5	989
	91	11	47.137	74	33	06.3	254	30	00.6	Barrowza.....	4.005249	10,121.6	33,207
				98	12	47.3	278	08	36.5	Devahl.....	4.123951	13,303.0	43,645
Baton Rouge, Istrouma Water Co., tank, 1929.	30	28	08.989	94	30	03.5	274	29	25.9	Babin.....	3.297749	1,984.9	6,512
	91	10	02.920	153	44	43.1	333	43	54.2	Scott.....	3.806871	6,410.2	21,031
				300	12	23.5	120	14	39.0	Connell.....	3.916661	8,253.9	27,080

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Mississippi River arc, Arkansas State line to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
											Logarithm (meters)	Meters	Feet
<i>Supplementary points—Continued</i>													
Port Allen, water tank, 1929.....	30	27	32.175	186	36	03.7	6	36	18.9	Scott.....	3.840619	6,928.2	22,730
	91	12	19.145	232	04	43.3	52	05	14.8	Babin.....	3.321791	2,097.9	6,883
Baton Rouge St. Josephs Catholic Church, spire, 1929.	30	27	05.552	283	44	07.6	103	46	58.3	Connell.....	3.966451	9,256.6	30,369
	91	11	12.572	325	57	28.6	145	59	27.7	Gianelloni.....	4.050457	11,232.0	36,850
Baton Rouge, Gas & Electric Co., concrete stack, 1929.	30	26	37.373	279	51	51.0	99	54	16.3	Brusle.....	3.939275	8,695.1	28,527
	91	10	22.495	329	36	23.5	218	01	40.2	Connell.....	3.890444	7,770.4	25,493
Louisiana State University, memorial campanile, 1929.	30	24	51.414	171	52	01.1	351	51	44.2	Gianelloni.....	3.990552	9,784.8	32,102
	91	10	43.675	256	46	27.1	76	49	03.2	Brusle.....	3.953129	8,977.0	29,452
Brusle, water tank, 1929.....	30	23	44.404	207	21	37.7	27	22	59.3	Babin.....	3.799549	6,303.0	20,679
	91	13	58.193	286	11	25.3	106	14	48.1	Connell.....	3.926586	8,444.7	27,706
Gianelloni, sugar refinery plant, smokestack, 1929. ¹	30	20	27.04	203	51	56	23	52	21	Gianelloni.....	3.878805	7,564.9	24,819
	91	08	06.19	356	29	57	176	29	58	Burtville.....	3.970804	9,349.8	30,675
Leper colony, water tank, 1929.....	30	12	03.630	27	46	10.6	207	45	35.6	Gianelloni.....	4.047374	11,152.5	36,589
	91	07	33.164	176	45	34.1	356	45	18.6	Plaquemine.....	4.057383	11,412.6	37,443
Whitecastle, water tank, 1929.....	30	10	08.406	148	19	00.6	328	16	21.1	Babin.....	3.510501	3,239.7	10,629
	91	08	46.923	183	38	39.0	3	39	00.8	Burtville.....	3.001811	1,004.2	3,295
Scott, water tank near station, 1929.....	30	30	52.925	80	22	46.8	260	19	36.0	Whitecastle.....	3.601263	3,992.7	13,099
	91	11	37.038	155	01	39.6	335	01	33.4	Burtville.....	4.162030	14,522.1	47,645
Baton Rouge, standpipe, 1929.....	30	26	50.565	14	10	08.7	194	08	46.8	St. Gabriel.....	3.831140	6,778.6	22,239
	91	11	21.806	38	41	18.8	218	39	41.8	Plaquemine.....	4.207390	16,120.9	52,890
Baton Rouge, water tank, 1929.....	30	26	24.406	44	33	51.5	224	32	07.3	Burtville.....	4.257282	18,083.5	59,329
	91	11	07.502	175	39	43.4	355	39	38.5	St. Gabriel.....	4.034180	10,818.8	35,495
Baton Rouge, water tank, 1929.....	30	25	47.695	316	14	46.5	136	16	51.9	Barrowza.....	4.007245	10,168.2	33,360
	91	11	24.837	15	36	13.9	195	34	53.6	Scott.....	2.887974	772.6	2,535
Plaquemine, Red Ball Co., water tank, 1929.....	30	17	36.704	178	36	08.3	358	36	03.4	Hooper ecc.....	4.024655	10,584.1	34,725
	91	14	23.592	234	12	01.0	54	15	36.4	Plaquemine.....	4.247510	17,681.1	58,009
Donaldsonville, Catholic Church, spire, 1929.	30	06	15.012	105	08	20.0	285	06	34.8	Brusle.....	3.912771	8,180.3	26,838
	90	50	01.169	161	01	51.5	341	00	40.5	Babin.....	4.076206	11,918.1	39,101
Lauderdale, sugar refinery, water tank, 1930.....	30	05	17.411	108	35	21.1	288	33	22.6	Barrowza.....	3.893833	7,831.3	25,693
	90	55	22.498	181	44	25.1	1	44	20.7	Babin.....	3.529658	3,385.8	11,106
Brown (Miss.), 1931.....	30	18	05.063	274	21	58.38	94	26	21.09	Gianelloni.....	4.065352	10,124.0	33,215
	89	29	47.183	118	55	27.3	298	52	08.9	Gianelloni.....	3.980713	9,565.6	31,383
Seal (Miss.), 1931.....	30	24	03.649	303	54	19.48	123	59	59.78	Plaquemine.....	4.198360	15,789.2	51,802
	89	32	19.978	339	42	19.51	159	43	36.72	Brusle.....	3.827194	6,717.3	22,038
Pearl (Miss.), 1931.....	30	14	53.941	203	34	48.88	23	37	08.65	Brusle.....	4.028238	10,671.8	35,012
	89	36	56.798	242	49	53.54	62	53	30.13	Gianelloni.....	4.147409	14,041.4	46,067
Gaines (Miss.), 1931.....	30	21	03.480	240	45	07.19	60	48	15.02	Burtville.....	4.041241	10,996.2	36,077
	89	38	31.429	291	22	50.40	111	27	15.10	McCall.....	3.764484	5,814.1	19,075
Pike, 1931.....	30	09	58.985	204	06	54.91	24	09	47.76	Geismar.....	4.055411	11,364.26	37,284.2
	89	44	14.445	252	09	40.97	52	13	21.16	Miles.....	4.1773536	15,043.66	49,355.7
Slidell, 1931.....	30	16	49.618	239	08	57.98	59	13	05.57	Miles.....	4.0665749	11,656.68	38,243.6
	89	46	41.936	342	39	54.35	162	41	08.59	Donaldsonville.....	3.824382	6,673.9	21,896
										Miles.....	3.907264	8,077.3	26,500
										Winchester.....	3.567452	3,693.6	12,118

Mississippi State line to Donaldsonville

Principal points	Latitude and longitude			Azimuth			Back azimuth			To station	Logarithm (meters)	Meters	Feet
Brown (Miss.), 1931.....	30	18	05.063	274	21	58.38	94	26	21.09	St. Louis.....	4.1447968	13,957.15	45,791.1
Seal (Miss.), 1931.....	30	24	03.649	303	54	19.48	123	59	59.78	St. Louis.....	4.3362128	21,687.66	71,153.6
Pearl (Miss.), 1931.....	30	14	53.941	203	34	48.88	23	37	08.65	Brown.....	4.0708238	11,771.28	38,619.6
Gaines (Miss.), 1931.....	30	21	03.480	240	45	07.19	60	48	15.02	Seal.....	4.2665129	18,471.96	60,603.4
Pike, 1931.....	30	09	58.985	204	06	54.91	24	09	47.76	Brown.....	4.1107028	12,903.36	42,333.8
Slidell, 1931.....	30	16	49.618	239	08	57.98	59	13	05.57	Seal.....	4.055411	11,364.26	37,284.2
	89	46	41.936	342	39	54.35	162	41	08.59	Brown.....	4.1773536	15,043.66	49,355.7
										Pearl.....	4.0665749	11,656.68	38,243.6
										Gaines.....	4.3506774	22,422.16	73,563.4
										Pearl.....	4.1707242	14,815.77	48,608.1
										Gaines.....	4.1835340	15,259.28	50,063.2
										Pearl.....	4.2052523	16,041.77	52,630.4
										Pike.....	4.1220593	13,245.22	43,455.4

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued
Mississippi State line to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
											Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>													
North Shore, 1931.....	30 13 04.075	211 50 14.56	31 51 35.85	Slidell.....	3.9125378	8,175.94	26,823.9						
	89 49 23.307	304 34 35.40	124 37 10.72	Pike.....	4.0016151	10,037.26	32,930.6						
Herbes, 1931.....	30 09 16.933	204 22 50.53	24 23 50.14	North Shore.....	3.8853325	7,679.49	25,195.1						
	89 51 21.843	208 13 02.67	28 15 23.55	Slidell.....	4.1992630	15,822.06	51,909.5						
		263 30 38.18	83 34 12.92	Pike.....	4.0610691	11,509.84	37,761.9						
Macomb, 1931.....	30 03 48.396	153 35 06.90	333 33 32.69	Herbes.....	4.0529548	11,296.78	37,062.9						
	89 48 14.047	173 49 17.79	353 48 43.02	North Shore.....	4.2357945	17,210.54	56,464.9						
		209 19 29.03	29 21 29.25	Pike.....	4.1169528	13,090.40	42,947.4						
Pontchartrain, 1931.....	30 04 31.577	223 52 56.06	43 55 34.55	Herbes.....	4.0861881	12,195.18	40,010.4						
	89 56 37.734	275 35 37.37	95 39 49.74	Macomb.....	4.1321290	13,555.92	44,474.7						
Milneburg, 1931.....	30 01 55.435	235 34 02.31	55 40 14.35	Herbes.....	4.3815479	24,073.98	78,982.7						
	90 03 43.829	247 07 43.71	67 11 17.11	Pontchartrain.....	4.0929102	12,385.40	40,634.4						
		261 59 09.36	82 06 54.93	Macomb.....	4.4005384	25,150.02	82,513.0						
Chalmette 2, 1931.....	29 56 31.659	146 44 54.12	326 42 52.16	Milneburg.....	4.0764088	11,923.64	39,119.5						
	89 59 39.819	198 15 43.15	18 17 14.22	Pontchartrain.....	4.1920698	15,562.16	51,056.9						
		233 45 39.82	53 51 22.74	Macomb.....	4.3574391	22,773.99	74,717.7						
American, 1929.....	29 57 07.505	185 19 16.03	5 19 31.44	Milneburg.....	3.9495902	8,904.10	29,212.9						
	90 04 14.648	278 29 54.58	98 32 11.78	Chalmette 2.....	3.8722811	7,452.14	24,449.2						
Harvey, 1930.....	29 54 28.877	194 43 15.04	14 43 38.92	American.....	3.7033055	5,050.16	16,568.7						
	90 05 02.505	246 22 55.64	66 25 36.62	Chalmette 2.....	3.9751956	9,444.86	30,987.0						
New Orleans, east base, 1929.....	29 58 26.348	235 55 15.18	55 58 12.90	Milneburg.....	4.0605812	11,496.91	37,719.4						
	90 09 39.230	285 33 50.58	105 36 32.69	American.....	3.9559290	9,035.02	29,642.4						
		314 33 21.26	134 35 39.37	Harvey.....	4.0177944	10,418.24	34,180.5						
Chasse, 1931.....	29 51 48.096	116 17 50.77	296 14 44.53	Harvey.....	4.0486177	11,184.53	36,694.6						
	89 58 48.739	138 23 08.27	318 20 25.77	American.....	4.1192337	13,159.33	43,173.6						
		171 05 00.70	351 04 35.24	Chalmette 2.....	3.9463551	8,838.02	28,996.1						
Westwego, 1930.....	29 54 45.548	163 09 55.40	343 09 17.10	New Orleans, east base.....	3.8514561	7,103.23	23,304.5						
	90 08 22.496	236 39 21.80	56 41 25.47	American.....	3.9006793	7,955.72	26,101.4						
		275 27 06.30	95 28 46.02	Harvey.....	3.7315517	5,389.54	17,682.2						
New Orleans, west base, 1929.....	29 58 44.880	274 16 43.90	94 19 05.39	New Orleans, east base.....	3.8815601	7,613.075	24,977.23						
	90 14 22.410	307 20 14.44	127 23 14.10	Westwego.....	4.0843399	12,143.39	39,840.4						
Williswood, 1930.....	29 55 24.752	169 00 04.95	348 59 42.65	New Orleans, west base.....	3.7977870	6,277.50	20,595.4						
	90 13 37.734	228 49 18.37	48 51 17.44	New Orleans, east base.....	3.9291803	8,495.33	27,871.8						
		278 06 08.63	98 08 45.86	Westwego.....	3.9315472	8,541.76	28,024.1						
Almedia, 1929.....	29 58 15.547	262 02 54.76	82 04 55.53	New Orleans, west base.....	3.8137572	6,542.70	21,465.5						
	90 18 24.122	304 22 55.99	124 25 18.96	Williswood.....	3.9688530	9,307.93	30,537.8						
Davis, 1930.....	29 55 40.268	210 53 02.05	30 53 55.30	Almedia.....	3.7459767	5,571.56	18,279.4						
	90 20 10.794	238 39 21.42	58 42 15.37	New Orleans, west base.....	4.0388332	10,935.36	35,877.1						
		272 34 02.71	92 37 18.80	Williswood.....	4.0233989	10,553.56	34,624.5						
Hope, 1929.....	29 59 54.728	289 27 58.82	109 30 39.70	Almedia.....	3.9616014	9,153.80	30,032.1						
	90 23 46.036	323 36 38.60	143 38 26.10	Davis.....	3.9681621	9,731.10	31,926.1						
Luling, 1930.....	29 56 50.002	176 43 02.34	356 42 56.26	Hope.....	3.7556661	5,697.26	18,691.8						
	90 23 33.864	252 22 55.23	72 25 29.91	Almedia.....	3.9401622	8,712.89	28,585.5						
		291 30 11.12	111 31 52.47	Davis.....	3.7674636	5,854.15	19,206.5						
Perilloux, 1929.....	30 04 46.007	324 54 19.38	144 56 17.06	Hope.....	4.0397913	10,959.51	35,956.3						
	90 27 41.122	335 39 20.20	155 41 23.88	Luling.....	4.2064223	16,085.04	52,772.3						
Killona, 1930.....	29 59 57.982	196 30 40.67	16 31 29.81	Perilloux.....	3.9661637	9,250.47	30,349.3						
	90 29 19.290	270 37 10.79	90 39 57.41	Hope.....	3.9509786	8,932.62	29,306.4						
		301 58 56.32	122 01 48.89	Luling.....	4.0382516	10,920.73	35,829.1						
Gramercy, east base, 1929.....	30 04 15.926	264 38 15.26	84 41 20.79	Perilloux.....	3.9981989	9,958.61	32,672.5						
	90 33 51.350	317 26 12.37	137 28 28.54	Killona.....	4.0326328	10,780.35	35,368.5						
Edgard, 1930.....	30 01 15.085	174 34 52.07	354 34 42.20	Gramercy, east base.....	3.7476748	5,593.39	18,351.0						
	90 33 31.628	235 18 17.39	55 21 12.91	Perilloux.....	4.0575470	11,416.87	37,456.8						
		289 19 36.80	109 21 43.01	Killona.....	3.8553474	7,167.16	23,514.3						
Gramercy, west base, 1929.....	30 04 15.075	269 50 37.57	89 54 22.20	Gramercy, east base.....	4.0794233	12,006.691	39,391.95						
	90 41 19.641	293 48 51.28	113 52 45.61	Edgard.....	4.1369845	13,708.33	44,974.7						
Johnson, 1930.....	30 00 59.156	139 22 25.05	319 20 48.29	Gramercy, west base.....	3.9003688	7,950.03	26,082.7						
	90 38 06.369	228 24 53.96	48 27 01.64	Gramercy, east base.....	3.9605488	9,131.64	29,959.4						
		266 10 10.67	86 12 28.12	Edgard.....	3.8679753	7,378.62	24,208.0						
Remy, 1929.....	30 02 41.573	242 55 15.38	62 57 00.75	Gramercy, west base.....	3.8012481	6,327.73	20,760.2						
	90 44 50.000	286 13 42.00	106 17 04.01	Johnson.....	4.0517429	11,265.30	36,959.6						
		94 22 51.91	274 17 52.08	Winchester.....	4.2064488	16,086.03	52,775.6						
		113 12 20.06	293 09 03.35	Wilton.....	4.0584377	11,440.31	37,533.8						

GEOGRAPHIC POSITIONS—Continued

Mississippi State line to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth	Back azimuth	To station	Distance			
	°	'	"				Logarithm (meters)	Meters	Feet	
<i>Principal points—Continued</i>										
Vacherie, 1930.....	29	57	53.808	160	12	39.33	Remy.....	3.9739243	9,417.25	30,896.4
	90	42	50.990	191	46	19.16	Gramercy, west base.....	4.0789000	11,992.23	39,344.5
				233	10	53.81	Johnson.....	3.9789851	9,527.63	31,258.6
St. James, 1930.....	29	59	08.776	220	44	02.30	Remy.....	3.9369642	8,648.97	28,375.8
	90	48	20.669	258	17	37.39	Johnson.....	4.2256087	16,811.59	55,156.0
				284	36	52.28	Vacherie.....	3.9606985	9,134.79	29,969.7
				126	47	25.55	Winchester.....	4.1133164	12,981.25	42,589.3
				156	12	49.45	Wilton.....	4.0821578	12,082.53	39,640.8
<i>Supplementary points</i>										
Lake Borgne Lighthouse (Miss.), 1909.....	30	10	25.073	119	18	04.03	Pearl.....	4.2283882	16,937.07	55,567.7
	89	27	44.339	166	57	11.79	Brown.....	4.1625834	14,540.64	47,705.4
				219	04	15.35	St. Louis.....	4.2271557	16,871.58	55,352.8
Fire lookout tower (Miss.), 1931 ¹	30	18	03.73	269	41	00	Brown.....	3.9068881	8,107.4	26,599
	89	34	50.59	30	00	14	Pearl.....	3.8291555	6,747.7	22,138
Slidell, municipal water tank, 1931.....	30	16	32.429	215	46	38.8	Slidell.....	2.814525	652.4	2,140
	89	46	56.208	280	40	32.1	Pearl.....	4.212392	16,307.7	53,503
				27	55	55.4	Herbes.....	4.181143	15,175.5	49,788
Slidell, Standard Brick & Tile Co., water tank, 1931.....	30	16	15.555	224	52	05.6	Slidell.....	3.170272	1,480.0	4,856
	89	47	21.004	278	31	15.8	Pearl.....	4.227234	16,874.6	55,363
				26	34	04.7	Herbes.....	4.158666	14,410.1	47,277
Slidell, Gulf States Creosoting Co., water tank, 1931.....	30	16	55.710	285	54	37.3	Slidell.....	2.835234	684.3	2,245
	89	47	06.559	340	15	20.9	Pike.....	4.134573	13,632.4	44,726
				25	48	40.7	Herbes.....	4.195624	15,690.0	51,476
Slidell, Pan American Oil Co., tank, 1931.....	30	17	18.415	285	42	28.9	Pearl.....	4.214575	16,389.8	53,772
	89	46	46.945	351	24	54.3	Slidell.....	2.952672	896.8	2,942
				28	06	07.3	North Shore.....	3.948290	8,877.5	29,126
Point aux Herbes Lighthouse, 1898 ¹	30	09	15.61	334	34	44	Macomb.....	4.047446	11,154.4	36,596
	89	51	12.81	99	34	35	Herbes.....	2.389466	245.2	804
Louisville & Nashville R.R. bridge, center of middle span, 1931 ¹	30	09	17.99	97	02	07	Pike.....	4.014713	10,344.6	33,939
	89	37	50.75	187	56	17	Pearl.....	4.018896	10,444.7	34,267
West Rigolets Lighthouse, 1917.....	30	10	28.240	328	40	28.24	Pike.....	3.0230448	1,054.49	3,459.6
	89	44	34.934	78	37	37.57	Herbes.....	4.0456061	11,107.24	36,441.0
				121	54	16.51	North Shore.....	3.9583028	9,084.54	29,804.9
Fort Pike Bridge, center of draw, light, 1931 ¹	30	10	13.48	29	38	49	Macomb.....	4.134855	13,641.3	44,755
	89	44	02.13	36	26	05	Pike.....	2.744249	544.9	1,821
Industrial canal, white flashing light, 1931 ¹	30	02	28.97	247	11	24	Pontchartrain.....	3.988895	9,747.5	31,980
	90	02	13.23	66	57	44	Milneburg.....	3.421254	2,637.9	8,655
West End, white flashing light, 1931.....	30	01	36.399	251	41	04.6	Pontchartrain.....	4.235606	17,203.1	56,441
	90	06	47.531	263	11	46.4	Milneburg.....	3.695214	4,656.9	16,263
				38	11	36.1	New Orleans, east base.....	3.871842	7,444.6	24,424
New Orleans, Maison Blanche broadcasting station, north tower, 1931.....	29	57	18.280	1	05	44.0	American.....	2.520932	331.8	1,089
	90	04	14.411	103	33	13.8	New Orleans, east base.....	3.952192	8,957.6	29,388
				281	00	45.3	Chalmette 2.....	3.875184	7,502.1	24,613
New Orleans, Maison Blanche broadcasting station, south tower, 1931.....	29	57	16.070	0	49	16.6	American.....	2.421149	263.7	865
	90	04	14.507	103	58	49.4	New Orleans, east base.....	3.952857	8,971.3	29,433
				280	29	51.8	Chalmette 2.....	3.874594	7,491.9	24,580
Gretna, radio station WDSU, north tower, 1931.....	29	54	20.120	95	00	33.3	Harvey.....	3.489850	3,089.2	10,135
	90	03	07.791	234	00	21.8	Chalmette 2.....	3.838437	6,893.5	22,616
				303	56	24.7	Chasse.....	3.923271	8,380.5	27,495
Gretna, radio station WDSU, south tower, 1931.....	29	54	16.993	96	47	38.6	Harvey.....	3.490923	3,096.9	10,160
	90	03	07.876	233	22	22.8	Chalmette 2.....	3.842143	6,952.5	22,810
				303	22	47.5	Chasse.....	3.920588	8,328.9	27,326
Chalmette Monument, southwest corner, 1931 ¹	29	56	32.05	66	48	14	Chalmette 2.....	1.481629	30.31	99.4
	89	59	38.78							
New Orleans, water tank, milk-bottle-shaped, 1931 ¹	29	58	33.02	287	25	30	American.....	3.943629	8,782.7	28,815
	90	09	27.15	57	36	14	New Orleans, east base.....	2.583975	383.7	1,259
New Orleans, American Bank Building, gilt tower, 1931 ¹	29	57	07.89	14	35	48	Harvey.....	3.704106	5,059.5	16,599
	90	04	14.98	56	35	02	Westwego.....	3.900636	7,854.9	26,099
College Point, water tank, 1930 ¹	29	59	38.42	127	03	18	Winchester.....	4.056341	11,385.2	37,353
	90	49	09.56	304	50	55	St. James.....	3.203327	1,597.1	5,240
Kenner, water tank near, 1930 ¹	29	58	34.07	44	59	45	Davis.....	3.878861	7,565.9	24,822
	90	16	51.35	73	29	29	Luling.....	4.051469	11,258.2	36,936

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued
Mississippi State line to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
	°	'	"	°	'	"	°	'	"		Logarithm (meters)	Meters	Feet
<i>Supplementary points—Continued</i>													
Convent, oil derrick, 1930 ¹	30	02	04.27	336	53	17	156	54	00	St. James.....	3.769014	5,875.1	19,275
	90	49	46.70	106	19	01	286	16	29	Winchester.....	3.925871	8,430.8	27,660
Garyville, sawdust burner, 1930 ¹	30	03	54.54	95	28	49	275	26	45	Gramercy, west base.....	3.822235	6,641.0	21,788
	90	37	12.82	263	01	44	83	03	24	Gramercy, east base.....	3.735299	5,436.2	17,835
New Orleans, St. Patricks Church (mark), 1930.	29	56	47.235	17	45	17.29	197	44	51.92	Harvey.....	3.6506117	4,473.13	14,675.6
	90	04	11.659	60	54	11.33	240	52	06.18	Westwego.....	3.8865329	7,700.75	25,264.9
				109	10	59.23	289	08	15.64	New Orleans, east base.....	3.9684010	9,298.24	30,506.0
				172	40	54.47	352	40	52.98	American.....	2.7988476	629.29	2,064.6
New Orleans, St. Patricks Church, south spire, 1930.	29	56	47.012	17	51	08.52	197	50	43.04	Harvey.....	3.6501483	4,468.36	14,659.9
	90	04	11.443	60	53	07.32	240	56	02.26	Westwego.....	3.8865300	7,702.47	25,270.5
				109	12	40.96	289	09	57.26	New Orleans, east base.....	3.9687617	9,305.97	30,531.3
				172	14	38.79	352	14	37.19	American.....	2.8040396	636.85	2,089.4
Chalmette Monument, 1873.....	29	56	32.087	66	25	47.22	246	23	05.65	Harvey.....	3.9767571	9,478.88	31,098.6
	89	59	38.649	93	39	50.67	273	37	34.39	St. Patricks Church (mark).....	3.8654707	7,336.19	24,068.8
				98	24	04.56	278	21	46.78	American.....	3.8739726	7,481.22	24,544.6
New Orleans, St. Patricks Church (ecc.), 1930.	29	56	47.212	17	46	51.46	197	46	26.05	Harvey.....	3.6506034	4,473.05	14,675.3
	90	04	11.587	60	54	52.82	240	52	47.63	Westwego.....	3.8866081	7,702.08	25,269.2
				109	11	00.03	289	08	16.40	New Orleans, east base.....	3.9684965	9,300.29	30,512.7
				110	09		290	09		St. Patricks Church (mark).....	0.3102634		6.70
				172	31	01.24	352	30	59.71	American.....	2.7994993	630.23	2,067.7
				273	37	18.09	93	39	34.33	Chalmette Monument.....	3.8653547	7,334.23	24,062.4
				327	53		147	53		St. Patricks Church, south spire.....	0.8620121	7.278	23.88
New Orleans, Loyola Church, southwest spire, 1930.	29	56	02.761	248	03	17.1	68	04	49.2	American.....	3.727321	5,337.3	17,511
	90	07	19.266	308	13	45.5	128	14	53.7	Harvey.....	3.669365	4,670.5	15,323
				35	30	28.1	215	29	56.6	Westwego.....	3.465440	2,920.4	9,581
New Orleans, Loyola Church, northwest spire, 1930.	29	56	03.035	248	07	20.4	68	08	52.4	American.....	3.726748	5,330.3	17,488
	90	07	19.110	308	20	33.2	128	21	41.3	Harvey.....	3.669548	4,672.5	15,330
				35	28	42.0	215	28	10.4	Westwego.....	3.466823	2,929.7	9,612
New Orleans waterworks, concrete stack, 1930.	29	57	28.268	276	29	36.7	96	31	21.1	American.....	3.751321	5,640.5	18,506.
	90	07	43.647	11	45	00.6	191	44	41.2	Westwego.....	3.709056	5,117.5	16,790
				68	11	53.9	248	08	57.1	Willswood.....	4.009644	10,229.3	33,561
New Orleans, St. Stephens Church, spire, 1930.	29	55	18.689	74	37	31.7	254	36	22.8	Westwego.....	3.585064	3,846.5	12,620
	90	06	04.239	221	15	01.0	41	15	55.7	American.....	3.649043	4,457.0	14,623
				312	48	01.9	132	48	32.7	Harvey.....	3.353570	2,257.2	7,405
New Orleans, St. John the Baptist Church, spire, 1930	29	56	37.372	9	17	28.8	189	17	16.8	Harvey.....	3.603042	4,009.1	13,153
	90	04	38.377	112	36	22.4	292	33	52.3	New Orleans, east base.....	3.941358	8,736.9	28,664
				214	26	28.0	34	26	39.9	American.....	3.051184	1,125.1	3,691
New Orleans, Hibernia Bank Building, light, 1930.	29	57	05.611	13	58	60.2	193	58	27.9	Harvey.....	3.696641	4,973.3	16,317
	90	04	17.717	56	42	56.7	236	40	54.6	Westwego.....	3.895141	7,854.9	25,771
				106	06	31.6	286	03	51.1	New Orleans, east base.....	3.952878	8,971.8	29,435
New Orleans, Jung Hotel, aviation beacon, 1930.	29	57	24.470	8	16	07.4	188	15	52.8	Harvey.....	3.737467	5,463.5	17,925
	90	04	33.216	51	30	16.2	231	28	21.8	Westwego.....	3.895347	7,858.6	25,783
				103	05	41.0	283	03	08.2	New Orleans, east base.....	3.925468	8,423.0	27,634
New Orleans, water tank, milk-bottle-shaped, 1930 ¹ .	29	57	49.33	287	26	49	107	28	06	American.....	3.632732	4,292.7	14,084
	90	06	47.37	103	54	24	283	52	58	New Orleans, east base.....	3.676383	4,746.6	15,573
Destrehan, silver water tank, higher of two, 1930	29	56	54.013	281	49	39.7	101	53	43.3	Willswood.....	4.126174	13,371.3	43,869
	90	21	45.655	311	44	36.4	131	45	23.8	Davis.....	3.532759	3,410.0	11,188
				87	34	14.1	267	33	20.1	Luling.....	3.463056	2,904.4	9,529
Cities Service Co., concrete stack, 1930.....	29	56	31.371	31	39	35.3	211	39	17.2	Davis.....	3.266841	1,848.6	6,065
	90	19	34.619	95	07	33.4	275	05	34.0	Luling.....	3.808986	6,441.5	21,133
				210	30	22.2	30	30	57.4	Almedia.....	3.570919	3,723.2	12,215
Twelve Mile Point, silver water tank, 1930.....	29	55	42.634	151	59	25.1	331	58	29.5	New Orleans, west base.....	3.803218	6,356.5	20,855
	90	12	31.057	222	24	59.9	42	26	25.7	New Orleans, east base.....	3.834384	6,829.4	22,406
				284	45	06.1	104	47	10.1	Westwego.....	3.838540	6,895.1	22,622
Red brick stack, 1930 ¹	29	55	39.38	149	07	00	329	06	36	Luling.....	3.403777	2,533.8	8,313
	90	22	45.36	269	36	43	89	38	00	Davis.....	3.617623	4,145.9	13,602
Westwego, city waterworks, tank, 1930.....	29	54	40.033	99	40	58.8	279	38	28.5	Willswood.....	3.914032	8,204.1	26,916
	90	08	36.223	166	22	32.2	346	22	00.8	New Orleans, east base.....	3.855541	7,170.4	23,525
				273	24	49.5	93	26	36.1	Harvey.....	3.759194	5,743.7	18,844
New Orleans, Loyola Church, southeast spire, 1930.	29	56	02.888	248	07	38.1	68	09	10.3	American.....	3.727833	5,343.6	17,531
	90	07	19.577	308	12	13.4	128	13	21.7	Harvey.....	4.679201	4,679.5	15,353
				35	19	46.2	215	19	14.8	Westwego.....	3.465195	2,918.7	9,576
New Orleans, Loyola Church, northeast spire, 1930.	29	56	03.164	248	11	46.4	68	13	18.6	American.....	3.727278	5,336.8	17,509
	90	07	19.431	308	18	54.8	128	20	03.1	Harvey.....	3.670403	4,681.7	15,360
				35	17	46.0	215	17	14.6	Westwego.....	3.466564	2,928.0	9,606
St. Michaels Catholic Church, convent, 1930.	30	00	34.809	267	38	11.0	87	43	67.0	Johnson.....	4.268456	18,554.8	60,875
	90	49	38.178	321	53	24.7	141	54	03.5	St. James.....	3.527180	3,366.5	11,045
				121	37	35.3	301	34	59.9	Winchester.....	3.989922	9,770.6	32,056

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Mississippi State line to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
	°	'	"	°	'	"	°	'	"		Logarithm (meters)	Meters	Feet
<i>Supplementary points—Continued</i>													
Gramercy, Colonial Sugar Refinery, concrete stack, 1930.	30	02	59.691	308	12	32.8	128	14	00.9	Johnson.....	3.778062	5,998.8	19,681
	90	41	02.263	17	11	55.2	197	11	00.9	Vacherie.....	3.993832	9,859.0	32,346
				84	47	28.4	264	45	34.4	Remy.....	3.787207	6,126.4	20,100
Reserve Godchaux Sugar Refinery, large concrete stack, 1930.	30	03	36.862	350	37	28.6	170	37	42.1	Edgard.....	3.645875	4,424.6	14,516
	90	33	58.526	53	50	20.9	233	48	16.9	Johnson.....	3.915207	8,226.3	26,989
				95	43	04.4	275	39	23.5	Gramercy, west base.....	4.074581	11,873.6	38,955
Reserve Godchaux Sugar Refinery, small concrete stack, 1930.	30	03	36.805	349	35	46.8	169	36	01.7	Edgard.....	3.647058	4,436.7	14,556
	90	34	01.527	53	30	56.6	223	36	54.0	Johnson.....	3.911720	8,160.6	26,774
				95	45	53.6	275	42	14.1	Gramercy, west base.....	4.071652	11,793.8	38,693
Reserve Godchaux Sugar Refinery, water tank, 1930.	30	03	31.935	350	23	35.1	170	23	48.4	Edgard.....	3.630806	4,273.7	14,021
	90	33	58.244	54	43	56.5	234	41	52.3	Johnson.....	3.910833	8,143.9	26,719
				96	26	29.1	276	22	48.0	Gramercy, west base.....	4.075442	11,897.1	39,032
Kenner, church spire, 1930 ¹	29	58	32.22	243	21	38	63	21	53	New Orleans, west base.....	2.939368	869.7	2,853
	90	14	51.41	341	06	02	161	06	39	Willwood.....	3.785397	6,100.9	20,016
New Orleans Compress Co., west water tank, 1930. ¹	29	58	13.82	351	12	56	171	13	14	Westwego.....	3.812168	6,488.9	21,289
	90	08	59.44	109	53	11	289	52	51	New Orleans, east base.....	3.054789	1,134.5	3,722
New Orleans Compress Co., east water tank, 1930. ¹	29	58	11.86	353	54	20	173	54	32	Westwego.....	3.805399	6,388.5	20,960
	90	06	47.78	107	55	47	287	55	21	New Orleans, east base.....	3.161285	1,449.7	4,756
Gramercy, Colonial Sugar Refinery, water tank, 1930. ¹	30	03	00.23	308	15	44	128	17	12	Johnson.....	3.779490	6,018.5	19,746
	90	41	02.71	17	06	12	197	05	17	Vacherie.....	3.994375	9,871.3	32,386
Edgard, Catholic church, east spire, 1930 ¹	30	02	40.76	1	06	56	181	06	55	Edgard.....	3.421387	2,638.7	8,657
	90	33	29.71	67	08	12	247	05	53	Johnson.....	3.905580	8,046.0	26,398
Edgard, Catholic church, west spire, 1930 ¹	30	02	40.32	0	47	01	180	47	00	Edgard.....	3.419064	2,624.6	8,611
	90	33	30.29	67	11	04	247	08	46	Johnson.....	3.904518	8,026.3	26,333
Industrial Canal, flashing light, 1930 ¹	30	02	33.13	19	01	17	199	00	12	American.....	4.025507	10,604.9	34,793
	90	02	05.75	58	00	58	237	57	11	New Orleans, east base.....	4.156344	14,333.2	47,025
West End flashing light, 1930 ¹	30	01	40.36	334	31	02	154	32	16	American.....	3.968765	9,306.0	30,531
	90	06	43.96	38	11	33	218	10	06	New Orleans, east base.....	3.880787	7,599.5	24,933
Lutcher, sawdust burner, 1930 ¹	30	02	20.15	97	19	55	277	18	19	Remy.....	3.714219	5,178.7	16,990
	90	41	38.28	188	01	40	8	01	49	Gramercy, west base.....	3.553130	3,573.8	11,725
Basin, 1931.....	30	01	39.767	264	22	42.06	84	24	13.81	Milneburg.....	3.6933807	4,936.06	16,194.4
	90	06	47.168	333	59	31.49	154	00	47.72	American.....	3.9697430	9,327.02	30,600.4
Kenner, city water tank, 1929.....	29	58	32.859	333	22	20.5	153	23	14.6	New Orleans, east base.....	3.8769300	7,532.34	24,712.4
	90	15	25.990	55	11	15.6	235	08	53.5	Willwood.....	3.811493	6,478.8	21,256
Kenner, Louisiana Box Co., red water tank, 1929.	29	58	31.214	259	02	08.6	79	02	49.1	Davis.....	3.968674	9,304.1	30,525
	90	15	43.470	329	34	01.0	149	35	03.8	Almedia.....	3.681718	4,805.3	15,765
B.M. 194/3 (M.R.C.), 1930.....	29	59	08.148	134	58	04.0	314	58	03.6	New Orleans, west base.....	3.345070	2,213.5	7,262
	90	48	19.947	53	43	45.9	233	41	32.6	Willwood.....	3.823356	6,658.2	21,844
B.M. 200/3 (ecc.), 1930.....	30	02	39.663	20	15	27.4	200	15	09.5	Davis.....	3.949064	8,893.3	29,177
	90	32	55.760	153	19	48.3	333	19	20.5	St. James.....	1.437005	27.35	89.7
B.M. 200/3 (M.R.C.), 1930.....	30	02	38.858	219	23	58.0	39	23	58.4	Edgard.....	3.443412	2,776.0	9,108
	90	32	56.520							Gramercy, east base.....	3.520760	3,317.1	10,883
Pecan, 1929.....	29	56	38.860	229	04	46.0	49	05	50.0	B.M. 200/3, ecc.....	1.506180	32.08	105.2
	90	20	32.245	342	18	41.6	162	18	52.3	Almedia.....	3.657622	4,545.9	14,914
P.B.M. 206/1 (M.R.C.), 1929.....	29	56	39.914	94	02	31.4	274	01	00.8	Davis.....	3.277288	1,893.6	6,213
	90	20	27.365	139	16	09.9	319	14	33.2	Luling.....	3.688645	4,882.5	16,019
B.M. 212/3 (M.R.C.), 1930.....	29	54	47.490	339	39	06.8	159	39	07.2	Hope.....	3.900930	7,960.3	26,116
	90	08	23.323							Pecan.....	2.129780	134.83	442.4
Oil derrick, 1930.....	30	08	44.752	322	15	58.9	142	18	23.2	Westwego.....	1.804562	63.76	209.2
	90	59	36.567	353	36	55.6	173	37	04.5	Winchester.....	4.100291	12,597.7	41,331
Celotex plant, water tank, 1930.....	29	54	10.538	101	18	21.6	281	14	48.5	Donaldsonville.....	3.631980	4,285.3	14,059
	90	06	30.515	256	32	40.5	76	33	24.4	McCall.....	3.747946	5,596.9	18,362
Westwego Export Co., water tank, 1930.....	29	55	35.753	343	25	06.0	163	25	14.6	Willwood.....	4.067666	11,686.0	38,340
	90	08	39.655	163	05	16.8	343	04	47.1	Westwego.....	3.504020	3,191.7	10,471
Paulina, St. Josephs Church, spire, 1930.....	30	01	41.736	118	44	45.8	298	43	43.0	Harvey.....	3.385191	2,427.7	7,965
	90	42	44.587	205	43	35.4	25	44	18.0	Westwego.....	3.207611	1,612.9	5,292
			279	57	18.1	99	59	37.2	New Orleans, east base.....	3.739599	5,490.3	18,013	
									Harvey.....	3.790862	6,178.2	20,270	
									Remy.....	3.583438	3,832.1	12,572	
									Gramercy, west base.....	3.719439	5,241.3	17,196	
									Johnson.....	3.879074	7,569.6	24,835	

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Gulf Coast arc, ninety-fourth meridian to Donaldsonville

Station	Latitude and longitude	Azimuth	Back azimuth	To station	Distance		
					Logarithm (meters)	Meters	Feet
<i>Principal points</i>							
Reese (Tex.), 1931	30 12 04.817 93 45 04.960						
Orange (Tex.), 1931	30 05 20.676 93 44 12.601	173 34 43.98	353 34 17.69	Reese	4. 0977067	12,522.95	41,085.7
Vinton, 1931	30 14 28.343 93 38 19.672	29 16 23.44 67 50 41.03	209 13 26.09 247 47 17.03	Orange Reese	4. 2861854 4. 0683672	19,327.93 11,704.89	63,411.7 38,401.8
Ged, 1931	30 08 05.800 93 35 52.102	69 15 19.56 116 29 24.65 161 28 55.89	249 11 08.46 296 24 46.82 341 27 41.69	Orange Reese Vinton	4. 1562965 4. 2180771 4. 0942350	14,331.66 16,522.55 12,423.24	47,019.8 54,207.7 40,758.6
Edgerly, 1931	30 15 00.366 93 30 12.678	35 26 49.66 85 42 11.63	215 23 58.96 265 38 06.33	Ged Vinton	4. 1949338 4. 1158623	15,665.12 13,057.57	51,394.6 42,839.7
Rice, 1931	30 08 21.146 93 30 06.881	87 05 47.89 130 39 15.01 179 16 39.55	267 02 54.56 310 35 07.20 359 16 36.63	Ged Vinton Edgerly	3. 9662379 4. 2397348 4. 0896873	9,252.05 17,367.40 12,293.83	30,354.4 56,979.5 40,334.0
Stine, 1931	30 15 33.974 93 22 04.577	44 06 05.50 85 29 58.92	224 02 02.90 265 25 52.99	Rice Edgerly	4. 2683182 4. 1169281	18,548.90 13,089.65	60,855.8 42,945.0
Wright, 1931	30 08 15.595 93 22 01.220	90 47 14.08 133 30 25.96 179 37 08.53	270 43 10.24 313 26 18.79 359 37 06.84	Rice Edgerly Stine	4. 1139385 4. 2580542 4. 1302995	12,999.85 18,115.66 13,498.93	42,650.3 59,434.5 44,287.7
Charles, 1931	30 16 06.775 93 14 41.335	39 04 16.07 85 09 30.68	219 00 34.78 265 05 47.29	Wright Stine	4. 2713729 4. 0752295	18,679.83 11,891.30	61,285.4 39,013.4
Davies, 1931	30 08 22.682 93 13 55.809	89 04 17.47 135 28 59.61 175 07 57.65	269 00 13.75 315 24 53.75 355 07 34.75	Wright Stine Charles	4. 1137373 4. 2703486 4. 1566165	12,993.83 18,635.82 14,342.22	42,630.6 61,141.0 47,054.4
Iowa, 1931	30 14 49.455 93 04 34.942	51 35 48.27 98 23 52.29	231 31 06.20 278 18 46.74	Davies Charles	4. 2822948 4. 2144318	19,155.56 16,384.45	62,846.2 53,754.6

Homewood, 1931	30 07 36.439 93 04 49.862	95 36 12.36 134 50 48.99 181 42 48.95	275 31 38.29 314 45 51.49 1 42 56.45	Davies Charles Iowa	4. 1667921 4. 3482892 4. 1251373	14,682.23 22,299.19 13,339.43	48,169.9 73,159.9 43,764.4
Lacassine, 1931	30 14 08.633 92 55 13.935	51 57 06.21 94 49 46.31	231 52 16.67 274 45 03.76	Homewood Iowa	4. 2917400 4. 1776036	19,576.72 15,052.33	64,228.0 49,394.2
Hayes, 1931	30 06 36.152 92 55 15.489	96 55 26.26 135 27 39.59 180 10 15.19	276 50 38.05 315 22 58.35 0 10 15.97	Homewood Iowa Lacassine	4. 1899912 4. 3288923 4. 1440404	15,487.85 21,325.16 13,932.87	50,813.1 69,964.3 45,711.4
Welsh, 1931	30 13 27.456 92 47 40.387	43 54 26.38 96 00 00.28	223 50 37.68 275 56 11.93	Hayes Lacassine	4. 2447575 4. 0861490	17,569.42 12,194.08	57,642.3 40,006.7
Lake Arthur, west base, 1931	30 05 52.388 92 48 04.683	96 41 37.34 143 05 57.37 182 39 17.03	276 38 01.26 323 02 21.66 2 39 29.24	Hayes Lacassine Welsh	4. 0649436 4. 2813902 4. 1469811	11,612.98 19,115.70 14,027.53	38,100.3 62,715.4 46,022.0
Jennings, 1931	30 12 43.117 92 39 47.300	46 29 52.93 96 11 31.44	226 25 43.07 276 07 33.34	Lake Arthur, west base Welsh	4. 2638881 4. 1046733	18,360.65 12,725.45	60,238.2 41,750.1
Lake Arthur, east base, 1931	30 05 14.665 92 41 18.294	96 07 15.37 146 03 09.98 189 59 42.20	276 03 51.60 325 59 58.03 10 00 27.90	Lake Arthur, west base Welsh Jennings	4. 0391693 4. 2823920 4. 1468033	10,943.829 18,297.51 14,021.78	35,904.88 60,031.1 46,003.1
Wild, 1931	30 09 15.381 92 30 08.437	67 35 20.88 112 29 00.64	247 29 44.73 292 24 09.61	Lake Arthur, east base Jennings	4. 2878780 4. 2241531	19,403.41 16,755.33	63,659.4 54,971.4
Gueydan, 1931	30 01 43.101 92 30 48.708	111 09 50.99 144 41 02.47 184 25 29.67	291 04 35.65 324 36 32.20 4 25 40.86	Lake Arthur, east base Jennings Wild	4. 2571737 4. 3965133 4. 1451388	18,078.97 24,918.01 13,968.15	59,314.1 81,751.8 45,827.2
Boulet, 1931	30 08 18.661 92 21 47.297	50 00 19.41 97 27 15.46	229 55 48.02 277 23 03.78	Gueydan Wild	4. 2772860 4. 1311431	18,935.90 13,525.18	62,125.5 44,373.9
Vincent, 1931	30 00 23.826 92 19 48.791	97 54 17.41 134 38 54.23 167 45 37.83	277 48 47.28 314 33 43.66 347 44 38.45	Gueydan Wild Boulet	4. 2516824 4. 3675081 4. 1749738	17,851.82 23,308.17 14,961.45	58,568.8 76,470.2 49,086.0
Indian, 1931	30 07 35.693 92 14 26.534	33 00 34.25 96 25 46.39	212 57 52.80 276 22 05.13	Vincent Boulet	4. 2001262 4. 0745122	15,853.54 11,871.68	52,012.8 38,949.0
Kaplan, 1931	30 00 15.805 92 17 03.431	93 12 04.21 152 56 11.57 197 13 34.43	273 10 41.52 332 53 49.34 17 14 53.04	Vincent Boulet Indian	3. 6472512 4. 2226906 4. 1517305	4,438.65 16,699.00 14,181.77	14,562.5 54,786.6 46,526.0
Maurice, 1931	30 06 22.112 92 07 18.522	54 17 29.70 101 12 53.62	234 12 36.76 281 09 18.87	Kaplan Indian	4. 2856859 4. 0674475	19,305.72 11,680.13	63,338.8 38,320.6
Abbeville, 1931	29 58 27.731 92 07 20.073	102 03 16.20 145 55 40.56 180 09 46.44	281 58 24.62 325 52 07.02 0 09 47.22	Kaplan Indian Maurice	4. 2037709 4. 3091276 4. 1645587	15,987.14 20,376.41 14,606.92	52,451.1 66,851.6 47,922.9

GEOGRAPHIC POSITIONS—Continued
Gulf Coast arc, ninety-fourth meridian to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth	Back azimuth	To station	Distance						
	°	'	"				Logarithm (meters)	Meters	Feet				
<i>Principal points—Continued</i>													
Young, 1931.....	30	04	47.593	47	26	37.05	227	22	39.41	Abbeville.....	4.2376332	17,283.56	56,704.5
	91	59	25.188	102	57	54.94	282	53	57.61	Maurice.....	4.1140917	13,004.44	42,665.4
Erath, 1931.....	29	57	07.752	106	26	22.90	286	23	47.22	Abbeville.....	3.9401602	8,712.85	28,585.4
	92	02	08.364	154	03	42.56	334	01	07.35	Maurice.....	4.2784117	18,985.05	62,286.8
				197	09	03.87	17	10	25.50	Young.....	4.1708179	14,818.97	48,618.6
Iberia, 1931.....	29	59	56.367	76	08	33.08	256	02	02.44	Erath.....	4.3343389	21,594.29	70,847.3
	91	49	06.500	118	27	21.20	298	22	11.49	Young.....	4.2752149	18,845.81	61,830.0
Avery, 1931.....	29	54	13.918	112	36	02.17	292	32	02.60	Erath.....	4.1444876	13,947.22	45,758.5
	91	54	08.182	156	29	21.09	336	26	42.63	Young.....	4.3280037	21,281.57	69,821.3
				217	28	28.84	37	30	59.46	Iberia.....	4.1235280	13,290.09	43,602.6
Jeanerette, 1931.....	29	55	29.238	82	52	39.53	262	46	56.79	Avery.....	4.2690714	18,581.10	60,961.5
	91	42	40.927	128	31	53.52	308	28	45.95	Iberia.....	4.1209378	13,211.06	43,343.3
Weeks 2, 1931.....	29	48	23.950	139	27	24.62	319	24	33.52	Avery.....	4.1518343	14,185.16	46,539.1
	91	48	24.488	176	53	36.03	356	58	15.08	Iberia.....	4.3293949	21,349.85	70,045.3
				215	07	37.38	35	10	28.46	Jeanerette.....	4.2045396	16,015.47	52,544.1
Baldwin, northwest base, 1931.....	29	52	43.051	69	13	47.29	249	07	18.47	Weeks 2.....	4.3510434	22,441.06	73,625.4
	91	35	23.131	113	34	16.05	293	30	37.80	Jeanerette.....	4.1076076	12,811.73	42,033.2
Cote Blanche 3, 1913.....	29	44	56.806	126	20	05.35	306	17	24.89	Weeks 2.....	4.0322235	10,770.19	35,335.2
	91	43	01.404	181	36	56.29	1	37	06.47	Jeanerette.....	4.2896031	19,480.64	63,912.7
				220	34	15.88	40	38	03.72	Baldwin, northwest base.....	4.2766492	18,908.16	62,034.5
Franklin, 1931.....	29	47	04.277	78	15	51.44	258	10	03.76	Cote Blanche 3.....	4.2837200	19,218.52	63,052.8
	91	31	21.100	148	05	46.08	328	03	45.68	Baldwin, northwest base.....	4.0895292	12,289.36	40,319.3
Charenton, 1931.....	29	53	13.282	0	22	56.43	180	22	55.03	Franklin.....	4.0554580	11,362.08	37,277.1
	91	31	18.277	81	57	11.82	261	55	09.83	Baldwin, northwest base.....	3.8219033	6,635.95	21,771.4
Baldwin, southeast base, 1931.....	29	50	19.289	59	08	57.74	239	03	50.72	Cote Blanche 3.....	4.2864299	19,338.82	63,447.4
	91	32	43.509	135	56	46.88	315	55	27.41	Baldwin, northwest base.....	3.7896031	6,160.287	20,210.87
				203	06	57.93	23	07	40.37	Charenton.....	3.7653180	5,825.30	19,111.8
				339	45	47.99	159	46	28.96	Franklin.....	3.8061306	6,399.27	20,994.9

Oaklawn, 1931.....	29	50	06.784	48	40	41.71	228	38	43.45	Franklin.....	3.9298188	8,507.83	27,912.8
	91	27	23.218	92	35	09.97	272	32	30.61	Baldwin, southeast base.....	3.9348581	8,607.13	28,238.6
				132	19	30.12	312	17	33.08	Charenton.....	3.9309965	8,530.93	27,988.6
Germania, 1931.....	29	45	45.350	103	37	44.17	283	34	38.52	Franklin.....	4.0142099	10,332.61	33,899.6
	91	25	07.248	155	36	30.07	335	35	22.50	Oaklawn.....	3.9464115	8,839.17	28,999.8
Foster, 1931.....	29	41	40.577	149	43	25.82	329	41	38.34	Franklin.....	4.0623027	11,542.57	37,869.2
	91	27	44.443	182	05	37.42	2	05	47.96	Oaklawn.....	4.1930294	15,596.58	51,169.8
				209	15	43.31	29	17	01.26	Germania.....	3.9365050	8,639.83	28,345.8
Verdun, 1931.....	29	45	01.428	45	52	33.92	225	50	36.36	Foster.....	3.9484118	8,870.98	29,133.7
	91	23	47.337	122	12	41.61	302	12	01.95	Germania.....	3.4043941	2,537.43	8,324.9
Mound, 1931.....	29	41	53.665	87	21	48.62	267	19	08.70	Foster.....	3.9388860	8,687.32	28,501.6
	91	22	21.644	148	03	07.15	328	01	45.02	Germania.....	3.9246934	8,408.01	27,585.3
				158	17	05.11	338	10	22.62	Verdun.....	3.7940035	6,223.05	20,416.8
Teche, 1931.....	29	43	27.966	63	45	18.08	243	43	29.57	Mound.....	3.8170617	6,562.38	21,530.1
	91	18	42.700	109	23	19.19	289	20	48.08	Verdun.....	3.9383916	8,677.44	28,469.2
Idlewild, 1931.....	29	39	47.160	117	40	39.21	297	38	22.34	Mound.....	3.9238081	8,390.89	27,529.1
	91	17	45.233	134	51	19.97	314	48	20.52	Verdun.....	4.1375098	13,724.92	45,029.2
				167	12	03.79	347	11	35.32	Teche.....	3.8433511	6,971.90	22,873.6
Morgan, 1931.....	29	43	06.921	52	48	50.95	232	46	21.70	Idlewild.....	4.0073843	10,171.48	33,370.9
	91	12	43.905	93	52	07.79	273	49	09.90	Teche.....	3.9852019	9,665.00	31,709.3
Wax, 1931.....	29	39	30.152	95	47	29.52	275	45	54.30	Idlewild.....	3.7161113	5,201.29	17,064.6
	91	14	32.809	137	28	48.71	317	26	44.93	Teche.....	3.9972695	9,937.32	32,602.7
				203	40	44.64	23	41	38.58	Morgan.....	3.8626233	7,286.25	23,911.5
Palourde, 1931.....	29	42	23.378	70	40	57.04	250	36	17.42	Wax.....	4.2066113	16,092.05	52,795.3
	91	05	08.137	96	16	36.49	276	12	50.59	Morgan.....	4.0907460	12,323.84	40,432.5
Avoca, 1931.....	29	38	10.814	101	07	07.30	281	03	18.03	Wax.....	4.1039110	12,703.14	41,676.9
	91	06	49.327	133	44	36.24	313	41	40.68	Morgan.....	4.1202988	13,191.64	43,279.6
				199	16	42.46	19	17	32.55	Palourde.....	3.9158571	8,238.67	27,029.7
Gibson, 1931.....	29	42	19.340	57	04	51.40	237	01	14.07	Avoca.....	4.1482612	14,068.94	46,157.8
	90	59	30.285	90	48	27.08	270	45	39.66	Palourde.....	3.9582124	9,082.65	29,798.7
Arsenaux, 1931.....	29	38	17.098	89	19	24.55	269	14	39.93	Avoca.....	4.1898649	15,483.35	50,798.3
	90	57	13.767	120	45	45.35	300	41	50.51	Palourde.....	4.1714182	14,839.46	48,685.8
				153	48	13.28	333	47	05.69	Gibson.....	3.9197576	8,313.00	27,273.6
Chacahoula, 1931.....	29	42	22.016	29	27	08.39	209	25	50.03	Arsenaux.....	3.9374791	8,659.23	28,409.5
	90	54	35.481	89	25	27.87	269	23	01.77	Gibson.....	3.8990023	7,925.05	26,000.8
Cocke, 1931.....	29	39	06.007	79	14	40.28	259	12	14.77	Arsenaux.....	3.9060335	8,054.41	26,425.2
	90	52	19.596	117	14	02.04	297	10	28.77	Gibson.....	4.1146380	13,020.81	42,719.1
			148	49	05.36	328	47	58.07	Chacahoula.....	3.8484910	7,054.90	23,146.0	

GEOGRAPHIC POSITIONS—Continued

Gulf Coast arc, ninety-fourth meridian to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth	Back azimuth	To station	Distance						
	°	'	"				Logarithm (meters)	Meters	Feet				
<i>Principal points—Continued</i>													
Schriever, north base, 1931.....	29	44	44.883	27	16	38.15	207	14	59.06	Cocke.....	4.0695905	11,737.90	38,510.1
	90	48	59.582	64	02	39.74	243	59	53.18	Chacaboula.....	4.0018282	10,042.18	32,946.7
Brule Guillot, 1931.....	29	45	28.385	278	16	42.33	98	19	31.87	Schriever, north base.....	3.9673666	9,276.55	30,434.8
	90	54	41.219	358	27	37.02	178	27	39.86	Chacaboula.....	3.7589402	5,740.37	18,833.2
Schriever, south base, 1931.....	29	41	33.261	52	22	57.53	232	21	09.27	Cocke.....	3.8707209	7,425.42	24,361.6
	90	48	40.908	98	58	27.54	278	55	31.86	Chacaboula.....	3.9844995	9,649.38	31,658.0
				126	48	23.18	306	45	24.52	Brule Guillot.....	4.0824488	12,090.63	39,667.3
				175	08	19.29	355	08	10.03	Schriever, north base.....	3.7724196	5,921.334	19,426.91
Laurel, 1931.....	29	49	43.847	327	18	09.46	147	19	58.69	Schriever, north base.....	4.0388855	10,936.68	35,881.4
	90	52	39.454	22	35	04.21	202	34	03.70	Brule Guillot.....	3.9303628	8,518.49	27,947.7
Thibodaux, 1931.....	29	47	58.697	357	55	59.38	177	56	03.36	Schriever, north base.....	3.7760810	5,971.47	19,691.4
	90	49	07.597	62	42	33.54	242	39	47.84	Brule Guillot.....	4.0037242	10,086.12	33,090.9
Himalaya, 1931.....	29	50	26.381	275	44	50.09	95	48	49.83	Laurel.....	4.1140492	13,003.17	42,061.2
		91	00	41.342	313	28	02.42	133	31	01.38	Brule Guillot.....	4.1246743	13,331.36
Robichaux, 1931.....	29	52	39.165	314	19	30.99	134	21	13.43	Laurel.....	3.8878256	7,723.70	25,340.2
	90	56	05.257	350	20	21.59	170	21	03.36	Brule Guillot.....	4.1288662	13,454.46	44,141.8
				61	07	54.09	241	05	36.63	Himalaya.....	3.9275362	8,463.23	27,766.4
Bergeron, 1931.....	29	54	41.980	287	46	17.58	107	49	56.35	Robichaux.....	4.0923378	12,369.09	40,580.9
	91	03	24.191	330	56	45.81	150	58	06.93	Himalaya.....	3.9543390	9,002.00	29,534.1
Rose, 1931.....	29	55	32.636	339	11	40.90	159	12	18.60	Robichaux.....	3.7569171	5,713.70	18,745.7
	90	57	20.835	29	42	55.84	209	41	15.96	Himalaya.....	4.0356743	10,856.11	35,617.1
				80	55	55.85	260	52	54.64	Bergeron.....	3.9942911	9,869.41	32,379.9
Landry, 1931.....	29	57	35.536	289	01	08.72	109	04	32.73	Rose.....	4.0642896	11,595.50	38,042.9
	91	04	09.595	347	09	37.38	167	10	00.04	Bergeron.....	3.7388530	5,480.91	17,982.0
Delia, 1931.....	30	01	13.439	343	19	45.58	163	20	44.11	Rose.....	4.0395587	10,953.65	35,937.1
	90	59	18.037	28	43	10.66	208	41	07.71	Bergeron.....	4.1380495	13,741.99	45,065.2
				49	22	24.57	229	19	58.83	Landry.....	4.0128468	10,300.23	33,793.3
				179	53	01.27	359	53	00.91	Donaldsonville.....	3.9839969	9,638.00	31,620.7
				241	23	50.12	61	26	04.92	Winchester.....	3.9146613	8,216.02	26,955.4
Kessler, 1931.....	30	02	07.813	281	37	06.16	101	39	39.95	Delia.....	3.9189857	8,298.23	27,225.1
	91	04	21.364	353	37	30.52	173	37	59.06	Bergeron.....	4.1402883	13,813.01	45,318.2
				357	50	39.95	177	50	45.83	Landry.....	3.9237466	8,389.70	27,525.2
				225	28	50.93	45	31	22.56	Donaldsonville.....	4.0554680	11,362.35	37,278.0
				261	35	29.63	81	40	16.34	Winchester.....	4.1904802	15,505.30	50,870.3
Calcasieu, 1931.....	30	02	38.813	165	05	04.08	345	04	12.33	Wright.....	4.0306812	10,732.01	35,209.9
	93	20	18.013	223	59	59.79	44	03	11.42	Davies.....	4.1680864	14,726.05	48,313.7
Grand Lake, 1931.....	30	01	47.654	103	47	50.03	283	45	50.04	Calcasieu.....	3.8204017	6,613.05	2,169.6
	93	16	18.292	142	28	15.09	322	25	23.19	Wright.....	4.1780397	15,067.45	49,433.8
				197	24	22.66	17	25	34.08	Davies.....	4.1054412	12,747.97	41,824.0
<i>Supplementary points</i>													
Donaldsonville, municipal water tank, 1931.....	30	06	24.082	308	23	00.9	128	25	14.0	Winchester.....	3.957623	9,070.3	29,758
	90	59	14.178	46	13	02.2	226	10	28.3	Kessler.....	4.056900	11,399.9	37,401
				120	38	17.8	300	38	15.6	Donaldsonville.....	2.154781	142.8	468
Paincourtville, Catholic Church, spire, 1931.....	29	59	29.988	20	52	38.9	200	52	14.0	Landry.....	3.576535	3,771.7	12,374
	91	03	19.465	0	49	08.6	180	49	06.3	Bergeron.....	3.947873	8,869.0	29,098
				307	12	50.7	127	15	49.8	Rose.....	4.081961	12,077.1	39,623
Napoleonville, Catholic Church, cross on dome, 1931.....	29	56	17.109	120	06	15.1	300	04	57.6	Landry.....	3.682692	4,816.1	15,801
	91	01	34.206	45	12	43.7	225	11	48.8	Bergeron.....	3.618806	4,157.2	13,639
				281	22	39.8	101	24	46.2	Rose.....	3.840786	6,930.8	22,739
Brick stack, square, ruined, 1931 ¹	30	03	00.59	317	12	19	137	13	16	Delia.....	3.652813	4,495.9	14,750
	91	01	12.02	13	00	17	192	59	11	Bergeron.....	4.197458	15,756.4	51,694
Napoleonville, municipal water tank, 1931.....	29	56	16.589	118	48	31.1	298	47	06.8	Landry.....	3.702971	5,046.3	16,556
	91	01	24.686	47	44	37.8	227	43	38.1	Bergeron.....	3.636628	4,331.4	14,211
				281	40	35.6	101	42	37.2	Rose.....	3.824612	6,677.5	21,908
Robichaux, sugar mill tank, 1931.....	29	51	33.781	122	29	40.6	302	26	51.5	Bergeron.....	4.033163	10,793.5	35,412
	90	57	44.830	184	59	27.4	4	59	39.3	Rose.....	3.868204	7,382.5	24,221
				233	00	00.2	53	00	49.9	Robichaux.....	3.524495	3,345.8	10,977
Himalaya, sugar mill tank, 1931.....	29	51	10.646	57	59	18.8	237	58	38.3	Himalaya.....	3.410067	2,570.8	8,434
	90	59	20.140	134	50	01.8	314	48	00.2	Bergeron.....	3.965295	0,232.0	30,289
				242	27	44.9	62	29	22.0	Robichaux.....	3.770697	5,897.9	19,350
Laurel Grove, sugar mill water tank, 1931.....	29	49	34.850	23	50	19.2	203	49	17.2	Brule Guillot.....	3.918868	8,296.0	27,218
	90	52	36.423	135	22	05.3	315	20	21.3	Robichaux.....	3.901828	7,976.8	26,171
				163	37	34.6	343	37	33.0	Laurel.....	2.460438	288.7	947

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Gulf Coast arc, ninety-fourth meridian to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
											Logarithm (meters)	Meters	Feet
<i>Supplementary points—Continued</i>													
Leighton, sugar mill tank, 1931.....	29	47	54.089	50	15	24.2	230	13	44.5	Brule Guillot.....	3.846019	7,014.9	23,015
	90	51	20.459	147	53	25.8	327	52	46.5	Laurel.....	3.600975	3,990.0	13,091
			267	42	49.0		87	43	55.0	Thibodaux.....	3.552787	3,571.0	11,716
Thibodaux, municipal standpipe, 1931.....	29	47	52.790	356	55	27.8	176	55	33.5	Schriever, north base.....	3.762980	5,794.0	19,009
	90	49	11.152	121	27	13.8	301	25	30.2	Laurel.....	3.816626	6,555.8	21,503
			207	41	20.1		27	41	21.8	Thibodaux.....	2.312678	205.4	674
Thibodaux, St. Josephs Catholic Church, north dome, cross, 1931.	29	47	36.318	356	45	44.7	176	45	50.2	Schriever, north base.....	3.723205	5,286.9	17,345
	90	49	10.695	125	01	27.7	304	59	43.9	Laurel.....	3.835325	6,844.2	22,455
			186	52	59.3		6	53	00.8	Thibodaux.....	2.841408	694.1	2,277
Thibodaux, St. Josephs Catholic Church, south dome, cross, 1931.	29	47	35.781	356	40	51.1	176	40	56.7	Schriever, north base.....	3.721876	5,270.8	17,293
	90	49	10.940	125	10	09.6	305	08	25.9	Laurel.....	3.835587	6,849.4	22,468
			187	14	57.0		7	14	58.6	Thibodaux.....	2.852062	711.3	2,334
Labadieville, Catholic Church, white spire, 1931.	29	50	20.797	278	39	16.2	98	41	34.4	Laurel.....	3.877618	7,544.3	24,752
	90	57	17.253	91	48	41.3	271	46	59.8	Hinalaya.....	3.738902	5,481.5	17,984
			204	23	33.1		24	24	08.9	Robichaux.....	3.670077	4,678.2	15,348
Price sugar mill, metal stack, 1931.....	29	46	00.636	34	03	43.4	214	03	14.3	Schriever, north base.....	3.449536	2,815.4	9,237
	90	48	00.898	84	45	08.7	264	41	50.0	Brule Guillot.....	4.033453	10,800.7	35,435
			132	35	33.1		312	33	14.7	Laurel.....	4.006839	10,158.7	33,329
Schriever sugar mill, metal stack, 1931.....	29	44	40.867	354	18	50.9	174	19	01.5	Schriever, south base.....	3.763797	5,804.9	19,045
	90	49	02.300	64	30	04.9	244	27	19.7	Chacahoula.....	3.996631	9,922.7	32,555
			99	09	02.8		279	06	14.0	Brule Guillot.....	3.964880	9,223.2	30,260
Ellendale, lone metal stack, 1931.....	29	38	40.600	98	53	47.1	278	52	15.0	Cocke.....	3.704644	5,065.8	16,620
	90	49	13.512	189	21	45.9	9	22	02.0	Schriever, south base.....	3.731429	5,388.0	17,677
			181	54	40.5		1	54	47.3	Schriever, north base.....	4.050089	11,222.5	36,819
Lavalle Plantation, sugar mill, tank, 1931 ¹	29	49	36.12	6	30	04	186	29	45	Schriever, north base.....	3.955465	9,025.4	29,611
	90	48	21.55	22	24	11	202	23	48	Thibodaux.....	3.511162	3,244.6	10,645
La Plene Plantation, sugar mill, tank, 1931 ¹	29	48	51.81	29	51	31	209	50	10	Schriever, north base.....	3.942790	8,765.8	28,759
	90	46	17.17	70	20	53	250	19	28	Thibodaux.....	3.686649	4,860.1	15,945
Donner, sawmill, water tank, 1931.....	29	41	18.281	349	20	41.2	169	21	00.5	Arsenaux.....	3.754072	5,676.4	18,623
	90	57	52.785	125	39	23.2	305	38	34.9	Gibson.....	3.508613	3,225.6	10,583
			249	41	00.0		69	42	37.8	Chacahoula.....	3.752476	5,655.6	18,555
Donner, stack, 1931 ¹	29	41	14.92	293	48	19	113	51	05	Cocke.....	3.992338	9,825.1	32,235
	90	57	53.82	348	51	59	168	52	19	Arsenaux.....	3.746648	5,580.2	18,308
Avoca Island Drainage Co., brick stack, 1931.....	29	39	54.102	291	00	53.3	111	03	25.4	Avoca.....	3.947416	8,859.6	29,067
	91	11	56.781	80	02	35.1	260	01	17.9	Wax.....	3.629442	4,260.3	13,977
			167	57	25.2		347	57	01.9	Morgan.....	3.783226	6,070.5	19,916
Avoca Island, oil derrick, 1931.....	29	37	56.949	265	57	43.5	85	59	35.1	Avoca.....	3.784330	6,086.0	19,967
	91	10	35.014	114	10	50.4	294	08	52.8	Wax.....	3.845734	7,010.3	23,000
			106	22	24.8		286	18	52.0	Idelwild.....	4.081300	12,058.7	39,563
Patterson, municipal tank, 1931.....	29	41	49.806	306	35	05.1	126	36	51.7	Wax.....	3.858052	7,211.9	23,661
	91	18	08.139	350	44	06.6	170	44	18.0	Idelwild.....	3.582759	4,260.1	12,553
			91	00	59.1		270	58	53.5	Mound.....	3.833533	6,816.1	22,362
P.B.M. 56 (MRC), 1931.....	29	41	31.237	35	03	11.5	215	02	23.4	Wax.....	3.658379	4,553.9	14,941
	91	12	55.557	67	39	24.4	247	37	01.0	Idelwild.....	3.925436	8,422.4	27,632
			111	05	18.8		291	02	26.8	Teche.....	3.999980	9,999.5	32,807
Texas Oil Co., shoomill water tank, 1931.....	29	41	13.774	65	41	06.5	245	38	56.6	Wax.....	3.888923	7,743.2	25,404
	91	10	10.427	130	11	16.4	310	10	00.4	Morgan.....	3.732383	5,399.9	17,716
			255	12	21.4		75	14	51.2	Palourde.....	3.924507	8,404.4	27,573
Morgan City, Peoples Ice & Storage Co., tank, 1931.	29	42	02.126	31	16	19.9	211	15	27.6	Wax.....	3.788324	5,474.2	17,960
	91	12	47.145	182	29	54.8	2	29	56.4	Morgan.....	3.300362	1,096.9	6,551
			266	55	58.1		86	59	45.5	Palourde.....	4.091885	12,356.2	40,539
Morgan City, Gulf Crushing Co., steel derrick, 1931.	29	41	26.037	42	43	10.1	222	42	09.5	Wax.....	3.686276	4,856.0	15,932
	91	12	30.313	173	17	33.2	353	17	26.5	Morgan.....	3.495214	3,127.6	10,261
			261	31	17.4		81	34	56.5	Palourde.....	4.079811	12,017.4	39,427
Morgan City, Sacred Heart Church, tower, pole, 1931.	29	41	36.624	42	33	00.4	222	31	54.6	Wax.....	3.723054	5,285.1	17,340
	01	12	19.916	166	56	34.8	346	56	22.9	Morgan.....	3.455460	2,854.0	9,363
			262	54	01.8		82	57	35.7	Palourde.....	4.068046	11,686.2	38,373
Morgan City, municipal tank, 1931.....	29	41	40.117	39	44	11.8	219	43	10.6	Wax.....	3.716259	5,203.1	17,071
	91	12	29.132	171	32	58.3	351	32	51.0	Morgan.....	3.431686	2,702.0	8,865
			263	33	32.5		83	37	11.0	Palourde.....	4.076626	11,929.6	39,139
Berwick, Catholic Church, cross, 1931.....	29	41	36.171	31	42	12.2	211	41	28.1	Wax.....	3.658995	4,560.3	14,962
	91	13	03.696	66	06	27.9	246	04	08.5	Idelwild.....	3.918071	8,280.8	27,188
			190	46	42.6		10	46	52.5	Morgan.....	3.453987	2,844.4	9,332
Idelwild Plantation, water tank, 1931.....	29	42	53.430	349	35	56.0	169	36	17.2	Wax.....	3.803687	6,363.4	20,877
	91	15	15.226	100	49	32.6	280	47	49.9	Teche.....	3.753499	5,663.9	18,599
			264	10	10.1		84	11	25.3	Morgan.....	3.612402	4,086.4	13,440

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Gulf Coast arc, ninety-fourth meridian to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
											Logarithm (meters)	Meters	Feet
<i>Supplementary points—Continued</i>													
Harry Williams' sawmill, sawdust burner, 1931.	29 42 28.462	148 56 31.7	328 56 11.3	Teche	3.330237	2,139.1	7,018						
	91 18 01.639	293 38 42.0	113 44 14.8	Avoca	4.295396	19,742.2	64,771						
		314 20 26.6	134 22 10.0	Wax	3.895015	7,852.6	25,763						
Church, cross, 1931 ¹	29 41 10.85	13 13 56	193 13 32	Avoca	3.755450	5,694.4	18,682						
	91 06 00.87	212 24 23	32 24 49	Palourde	3.422434	2,645.1	8,678						
Harry Williams' sawmill, tank, 1931	29 42 28.162	354 31 59.2	174 32 07.9	Idlewild	3.697216	4,979.8	16,338						
	91 18 02.875	149 49 55.7	329 49 35.9	Teche	3.328357	2,129.9	6,988						
		262 03 13.4	82 05 51.5	Morgan	3.937330	8,656.3	28,400						
Belle Isle, salt works, chimney, 1931 ¹	29 31 46.56	212 24 41	32 27 34	Idlewild	4.243841	17,532.4	57,521						
	91 23 34.67	225 34 30	45 38 58	Wax	4.309740	20,405.2	66,946						
Morgan City, waterworks, metal stack, 1931	29 42 26.049	57 38 19.7	237 35 57.5	Idlewild	3.960705	9,134.9	29,970						
	91 12 58.305	197 05 40.4	17 05 47.5	Morgan	3.119454	1,316.6	4,320						
		308 21 20.6	128 24 23.2	Avoca	4.102332	12,657.0	41,526						
Atchafalaya River, south base, 1889 ¹	29 39 29.47	242 30 56	62 30 56	Wax	1.655743	45,263	148.50						
	91 14 34.30												
Patterson, St. Joseph's Catholic Church, spire, 1931.	29 41 32.032	302 22 56.3	122 24 45.2	Wax	3.845344	7,004.0	22,979						
	91 18 12.742	347 05 45.4	167 05 59.1	Idlewild	3.520170	3,312.6	10,868						
		95 42 06.4	275 40 03.1	Mound	3.827662	6,724.5	22,062						
Patterson, airport beacon, 1931	29 42 44.255	127 19 05.2	307 17 22.9	Verdun	3.843174	6,969.1	22,864						
	91 20 21.064	243 00 51.5	63 01 40.2	Teche	3.472266	2,966.6	9,733						
		266 43 04.2	86 46 50.8	Morgan	4.090172	12,307.6	40,379						
Shadyside Plantation, water tank, 1931	29 43 58.900	156 16 18.1	336 16 02.4	Verdun	3.322845	2,103.0	6,900						
	91 23 15.841	277 22 27.4	97 24 42.8	Teche	3.869360	7,402.2	24,285						
		339 18 01.5	159 18 28.4	Mound	3.615105	4,122.0	13,524						
Centerville, Catholic church, spire, 1931	29 45 31.498	246 13 01.0	66 13 18.8	Germania	3.024344	1,057.7	3,470						
	91 25 43.273	288 32 45.0	106 33 42.5	Verdun	3.511837	3,249.7	10,662						
		24 37 00.8	204 36 00.7	Foster	3.893225	7,820.3	25,657						
Alice, J. W. Foster sugar mill, water tank, 1931.	29 46 09.747	349 00 25.0	169 00 54.7	Foster	3.926472	8,442.5	27,698						
	91 28 44.326	111 44 51.2	291 43 33.3	Franklin	3.656444	4,533.6	14,874						
		196 36 42.8	16 37 23.1	Oaklawn	3.881757	7,618.6	24,988						
Franklin, courthouse dome, tip of statue, 1931	29 47 27.890	71 42 51.9	251 42 11.2	Franklin	3.364666	2,315.6	7,597						
	91 29 59.242	220 33 45.8	40 35 03.4	Oaklawn	3.808978	6,441.4	21,133						
		291 54 14.3	111 56 39.3	Germania	3.927116	8,455.0	27,739						
Franklin, municipal standpipe, 1931	29 47 34.619	62 45 26.0	242 44 52.4	Franklin	3.309744	2,040.5	6,695						
	91 30 13.557	224 17 59.4	44 19 24.1	Oaklawn	3.816088	6,547.7	21,482						
		292 13 06.1	112 16 38.2	Germania	3.948868	8,889.3	29,164						
Franklin, St. Johns Catholic Church, south dome, 1931.	29 47 43.387	59 19 28.7	239 18 51.1	Franklin	3.372920	2,360.0	7,743						
	91 30 05.530	224 37 02.6	44 38 23.3	Oaklawn	3.792671	6,204.0	20,354						
		294 22 43.0	114 25 11.1	Germania	3.944386	8,798.0	28,865						
Franklin, St. Johns Catholic Church, north dome, 1931	29 47 43.892	59 00 38.5	239 00 00.9	Franklin	3.374503	2,368.7	7,771						
	91 30 05.501	224 42 48.2	44 44 08.9	Oaklawn	3.791858	6,192.4	20,316						
		294 28 22.1	114 30 50.2	Germania	3.944689	8,803.8	28,884						
Franklin, Sterling Sugar Mill, water tank, 1931.	29 48 15.411	225 35 30.2	45 36 35.0	Oaklawn	3.690308	4,901.3	16,080						
	91 29 33.638	302 49 59.8	122 52 12.1	Germania	3.930310	8,517.5	27,944						
		346 25 26.2	166 26 20.3	Foster	4.097119	12,506.0	41,030						
Old North Bend Sugar Mill, brick stack, 1931 ¹	29 41 00.83	210 34 17	30 35 53	Germania	4.007576	10,176.0	33,356						
	91 28 19.90	217 54 41	37 54 58	Foster	3.190650	1,551.1	5,089						
Oaklawn, South Coast Sugar Mill, tank, 1931	29 50 36.512	10 02 11.7	190 02 08.7	Oaklawn	2.968283	929.6	3,050						
	91 27 17.183	45 04 55.1	225 02 53.8	Franklin	3.960240	9,252.1	30,355						
		126 44 22.8	306 42 22.7	Charenton	3.907019	8,072.7	26,485						
Baldwin, Catholic Church, east dome, 1931	29 50 10.687	335 46 52.1	155 47 40.0	Franklin	3.798872	6,293.2	20,647						
	91 32 57.214	140 09 14.2	320 08 01.6	Baldwin, northwest base	3.780134	6,111.3	20,050						
		205 16 28.8	25 17 18.1	Charenton	3.793634	6,217.8	20,400						
Baldwin, Catholic Church, west dome, 1931	29 50 10.544	335 41 13.7	155 42 01.7	Franklin	3.798859	6,293.0	20,646						
	91 32 57.561	140 14 51.4	320 13 38.9	Baldwin, northwest base	3.785949	6,108.7	20,042						
		205 20 05.9	25 20 55.3	Charenton	3.794191	6,225.7	20,425						
Jeanerette, sawmill, flat-top tank, 1931	29 54 58.292	14 58 13.1	194 56 41.5	Cote Blanche 3	4.282612	19,169.6	62,892						
	91 39 57.110	48 18 49.6	228 14 37.0	Weeks 2	4.261138	18,244.8	59,853						
		102 14 47.5	282 13 25.9	Jeanerette	3.652850	4,496.2	14,751						
Jeanerette, St. Peters Catholic Church, spire, 1931.	29 54 56.465	13 51 05.3	193 49 41.1	Cote Blanche 3	4.279115	19,015.8	62,388						
	91 40 11.974	47 35 52.4	227 31 47.2	Weeks 2	4.253120	17,911.0	58,763						
		104 11 04.0	284 09 49.8	Jeanerette	3.614996	4,120.9	13,520						
Jeanerette, municipal water tank, 1931	29 54 45.076	15 47 19.8	195 45 45.0	Cote Blanche 3	4.274667	18,822.1	61,752						
	91 39 50.804	49 37 57.5	229 33 41.7	Weeks 2	4.257805	18,105.3	59,400						
		106 36 15.2	286 34 50.4	Jeanerette	3.677763	4,761.7	15,622						

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Gulf Coast arc, ninety-fourth meridian to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
	°	'	"	°	'	"	°	'	"		Logarithm (meters)	Meters	Feet
<i>Supplementary points—Continued</i>													
Adeline Plantation Sugar Mill, concrete stack, 1931.	29 52 36.182	318 28 55.8	138 30 05.0	Baldwin, southeast base.....	3.750399	5,628.6	18,466						
	91 35 02.486	42 18 37.1	222 14 39.0	Cote Blanche 3.....	4.281411	19,116.6	62,718						
Cypremort Plantation, metal stack, 1931.....	29 46 28.722	137 35 26.8	317 34 26.9	Baldwin, northwest base.....	2.773059	593.0	1,946						
	91 46 23.792	236 56 21.7	57 01 50.3	Weeks 2.....	3.681770	4,805.8	15,767						
Steel oil derrick, 1931 ¹	29 41 41.78	220 14 22	40 17 36	Baldwin, northwest base.....	4.325385	21,153.6	69,401						
	91 54 54.86	252 33 47	72 39 41	Cote Blanche 3.....	3.787446	6,129.8	20,111						
Weeks Island, Myles Salt Works, water tank, 1931.....	29 48 20.775	215 33 46.1	35 36 41.2	Weeks 2.....	4.210263	16,227.9	53,241						
	91 48 32.680	249 05 16.9	69 11 49.7	Cote Blanche 3.....	4.303054	20,083.4	65,923						
Avery Island, salt works, water tank, 1931.....	29 53 40.250	117 44 36.6	297 40 50.4	Jeanerette.....	4.210117	16,222.5	53,223						
	91 54 34.896	214 39 28.4	34 39 41.8	Baldwin, northwest base.....	4.355671	22,681.5	74,414						
New Iberia, Teche Quality Rice Co., tank, 1931.	29 59 54.934	1 28 26.7	181 28 16.5	Cote Blanche 3.....	4.037094	10,891.7	35,734						
	91 48 04.100	77 14 43.7	257 07 41.9	Erath.....	4.137964	13,739.3	45,076						
New Iberia, Chas. Boldt Paper Co., brick stack, 1931.	29 59 49.944	1 43 30.8	181 43 19.0	Avery.....	3.100472	1,260.3	4,135						
	91 48 00.797	77 39 47.3	257 32 43.9	Weeks 2.....	4.143571	13,917.8	45,662						
New Iberia, post office steeple, 1931 ¹	30 00 09.07	310 10 28	130 13 38	Erath.....	4.328032	21,283.0	69,826						
	91 49 01.20	197 14 09.5	17 22 29.1	Young.....	4.365708	23,211.8	76,154						
Broussard, municipal water tank, 1931 ¹	30 08 51.55	18 29 22	198 27 07	Young.....	4.308591	20,351.2	66,769						
	91 57 38.15	20 53 16	200 52 22	Weeks 2.....	4.324937	21,131.8	69,330						
Broussard, Beos Sugar Refining Co., water tank, 1931. ¹	30 08 07.76	22 48 52	202 46 12	Erath.....	4.366700	23,664.8	76,328						
	91 56 49.61	34 03 44	214 02 26	Young.....	4.311734	20,499.1	67,254						
New Iberia, St. Peters Catholic Church, spire, 1931.	30 00 16.162	310 20 22.1	150 23 35.7	Jeanerette.....	4.125451	13,349.1	43,706						
	91 49 08.558	354 49 43.5	174 49 44.6	Iberia.....	2.619356	416.3	1,366						
Erath, municipal water tank, 1931.....	29 57 24.690	11 45 03.7	191 45 01.8	Erath.....	4.358850	22,848.1	74,961						
	92 02 04.318	102 56 08.7	282 53 31.0	Abbeville.....	3.905255	8,040.0	26,378						
Erath, Catholic church, steeple, 1931.....	29 57 11.781	26 53 59.1	206 53 58.0	Young.....	4.343285	22,043.7	72,322						
	92 02 06.017	105 32 35.1	285 29 58.3	Maurice.....	3.871507	7,438.9	24,406						
Youngsville, municipal water tank, 1931.....	30 06 11.085	354 44 15.7	174 44 20.1	Kaplan.....	4.134836	13,640.7	44,753						
	91 59 34.030	13 53 41.9	193 52 24.6	Indian.....	2.786748	8,012.0	2,008						
Abbeville, Mandaline Catholic Church, steeple, 1931.	29 58 28.354	103 11 53.1	283 07 29.3	Young.....	4.267498	18,513.9	60,741						
	92 08 15.585	149 30 03.6	329 26 57.8	Erath.....	2.726486	532.7	1,748						
Maurice, Catholic church, spire, 1931 ¹	30 06 26.22	100 51 57	280 48 27	Abbeville.....	3.938797	8,685.5	28,496						
	92 07 29.10	294 04 04	114 04 10	Young.....	4.154993	14,288.7	46,879						
Abbeville, Planters Rice Co., tank, 1931.....	29 58 11.128	105 18 26.7	285 14 04.0	Erath.....	2.143360	139.1	456						
	92 08 18.885	186 06 06.2	6 06 36.4	Abbeville.....	3.941471	8,739.2	28,072						
Abbeville, power plant tank, 1931.....	29 58 30.276	103 00 48.4	282 56 25.5	Young.....	4.166782	14,081.9	48,169						
	92 08 17.394	186 11 30.6	6 12 00.1	Erath.....	3.411919	2,581.8	8,470						
Kaplan, municipal tank, 1931.....	30 00 02.573	98 18 46.3	278 17 22.7	Erath.....	4.236373	17,233.5	56,540						
	92 17 01.443	153 23 57.4	333 21 34.2	Maurice.....	4.094855	12,441.0	40,817						
Kaplan, Kaplan Rice Co., tank, 1931.....	29 59 50.244	105 30 01.3	285 28 51.7	Maurice.....	4.162285	14,530.6	47,672						
	92 17 29.584	156 13 27.3	336 11 18.2	Indian.....	4.291477	19,564.9	64,189						
Crowley, Mutual Rice Co., tank, 1931.....	30 12 17.699	348 05 12.7	168 06 39.4	Maurice.....	4.166358	14,667.6	48,122						
	92 22 41.820	348 47 06.4	168 47 35.8	Abbeville.....	4.056058	11,377.8	37,329						
Crowley, Louisiana Rice Co., tank, 1931.....	30 12 23.907	349 13 21.5	169 14 40.4	Maurice.....	2.491813	310.3	1,018						
	92 22 26.266	352 08 10.3	172 08 29.9	Abbeville.....	4.163024	14,575.5	47,820						
Crowley, Standard Rice Mill Co., tank, 1931 ¹	30 12 48.66	3 45 16	183 45 06	Abbeville.....	4.181968	15,204.4	49,883						
	92 21 26.91	64 49 48	244 45 26	Abbeville.....	3.219462	1,657.5	5,438						

¹ No check on this position.

42705°-34

GEOGRAPHIC POSITIONS—Continued

Gulf Coast arc, ninety-fourth meridian to Donaldsonville—Continued

Station	Latitude and longitude			Azimuth	Back azimuth	To station	Distance						
	°	'	"				°	'	"	Logarithm (meters)	Meters	Feet	
<i>Supplementary points—Continued</i>													
Gueydan, municipal tank, 1931.....	30	01	37.696	184	14	33.2	4	14	52.8	Wild.....	4.150193	14,131.7	46,364
	92	30	47.503	229	29	02.1	49	33	32.8	Boulet.....	4.279185	19,018.9	62,398
				277	17	47.9	97	23	17.4	Vincent.....	4.250370	17,798.0	58,392
Gueydan, Catholic church, steeple, 1931.....	30	01	36.207	103	49	53.6	283	49	37.5	Gueydan.....	2.948449	888.1	2,914
	92	30	16.525	276	35	20.3	96	41	57.0	Kaplan.....	4.330352	21,397.0	70,200
				277	30	12.4	97	35	26.4	Vincent.....	4.229653	16,968.9	55,672
Lake Arthur, power plant, tank, 1931.....	30	04	46.752	184	19	55.3	4	20	10.2	Jennings.....	4.167621	14,710.3	48,262
	92	40	28.846	243	28	56.7	63	34	08.0	Wild.....	4.268451	18,554.6	60,875
				289	57	18.0	110	02	08.6	Gueydan.....	4.218468	16,537.4	54,256
Jennings, municipal tank, 1931.....	30	13	31.392	11	32	15.2	191	31	16.6	Lake Arthur, east base.....	4.193408	15,610.2	51,214
	92	39	21.702	44	45	09.5	224	40	46.7	Lake Arthur, west base.....	4.298629	19,889.7	65,255
				89	30	50.7	269	26	39.6	Welsh.....	4.125032	13,336.2	43,754
Jennings, Louisiana State Rice Co., low tank, 1931.	30	13	01.955	12	21	52.9	192	20	53.8	Lake Arthur, east base.....	4.168202	14,730.0	48,327
	92	39	20.507	46	43	01.7	226	38	38.4	Lake Arthur, west base.....	4.285103	19,279.8	63,254
				93	23	47.4	273	19	35.8	Welsh.....	4.126820	13,391.2	43,934
Jennings, Louisiana State Rice Co., high tank, 1931.	30	13	01.704	12	24	13.2	192	23	13.9	Lake Arthur, east base.....	4.168033	14,724.2	48,308
	92	39	20.188	46	45	04.9	226	40	41.4	Lake Arthur, west base.....	4.285124	19,280.8	63,257
				93	25	39.0	273	21	27.2	Welsh.....	4.127111	13,400.2	43,964
Welsh, municipal tank, 1931.....	30	14	13.360	300	18	49.2	120	19	34.7	Welsh.....	3.447148	2,799.9	9,186
	92	49	10.774	353	27	20.2	173	27	53.4	Lake Arthur, west base.....	4.191087	15,527.0	50,941
				89	10	00.0	269	06	57.1	Lacassine.....	3.987285	9,711.5	31,862
Lake Charles, rice mill, tall silver tank, 1931.....	30	14	35.311	11	37	32.2	191	36	47.8	Davies.....	4.068708	11,714.1	38,432
	93	12	27.612	128	14	29.7	308	13	22.4	Charles.....	3.658110	4,551.0	14,931
				267	59	35.2	88	03	33.3	Iowa.....	4.101914	12,044.9	41,486
Lake Charles, Calcasieu Lumber Co., tank, 1931.	30	14	59.171	13	06	09.2	193	05	15.7	Davies.....	4.098113	12,534.7	41,124
	93	12	09.642	117	11	03.8	297	09	47.4	Charles.....	3.658799	4,558.3	14,955
				271	22	40.6	91	26	29.6	Iowa.....	4.084940	12,160.2	39,896
Port of Lake Charles, black tank, 1931.....	30	13	01.163	347	12	41.4	167	13	17.9	Davies.....	3.944134	8,792.9	28,848
	93	15	08.529	187	14	52.6	7	15	06.2	Charles.....	3.760536	5,761.5	18,903
				258	49	15.2	78	54	34.2	Iowa.....	4.237216	17,267.0	56,650
Port of Lake Charles, silver-top tank, 1931.....	30	13	01.483	346	55	32.3	166	56	09.7	Davies.....	3.945130	8,813.1	28,914
	93	15	10.297	187	43	36.4	7	43	51.0	Charles.....	3.760265	5,757.9	18,891
				258	52	58.6	78	58	18.5	Iowa.....	4.238334	17,311.5	56,796
Lake Charles, Catholic church, cross, 1931.....	30	13	34.608	-9	03	34.0	189	03	05.2	Davies.....	3.987938	9,726.1	31,910
	93	12	58.589	149	37	32.8	329	36	41.0	Charles.....	3.734915	5,431.4	17,820
				260	15	11.7	80	19	25.4	Iowa.....	4.135531	13,662.5	44,824
Lake Charles, Charleston Hotel, smokestack, 1931.	30	13	39.230	55	18	41.4	235	14	11.2	Wright.....	4.242885	17,493.8	57,394
	93	13	03.790	150	09	00.4	330	08	11.3	Charles.....	3.719211	5,238.5	17,187
				260	56	01.9	81	00	18.1	Iowa.....	4.139137	13,776.4	45,198
Lake Charles, Majestic Hotel, airways beacon, 1931.	30	13	39.665	8	59	12.1	188	58	43.1	Davies.....	3.994834	9,881.8	32,421
	93	12	58.136	148	39	44.7	328	38	52.8	Charles.....	3.724602	5,304.0	17,402
				260	53	24.0	80	57	37.5	Iowa.....	4.134339	13,625.1	44,702
Lake Charles, small black tank, 1931 ¹	30	13	53.34	147	15	36	327	14	46	Charles.....	3.688895	4,885.3	16,028
	93	13	02.49	262	42	28	82	46	44	Iowa.....	4.136094	13,680.2	44,882
Lake Charles, Noble Trotter rice mill, tank, 1931. ¹	30	13	52.56	6	55	42	186	55	18	Davies.....	4.009968	10,232.2	33,570
	93	13	09.69	53	55	11	233	50	44	Wright.....	4.245580	17,602.7	57,752
Lake Charles, Gulf States Utility Co., brick stack, 1931. ¹	30	14	28.94	7	12	57	187	12	30	Davies.....	4.055679	11,367.9	37,296
	93	13	02.46	51	27	36	231	23	05	Wright.....	4.265664	18,435.9	60,485
Sulphur, municipal silver water tank, 1931.....	30	14	17.042	355	17	48.0	175	18	05.2	Wright.....	4.047948	11,167.3	36,638
	93	22	35.431	47	48	37.8	227	44	50.7	Rice.....	4.212398	16,307.9	53,504
				96	15	35.1	276	11	44.7	Edgerley.....	4.089825	12,297.7	40,347

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Ninety-fourth meridian arc

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
	°	'	"	°	'	"	°	'	"		Logarithm (meters)	Meters	Feet
<i>Principal points</i>													
Pinkard (Tex.), 1930.....	32	59	26.570										
	94	07	56.761										
Ravana (Ark.), 1930.....	33	04	05.167	47	32	16.01	227	28	59.21	Pinkard.....	4.1040158	12,706.20	41,686.9
	94	01	55.715										
Posey (Tex.), 1930.....	32	56	13.362	128	43	40.29	308	41	04.67	Pinkard.....	3.9785462	9,518.01	31,227.0
	94	03	10.762	187	37	42.86	7	38	23.74	Ravana.....	4.1662625	14,664.34	48,111.3
Spearman, 1930.....	33	00	34.246	49	27	54.82	229	24	38.03	Posey.....	4.0919832	12,359.00	40,547.8
	93	57	09.190	82	58	45.83	262	52	53.13	Pinkard.....	4.2289020	16,939.55	55,575.8
				131	10	23.85	311	07	47.63	Ravana.....	3.9944948	9,874.04	32,395.1
Myra, 1930.....	32	55	37.745	94	23	30.83	274	18	28.99	Posey.....	4.1603449	14,465.88	47,460.1
	93	53	55.550	151	10	47.21	331	09	01.84	Spearman.....	4.0181467	10,426.70	34,208.3
Vivian, 1930.....	32	53	54.397	124	32	08.68	304	29	58.49	Posey.....	3.8782122	7,554.61	24,785.4
	93	59	11.204	194	25	08.42	14	26	14.79	Spearman.....	4.1044445	12,718.75	41,728.1
				248	45	46.23	68	48	37.74	Myra.....	3.9444113	8,798.55	28,866.6
Tyson, 1930.....	32	48	37.915	49	19	00.33	229	15	55.33	Oil.....	4.0693986	11,732.72	38,493.1
	93	53	19.218	136	50	05.76	316	46	54.80	Vivian.....	4.1262026	13,372.19	43,871.9
				175	49	31.68	355	49	11.96	Myra.....	4.1128525	12,967.39	42,543.8
				326	19	07.48	146	20	52.63	Belcher.....	3.9599361	9,118.77	29,917.2
Lewis, 1930.....	32	48	43.467	184	11	44.64	4	11	59.31	Vivian.....	3.9824523	9,604.00	31,509.1
	93	59	38.241	214	53	36.54	34	56	42.53	Myra.....	4.1921239	15,564.10	51,063.2
				270	57	54.40	91	01	19.79	Tyson.....	3.9939532	9,861.73	32,354.7
				297	26	19.30	117	31	29.65	Belcher.....	4.2257408	16,816.70	55,172.8
				352	55	36.10	172	55	56.29	Oil.....	3.8967048	7,883.24	25,863.6
Oil, 1930.....	32	44	29.503										
	93	59	00.956										
Belcher, 1930.....	32	44	31.546	89	46	54.66	269	42	04.77	Oil.....	4.1447098	13,954.36	45,781.9
	93	50	04.979										
Moor, 1930.....	32	38	18.128	179	12	18.67	359	12	15.38	Oil.....	4.0584661	11,441.06	37,536.2
	93	58	54.860	230	09	16.81	50	14	03.00	Belcher.....	4.2545015	17,968.07	58,950.2
Roy, 1930.....	32	35	18.684	115	32	34.86	295	28	35.40	Moor.....	4.1083954	12,834.99	42,109.5
	93	51	30.569	145	21	47.94	325	17	44.85	Oil.....	4.3145155	20,630.77	67,686.1
				187	27	15.65	7	28	01.85	Belcher.....	4.2349190	17,175.88	56,351.2
Bryson, 1930.....	32	33	38.851	176	57	59.91	356	57	50.49	Moor.....	3.9352492	8,614.88	28,264.0
	93	58	37.370	254	31	33.40	74	35	23.19	Roy.....	4.0625616	11,549.46	37,891.9
Greenwood, 1930.....	32	26	23.336	170	22	53.60	350	22	06.78	Bryson.....	4.1337589	13,606.89	44,641.9
	93	57	10.221	172	56	19.36	352	55	23.08	Moor.....	4.3460947	22,136.80	72,791.2
				208	14	13.28	28	17	15.85	Roy.....	4.2723639	18,722.50	61,425.4
Reid, 1930.....	32	28	17.813	76	12	30.71	256	07	36.45	Greenwood.....	4.1687657	14,749.11	48,389.4
	93	48	01.887	120	51	05.44	300	45	23.85	Bryson.....	4.2857988	19,310.73	63,355.3
				157	13	47.87	337	11	55.66	Roy.....	4.1480377	14,061.70	46,134.1
Spring, 1930.....	32	18	59.463	185	59	56.27	6	00	25.72	Greenwood.....	4.1382364	13,747.90	45,104.6
	93	58	05.223	222	28	16.43	42	33	39.66	Reid.....	4.3679777	23,333.38	76,552.9
Shreveport, north base, 1930.....	32	24	18.247	59	08	06.26	239	02	30.53	Spring.....	4.2813622	19,114.47	62,711.4
	93	47	37.980	104	29	38.31	284	24	31.60	Greenwood.....	4.1886411	15,439.78	50,655.3
				173	09	51.61	355	09	38.79	Reid.....	3.8695688	7,405.75	24,297.0
Shreveport south base, 1930.....	32	19	15.711	87	35	57.00	267	31	56.39	Spring.....	4.0712625	11,783.18	38,658.6
	93	50	35.158	141	55	59.07	321	52	27.50	Greenwood.....	4.2236922	16,737.56	54,913.1
				193	28	42.05	13	30	04.17	Reid.....	4.2348217	17,172.03	56,338.6
				206	25	04.41	26	26	39.25	Shreveport, north base.....	4.0173142	10,406.727	34,142.74
Stonewall, 1930.....	32	18	09.670	95	06	33.40	275	00	39.50	Spring.....	4.2402769	17,389.09	57,050.7
	93	47	03.095	110	09	11.94	290	07	18.58	Shreveport, south base.....	3.7714886	5,908.65	19,385.3
				133	49	06.51	313	43	41.45	Greenwood.....	4.3420367	21,980.46	72,114.2
				175	18	52.73	355	18	21.24	Reid.....	4.2740520	18,795.42	61,664.6
				175	24	32.45	355	24	13.78	Shreveport, north base.....	4.0565126	11,389.71	37,367.7
Forks, 1930.....	32	13	36.439	189	07	50.10	9	08	22.74	Spring.....	4.0033607	10,077.68	33,063.2
	93	59	06.358	245	58	36.42	66	05	02.52	Stonewall.....	4.3163165	20,716.50	67,967.4
Kickapoo, 1930.....	32	11	43.100	104	03	30.40	283	58	45.81	Forks.....	4.1587059	14,411.39	47,281.4
	93	50	12.451	137	23	57.32	317	19	45.60	Spring.....	4.2617431	18,270.19	59,941.4
				202	35	15.05	22	36	56.09	Stonewall.....	4.1105130	12,897.72	42,315.3
Pace, 1930.....	32	04	48.353	185	31	27.14	6	32	04.95	Forks.....	4.2141048	16,372.12	53,714.2
	94	00	17.404	231	05	47.79	51	11	09.90	Kickapoo.....	4.3068103	20,361.53	66,802.8
				320	40	22.00	140	45	11.96	Hunter.....	4.3556774	22,681.80	74,415.2
				19	21	17.80	199	19	35.59	Doggett.....	4.1840985	15,273.77	50,127.1
Ford, 1930.....	32	04	50.489	89	48	30.52	269	43	07.54	Pace.....	4.2027208	15,948.53	52,324.5
	93	50	09.283	139	03	25.45	318	58	39.62	Forks.....	4.3316237	21,459.70	70,405.7
				179	37	33.59	359	37	31.90	Kickapoo.....	4.1041231	12,709.34	41,697.2
				5	11	33.33	185	11	01.02	Hunter.....	4.2478175	17,693.65	58,049.9
				55	29	33.80	235	22	29.19	Doggett.....	4.4069798	25,525.82	83,746.0

48 U.S. COAST AND GEODETIC SURVEY TRANQUILLATION AND TRAVERSE IN LOUISIANA 49

GEOGRAPHIC POSITIONS—Continued

Ninety-fourth meridian arc—Continued

Station	Latitude and longitude			Azimuth	Back azimuth	To station	Distance		
	°	'	"				Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>									
Neuville (Tex.), 1919.....	31	41	11.563						
	94	05	07.694						
Brittain (Tex.), 1931.....	31	37	46.582	108 36	10.07	288 29	55.28	Neuville.....	4.2976292 19,844.00 65,104.9
	93	53	13.611						
Lula, 1919.....	31	50	33.025	16 38	26.80	196 36	05.99	Brittain.....	4.3915613 24,635.49 80,824.9
	93	48	45.910	56 16	34.62	236 07	57.78	Neuville.....	4.4926118 31,089.36 101,989.0
Hunter, 1919.....	31	55	18.390	336 38	44.30	156 40	00.53	Lula.....	3.9810451 9,572.93 31,407.2
	93	51	10.238	5 43	52.63	185 42	47.67	Brittain.....	4.5126539 32,557.71 106,816.4
				40 14	43.18	220 07	21.83	Neuville.....	4.5332641 34,140.05 112,007.8
Doggett (Tex.), 1919.....	31	57	00.299	279 07	08.77	99 13	40.19	Hunter.....	4.2942148 19,688.60 64,595.0
	94	03	30.211	297 06	24.89	117 14	12.14	Lula.....	4.4169799 26,120.40 85,696.7
				5 01	16.94	185 00	25.55	Neuville.....	4.4673611 29,333.31 96,237.7
<i>Supplementary points</i>									
Loutexark, ecc. (Tex.), 1930.....	33	01	08.726	5 54	12.4	185 53	52.7	Posey.....	3.961296 9,147.4 30,011
	94	02	34.546	69 24	20.0	249 21	24.5	Pinkard.....	3.951173 8,936.6 29,319
				190 29	54.6	10 30	15.7	Ravana.....	3.742572 5,528.0 18,136
Vivian, water tank, 1930.....	32	52	28.462	140 45	42.4	320 43	44.1	Posey.....	3.951646 8,946.4 29,352
	93	59	32.926	193 59	57.2	14 01	15.4	Spearman.....	4.188169 15,423.0 50,600
				236 21	09.1	56 24	12.4	Myra.....	4.022408 10,529.5 34,546
Loutexark (Tex.-Ark.-La. boundary), 1930 ¹	33	01	08.80	70 39	47	250 39	47	Loutexark, ecc.....	0.837588 6.88 22.6
	94	02	34.30						
Oak (Tex.-La. boundary), 1930.....	32	33	32.300	212 57	15.3	32 59	13.3	Moor.....	4.020975 10,494.8 34,432
	94	02	33.882	268 06	31.7	88 08	39.0	Bryson.....	3.790525 6,173.4 20,254
				327 22	44.9	147 25	38.8	Greenwood.....	4.195457 15,684.0 51,457
Shreveport, Southwestern Gas & Electric Co. old plant, concrete stack, 1930.	32	30	57.907	21 35	52.6	201 32	57.0	Shreveport, south base.....	4.366596 23,258.3 76,310
	93	45	07.845	42 40	11.1	222 38	37.6	Reid.....	3.826435 6,705.6 22,000
				128 50	39.4	308 47	13.5	Roy.....	4.107731 12,815.4 42,045
Shreveport, Southwestern Gas & Electric Co., Arsenal Hill Plant, east stack, 1930.	32	31	05.319	13 32	10.3	193 31	08.3	Shreveport, north base.....	4.110487 12,896.9 42,313
	93	45	42.467	35 12	36.5	215 11	21.6	Reid.....	3.800331 6,314.4 20,716
				130 42	00.6	310 38	53.3	Roy.....	4.078263 11,974.7 39,287
Shreveport, Southwestern Gas & Electric Co., Arsenal Hill Plant, west stack, 1930.	32	31	05.040	35 09	37.8	215 08	23.2	Reid.....	3.799342 6,300.0 20,669
	93	45	42.946	130 46	15.9	310 43	08.9	Roy.....	4.078116 11,970.6 39,274
				187 41	48.9	17 42	45.9	Vance.....	3.958840 9,095.8 29,842
Shreveport, Oil Refining Corporation, tank, 1930. ¹	32	31	33.52	120 14	44	300 10	39	Roy.....	4.139360 13,783.5 45,221
	93	43	54.00	179 26	17	359 26	15	Vance.....	3.891425 7,788.0 25,551
Shreveport, The Texas Co. Ardis Island tank farm, small high water tank, 1930. ¹	32	31	04.51	121 36	20	301 31	57	Roy.....	4.174792 14,955.2 49,066
	93	43	22.18	174 02	29	354 02	10	Vance.....	3.940938 8,728.5 28,637
Shreveport Charity Hospital, standpipe, 1930.	32	30	03.864	52 43	08.7	232 41	40.5	Reid.....	3.731721 5,391.6 17,689
	93	45	17.605	134 55	40.1	314 52	19.5	Roy.....	4.137938 13,738.5 45,074
				191 16	41.5	11 17	24.9	Vance.....	4.031705 10,757.3 35,293
Shreveport, Kansas City Southern R.R. shops, concrete stack, 1930.	32	29	36.195	51 07	05.9	231 06	04.4	Reid.....	3.584973 3,845.7 12,617
	93	46	07.247	141 22	31.5	321 19	37.6	Roy.....	4.130603 13,508.4 44,319
				196 35	47.3	16 36	57.4	Vance.....	4.075472 17,897.9 57,235
Shreveport, fertilizer works, high tank, 1930.....	32	29	09.816	16 06	48.0	196 05	52.8	Shreveport, north base.....	3.970724 9,348.1 30,670
	93	45	58.701	63 32	08.9	243 31	00.8	Reid.....	3.555494 3,593.3 11,789
				142 42	43.4	322 39	45.0	Roy.....	4.154920 14,286.3 46,871
Shreveport, Fairpark High School, spire, 1930.	32	28	44.132	49 20	45.7	220 20	26.3	Reid.....	3.094935 1,244.3 4,082
	93	47	25.736	152 17	16.3	332 15	04.7	Roy.....	4.137690 13,730.6 45,048
				202 42	57.9	22 44	50.2	Vance.....	4.149241 14,100.7 46,262
Shreveport Country Club, silver water tank, 1930.	32	28	40.900	159 02	39.5	339 01	02.8	Roy.....	4.118006 13,122.2 43,052
	93	48	30.617	208 34	06.9	28 36	34.1	Vance.....	4.173905 14,924.7 48,965
				313 28	08.6	133 28	24.1	Reid.....	3.014411 1,033.7 3,391
Shreveport, Libby-Owens Glass Co., water tank, 1930.	32	28	07.496	357 02	00.9	177 02	08.5	Shreveport, north base.....	3.849485 7,071.1 23,199
	93	47	51.984	77 37	51.9	257 32	52.4	Greenwood.....	4.174034 14,929.1 48,980
				156 46	25.2	336 44	27.7	Roy.....	4.160026 14,455.3 47,425
Shreveport, Caddo Storage Co., water tank, 1930.	32	29	49.822	19 56	16.1	199 55	00.3	Shreveport, north base.....	4.034680 10,831.3 35,536
	93	45	16.644	56 59	51.8	236 58	23.1	Reid.....	3.711405 5,145.2 16,881
				136 11	25.7	316 08	04.6	Roy.....	4.148814 14,086.9 46,217
Shreveport, municipal auditorium, flagpole, 1930. ¹	32	30	27.56	48 14	08	228 12	36	Reid.....	3.778052 5,998.6 19,680
	93	45	10.55	132 09	21	312 05	57	Roy.....	4.126105 13,369.2 43,862
Shreveport, First Baptist Church, spire, 1930.	32	30	45.880	18 49	14.0	198 47	50.4	Shreveport, north base.....	4.100850 12,613.9 41,384
	93	45	02.262	45 48	35.4	225 46	58.9	Reid.....	3.815693 6,541.7 21,462
				190 25	50.2	10 26	25.4	Vance.....	3.973629 9,410.9 30,87

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Ninety-fourth meridian arc—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance			
											Logarithm (meters)	Meters	Feet	
<i>Supplementary points—Continued</i>														
Illinois Central R. R., water tank 1 mile east of White Pine Hospital, 1930.	°	'	"	°	'	"	°	'	"	Shreveport, north base.....	3. 951173	8, 936. 6	29, 319	
	32	27	14. 449	307	22	37. 1	127	25	02. 8		Shreveport, south base.....	4. 174706	14, 952. 2	49, 056
	93	52	09. 731	350	28	37. 1	170	29	27. 8		Greenwood.....	3. 903377	8, 005. 3	26, 264
Shreveport Creosoting Co., water tank, 1930.	°	'	"	°	'	"	°	'	"	Shreveport, south base.....	4. 186607	15, 367. 6	50, 419	
	32	26	20. 546	31	38	37. 8	211	35	52. 7		Greenwood.....	4. 264162	18, 372. 2	60, 276
	93	45	26. 922	90	19	13. 7	270	12	56. 4		Reid.....	3. 734389	5, 424. 9	17, 798
Shreveport, Highland Baptist Church, spire, 1930.	°	'	"	°	'	"	°	'	"	Shreveport, north base.....	3. 954792	9, 011. 4	29, 565	
	32	28	42. 66	25	20	35	205	19	16		Reid.....	3. 657385	4, 543. 4	14, 906
	93	45	10. 38	80	18	46	260	17	14					
Shreveport, Crystal Oil Refining Co., concrete stack, 1930.	°	'	"	°	'	"	°	'	"	Shreveport, south base.....	4. 208321	16, 155. 5	53, 004	
	32	26	57. 505	28	19	19. 1	208	16	42. 1		Shreveport, north base.....	5. 764. 2	5, 764. 2	18, 911
	93	45	42. 132	31	40	56. 1	211	39	54. 0		Reid.....	3. 644362	4, 409. 2	14, 466
Shreveport, municipal water tank, 1930.	°	'	"	°	'	"	°	'	"	Shreveport, south base.....	4. 246200	17, 627. 9	57, 834	
	32	27	34. 441	29	23	38. 0	209	20	40. 7		Shreveport, north base.....	3. 860589	7, 254. 2	23, 800
	93	45	04. 385	33	35	40. 2	213	34	17. 8		Reid.....	3. 683423	4, 824. 2	15, 827
Mansfield, water tank, 1930.	°	'	"	°	'	"	°	'	"	Lula.....	4. 339554	21, 855. 2	71, 703	
	32	01	18. 927	24	28	55. 9	204	25	53. 7		Hunter.....	4. 229716	16, 971. 3	55, 680
	93	43	01. 451	49	10	01. 9	229	05	43. 1		Ford.....	4. 113217	12, 978. 3	42, 580
Haslam, standpipe (Tex.), 1919	°	'	"	°	'	"	°	'	"	Hunter.....	4. 228547	16, 925. 7	55, 530	
	31	57	51. 46	286	07	43	106	13	11		Doggett.....	3. 550011	3, 548. 2	11, 641
	94	01	29. 15	63	38	23	243	37	19					
Logansport, oil derrick near, 1919	°	'	"	°	'	"	°	'	"	Hunter.....	4. 055032	11, 350. 9	37, 240	
	31	57	49. 14	294	06	57	114	10	26		Doggett.....	3. 963783	9, 199. 9	30, 183
	93	57	44. 60	80	36	54	260	33	52					

Shreveport-Vicksburg arc

Principal points																			
Benton, 1930	32	43	19.870	37	38	16.68	217	34	20.29	Roy	4.2720680	18,709.75	61,383.6						
	93	44	12.469	103	33	07.64	283	29	57.04	Belcher	3.9749937	9,440.47	30,972.6						
Vance, 1930	32	35	46.337	85	54	56.04	265	50	51.68	Roy	4.0741190	11,860.94	38,913.8						
	93	43	56.927	149	22	11.22	329	18	52.55	Belcher	4.2743286	18,807.39	61,703.9						
				178	20	26.11	358	20	17.72	Benton	4.1454008	13,976.58	45,854.8						
Deserted, 1931	32	43	10.622	32	59	45.03	212	56	41.20	Vance	4.2125337	16,313.00	53,520.2						
	93	38	16.260	91	47	08.74	271	43	56.19	Benton	3.9267507	9,280.49	30,447.7						
Harper, 1931	32	33	20.203	113	23	03.37	293	19	28.17	Vance	4.0552017	11,355.38	37,255.1						
	93	37	17.243	149	39	54.08	329	36	10.13	Benton	4.3306012	21,409.24	70,240.1						
				175	10	11.37	355	09	39.54	Deserted	4.2613162	18,252.24	59,882.6						
Bellevue, 1931	32	40	38.890	33	03	41.92	213	00	40.24	Harper	4.2073484	16,119.38	52,885.0						
	93	31	40.176	114	23	07.50	294	20	33.53	Deserted	4.0540935	11,326.44	37,160.2						
Reed, 1931	32	33	18.657	90	20	11.52	270	17	14.60	Harper	3.9333777	8,577.84	28,142.5						
	93	31	48.459	151	01	36.55	330	58	07.41	Deserted	4.3190721	20,848.37	68,400.0						
				180	54	42.29	0	54	46.76	Bellevue	4.1323140	13,561.70	44,493.7						
Grimm, 1931	32	42	10.088	42	06	12.23	222	01	06.71	Reed	4.3433725	22,048.17	72,336.4						
	93	22	21.841	79	06	35.39	259	01	33.84	Bellevue	4.1706586	14,813.53	48,600.7						
Church, 1931	32	34	44.527	77	09	18.60	257	05	19.94	Reed	4.0742323	11,864.03	38,923.9						
	93	24	25.091	133	56	09.23	313	52	14.64	Bellevue	4.1970432	15,741.39	51,644.9						
				193	09	50.51	13	10	56.99	Grimm	4.1490963	14,096.01	46,246.7						
Crighton, 1931	32	41	48.558	50	43	18.20	230	37	48.28	Church	4.3141170	20,611.85	67,624.0						
	93	14	13.366	93	01	13.76	272	56	49.87	Grimm	4.1051949	12,740.75	41,800.3						
Burns, 1931	32	35	28.114	85	11	04.91	265	05	38.87	Church	4.1999202	15,846.02	51,988.2						
	93	14	10.697	134	36	52.55	314	32	32.45	Grimm	4.2465392	17,641.65	57,879.3						
				180	48	22.28	0	48	25.60	Crighton	4.0689415	11,720.37	38,452.6						
Athens, 1931	32	39	34.840	65	46	20.45	245	40	31.94	Burns	4.2665377	18,485.78	60,648.8						
	93	03	33.288	103	55	20.82	283	49	35.22	Crighton	4.2349600	17,177.50	56,356.5						
Jackson, 1931	32	31	26.429	114	21	27.33	294	15	47.38	Burns	4.2572924	18,083.91	59,330.3						
	93	03	47.987	139	39	14.49	319	33	37.45	Crighton	4.4007473	25,162.12	82,552.7						
				181	27	30.44	1	27	38.36	Athens	4.1775305	15,049.79	49,375.9						
Cobb, 1931	32	32	16.701	80	54	42.62	260	51	23.75	Jackson	3.9900841	9,774.26	32,067.7						
	92	57	38.171	145	34	17.10	325	31	05.78	Athens	4.2139898	16,367.78	53,700.0						

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Shreveport-Vicksburg arc—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
											Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>													
Owens, 1931	32 39 23.979	92 53 40.545	25 13 44.16	91 17 07.10	205 11 36.14	271 11 47.24	Cobb	4.1627890	14,547.52	47,728.0			
							Athens	4.1889332	15,450.17	50,689.4			
Arcadia, 1931	32 31 36.724	92 55 57.671	88 33 18.69	115 09 33.71	268 29 05.81	295 08 39.06	Jackson	4.0891397	12,278.34	40,283.2			
							Cobb	3.4620003	2,897.35	9,505.7			
							Athens	4.2769915	18,923.07	62,083.4			
							Owens	4.1711648	14,830.81	48,657.4			
Fogg, 1931	32 39 10.541	92 46 35.461	46 24 27.32	92 10 18.26	226 19 24.50	272 06 28.89	Arcadia	4.3066009	20,258.20	66,463.8			
							Owens	4.0447592	11,085.60	36,370.0			
Simsboro, 1931	32 31 17.494	92 46 39.481	92 22 12.46	143 47 53.81	272 17 12.35	323 44 07.02	Arcadia	4.1637517	14,579.81	47,833.9			
							Owens	4.2690050	18,578.26	60,952.2			
							Fogg	4.1635194	14,572.01	47,808.3			
Ball, 1931	32 35 55.319	92 35 52.323	63 10 04.18	109 46 48.58	243 04 15.88	289 41 01.83	Simsboro	4.2771077	18,928.13	62,100.0			
							Fogg	4.2507055	17,811.70	58,437.2			
Cargill, 1931	32 29 37.725	92 41 33.830	111 05 20.76	155 59 26.67	291 02 36.49	335 56 44.27	Simsboro	3.9319579	8,549.84	28,050.6			
							Fogg	4.2869952	19,364.00	63,530.1			
							Ball	4.1658995	14,652.09	48,071.1			
Sibley, 1931	32 34 46.674	92 28 31.953	65 03 07.47	100 27 54.87	244 56 06.95	280 23 57.68	Cargill	4.3524359	22,513.13	73,861.8			
							Ball	4.0673547	11,677.63	38,312.4			
Choudrant, 1931	32 26 58.117	92 34 12.006	113 06 47.05	171 01 01.00	293 02 49.84	351 00 07.06	Cargill	4.0983452	12,541.38	41,146.2			
							Ball	4.2241060	16,753.52	54,965.5			
							Sibley	4.2290128	16,943.88	55,590.0			
Simpson, 1931	32 33 43.222	92 18 28.426	63 12 08.95	97 07 20.91	243 03 41.89	277 01 56.01	Choudrant	4.4410890	27,611.44	90,558.5			
							Sibley	4.2004050	15,863.72	52,046.2			
Village, 1931	32 27 15.295	92 25 14.824	87 52 48.94	159 42 28.61	267 48 00.69	339 40 42.64	Choudrant	4.1473883	14,040.69	46,065.2			
							Sibley	4.1710083	14,825.46	48,639.9			
							Simpson	4.2035450	15,978.83	52,423.0			
Hendricks, 1931	32 32 15.047	92 12 32.632	65 09 50.63	106 20 07.91	245 03 01.15	286 16 56.48	Village	4.3411582	21,936.04	71,968.5			
							Simpson	3.9855235	9,672.16	31,732.7			
Marx, 1931	32 25 43.748	92 13 28.725	98 44 41.68	152 06 35.11	278 38 22.91	332 03 54.10	Village	4.2708907	18,659.10	61,217.4			
							Simpson	4.2230760	16,713.83	54,835.3			
							Hendricks	4.0842883	12,141.95	39,835.7			
Cole, 1931	32 33 10.684	92 07 23.393	34 44 31.22	78 01 53.53	214 41 14.97	257 59 07.17	Marx	4.2239720	16,748.35	54,948.5			
							Hendricks	3.9163554	8,248.70	27,062.6			
Brooks, 1931	32 25 09.372	92 07 01.083	95 59 50.98	146 35 24.87	275 56 23.13	326 32 26.84	Marx	4.0078832	10,183.18	33,409.3			
							Hendricks	4.1962398	15,712.30	51,549.4			
							Cole	4.1713586	14,837.43	48,679.1			
Monroe, west base, 1931	32 30 09.465	92 05 09.283	17 32 16.96	147 55 23.54	197 31 16.95	327 54 11.43	Brooks	3.9865029	9,694.00	31,804.4			
							Cole	3.8187946	6,588.62	21,616.2			
Sicard, 1931	32 31 48.544	92 00 39.416	39 03 17.42	66 35 36.46	218 59 52.49	246 33 11.39	Brooks	4.1994151	15,827.60	51,927.7			
							Monroe, west base	3.8851591	7,676.43	25,185.1			
							Cole	4.0350482	10,840.47	35,565.8			
Swamp, 1931	32 24 52.309	92 01 42.942	93 38 31.47	149 57 10.93	273 35 40.92	329 54 08.09	Brooks	3.9206129	8,329.38	27,327.3			
							Cole	4.2489418	17,739.52	58,200.4			
							Monroe, west base	4.0475581	11,157.27	36,605.1			
							Sicard	4.1115420	12,928.32	42,415.7			
Monroe, east base, 1931	32 29 43.266	91 59 25.620	21 49 14.26	95 09 57.24	201 48 00.57	275 06 52.60	Swamp	3.9846831	9,653.46	31,671.4			
							Monroe, west base	3.9546153	9,007.729	29,552.86			
							Sicard	3.6347809	4,313.01	14,150.3			
Crew, 1931	32 29 18.509	91 52 53.723	59 21 44.75	110 51 04.99	239 17 00.78	290 46 54.71	Swamp	4.2060681	16,071.63	52,729.3			
							Sicard	4.1140994	13,004.67	42,666.2			
Rhymes, 1931	32 22 42.795	91 53 57.893	108 12 21.36	148 04 21.27	288 08 12.20	328 00 45.81	Swamp	4.1069399	12,792.04	41,968.6			
							Sicard	4.2969652	19,813.68	65,005.4			
							Crew	4.0900439	12,303.93	40,367.1			
Rayville, 1931	32 28 34.927	91 45 33.258	50 35 35.57	96 41 27.01	230 31 04.97	276 37 30.47	Rhymes	4.2322998	17,072.61	56,012.4			
							Crew	4.0636625	11,578.77	37,988.0			
Deere, 1931	32 22 22.343	91 46 16.900	93 01 36.28	141 03 59.07	272 57 29.43	321 00 26.27	Rhymes	4.0816103	12,067.31	39,590.8			
							Crew	4.2171308	16,486.59	54,089.8			
							Rayville	4.0619496	11,533.19	37,838.5			
Holly, 1931	32 26 06.677	91 37 24.262	52 43 38.71	93 56 08.17	232 38 53.15	273 51 43.63	Deere	4.2429852	17,497.87	57,407.6			
							Rayville	4.1071713	12,798.86	41,990.9			
Mixon, 1931	32 22 47.842	91 37 20.205	86 50 07.95	129 43 42.04	266 45 20.56	309 39 17.64	Deere	4.1477270	14,051.64	46,101.1			
							Rayville	4.2237611	16,740.22	54,921.9			
							Holly	3.9921824	9,821.60	32,223.0			
Delhi, 1931	32 27 45.887	91 29 30.653	53 13 36.39	92 59 56.59	233 09 24.65	272 55 42.36	Mixon	4.1853478	15,323.14	50,272.7			
							Holly	4.0928932	12,384.92	40,632.9			

GEOGRAPHIC POSITIONS—Continued

Shreveport-Vicksburg arc—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
	°	'	"	°	'	"	°	'	"		Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>													
Dupree, 1931.....	32	22	03.924	97	16	33.31	277	12	55.38	Mixon.....	4.0304334	10,725.89	35,189.9
	91	30	33.181	136	09	42.89	316	06	02.51	Holly.....	4.1903085	15,499.17	50,850.2
				188	48	44.00		8	49	17.52	Delhi.....	4.0277340	10,659.43
Waverly, 1931.....	32	26	46.899	46	21	48.44	226	18	41.13	Dupree.....	4.1012323	12,625.03	41,420.6
	91	24	43.680	103	38	54.03	283	36	20.03	Delhi.....	3.8871870	7,712.36	25,303.0
Quebec, 1931.....	32	26	10.979	95	44	57.31	275	41	10.39	Waverly.....	4.0455448	11,105.67	36,435.9
	91	17	40.651	99	00	40.76	278	54	19.81	Delhi.....	4.2735591	18,774.10	61,594.7
Tensas, 1931.....	32	22	12.761	89	02	11.16	268	56	54.19	Dupree.....	4.1897875	15,480.59	50,759.2
	91	20	41.122	126	36	02.68	306	31	18.82	Delhi.....	4.2361848	17,226.02	56,515.7
				143	07	30.88	323	05	20.89	Waverly.....	4.0235999	10,558.44	34,640.5
				212	43	00.97	32	44	37.68	Quebec.....	3.9406533	8,722.75	28,617.9
Scott, 1931.....	32	25	34.193	287	40	04.02	107	41	07.81	Tallulah.....	3.5135929	3,262.82	10,704.8
	91	10	31.191	322	47	25.29	142	50	20.10	Callman.....	4.1498574	14,120.74	46,327.8
				68	46	37.87	248	41	11.07	Tensas.....	4.2331305	17,105.29	56,119.6
				95	47	56.08	275	44	05.77	Quebec.....	4.0521836	11,276.74	36,997.1
Joan, 1931.....	32	20	15.018	104	05	31.48	284	00	34.90	Tensas.....	4.1743026	14,938.35	49,010.2
	91	11	26.901	138	19	40.83	318	16	20.65	Quebec.....	4.1668801	14,685.21	48,179.7
				188	25	16.35	8	25	46.19	Scott.....	3.9973309	9,938.73	32,607.3
				207	18	18.55	27	19	52.10	Tallulah.....	3.9978445	9,950.49	32,645.9
				278	02	50.92	98	06	15.32	Callman.....	4.0041424	10,095.84	33,122.8
Park (Miss.), 1931.....	32	22	18.432	27	43	51.39	207	40	43.02	Culley.....	4.2976150	19,843.35	65,102.7
	90	50	27.878	77	14	23.99	257	06	34.83	Callman.....	4.3713446	23,514.98	77,148.7
Powers (Miss.), 1931.....	32	15	23.698	52	59	45.75	232	57	36.25	Culley.....	3.9009777	7,961.19	26,119.3
	90	32	17.691	110	41	07.30	290	34	17.54	Callman.....	4.3313150	21,444.45	70,355.7
				192	39	52.90	12	40	51.60	Park.....	4.1170656	13,093.80	42,958.6
Hawkins (Miss.), 1931.....	32	14	57.577	72	23	25.17	252	19	09.72	Culley.....	4.1192484	13,159.77	43,175.0
	90	48	21.498	97	25	55.57	277	23	49.53	Powers.....	3.7948226	6,234.80	20,455.3
				166	19	34.32	346	18	26.77	Park.....	4.1453850	13,976.07	45,853.2

Supplementary points

Minden, municipal water tank, 1931.....	32	37	01.701	69	53	53.1	249	49	55.0	Church.....	4.089024	12,275.1	40,273
	93	17	03.133	138	51	42.4	318	48	50.3	Grimm.....	4.100996	12,018.2	41,398
				304	03	53.3	124	05	21.3	Burns.....	3.711393	5,145.1	16,880
Minden, courthouse, dome, 1931.....	32	36	53.030	70	41	01.0	250	37	08.2	Church.....	4.077274	11,947.4	39,197
	93	17	12.812	140	30	58.0	320	28	11.2	Grimm.....	4.102386	12,658.6	41,531
				300	04	39.9	120	06	13.2	Burns.....	3.717433	5,217.1	17,116
Gibbsland, municipal water tank, 1931.....	32	32	32.113	24	12	11.9	204	11	53.1	Jackson.....	3.346008	2,218.2	7,278
	93	03	13.142	107	22	02.3	287	16	03.5	Burns.....	4.260389	18,213.3	59,755
				134	55	47.0	314	49	51.1	Crighton.....	4.385452	24,291.4	79,696
Gibbsland, Coleman's Negro College, cupola, 1931. †	32	32	14.50	8	37	19	188	37	14	Jackson.....	3.175412	1,497.7	4,914
	93	03	39.38	109	41	49	289	36	05	Burns.....	4.248865	17,736.4	58,190
Arcadia, municipal water tank, 1931.....	32	32	58.333	78	09	19.9	256	04	42.5	Jackson.....	4.138246	13,748.2	45,106
	92	55	12.417	133	07	11.2	313	02	41.3	Athens.....	4.252405	17,881.5	58,666
				191	23	40.2	11	24	29.7	Owens.....	4.083449	12,118.5	39,759
Ruston, municipal water tank, 1931.....	32	31	44.876	53	28	35.1	233	26	46.2	Cargill.....	3.818135	6,578.6	21,583
	92	38	11.331	205	09	56.6	25	11	11.4	Ball.....	3.930660	8,524.3	27,967
				324	42	26.7	144	44	35.2	Choudrant.....	4.034216	10,819.7	35,498
Ruston, courthouse, dome, 1931. †	32	31	36.79	54	12	40	234	10	55	Cargill.....	3.797213	6,269.2	20,568
	92	38	19.04	205	39	29	25	40	48	Ball.....	3.946241	8,835.7	28,988
Rudy (U.S.E.), 1931. †	32	33	10.66	144	20		324	20		Cole.....	9.865696	0.734	2.41
West Monroe, B.P.M. Co., northeast stack, 1931.	32	29	00.347	334	29	23.3	154	30	33.1	Brooks.....	3.896673	7,882.7	25,862
	92	09	11.012	48	02	28.7	228	00	10.5	Marx.....	3.956850	9,054.2	29,705
				138	44	53.6	318	43	05.2	Hendricks.....	3.901952	7,979.1	26,178
West Monroe, B.P.M. Co., southwest stack, 1931.	32	29	00.194	334	23	50.9	154	25	00.9	Brooks.....	3.896719	7,883.5	25,864
	92	09	11.464	48	00	48.3	227	58	30.3	Marx.....	3.956277	9,042.3	29,666
				138	50	03.7	318	48	15.5	Hendricks.....	3.901721	7,974.8	26,164
West Monroe, municipal water tank, 1931.....	32	30	10.023	355	56	41.0	175	56	54.5	Brooks.....	3.067746	9,284.2	30,460
	92	07	26.212	49	07	18.9	229	04	04.4	Marx.....	4.097811	12,526.0	41,096
				115	44	10.6	295	41	25.3	Hendricks.....	3.948234	8,876.3	29,122
Monroe, Ouachita National Bank Building, weather vane, 1931.	32	30	05.171	359	51	04.0	179	51	04.5	Brooks.....	3.959594	9,111.6	29,894
	92	07	01.989	51	27	46.4	231	24	18.8	Marx.....	4.111163	12,017.0	42,379
				174	25	07.5	354	24	56.0	Cole.....	3.759038	5,741.7	18,838
Monroe, B.P.M. Co., water tank, 1931.....	32	29	02.865	251	02	57.0	71	05	00.1	Monroe, west base.....	3.800895	6,322.6	20,743
	92	08	58.358	336	55	21.4	156	56	24.3	Brooks.....	3.893063	7,817.4	25,648
				136	38	32.8	316	36	37.5	Hendricks.....	3.910843	8,144.1	26,719

† No check on this position.

GEOGRAPHIC POSITIONS—Continued

Shreveport-Vicksburg arc—Continued

Station	Latitude and longitude			Azimuth	Back azimuth	To station	Distance			
	°	'	"				Logarithm (meters)	Meters	Feet	
<i>Supplementary points—Continued</i>										
Monroe, municipal water tank, 1931 ¹	32	30	09.73	161	59	18	Cole.....	3.767999	5,861.4	19,230
	92	06	13.93	270	16	26	Monroe, west base.....	3.227243	1,687.5	5,536
B.M. I-23-4 (U.S.E.), 1931 ¹	32	29	46.86	2	56	30.6	Monroe, east base.....	2.044982	110.913	363.89
	91	59	25.40							
B.M. 16 (U.S.E.), stake 2, 1931 ¹	32	28	36.75	4	06	50.9	Rayville.....	1.750346	56.279	184.64
	91	45	33.10							
Rayville B.M. 16 (U.S.E.), 1931 ¹	32	28	36.58	120	11	56	B.M. 16 (U.S.E.), stake 2.....	1.003374	10.078	33.06
	91	45	32.77							
Rayville, Astronomical pier, 1931 ¹	32	28	35.19	356	31	57	Rayville.....	0.904174	8.02	26.3
	91	45	33.28							
Rayville, municipal water tank, 1931.....	32	28	43.280	275	08	32.0	Holly.....	4.096689	12,493.6	40,989
	91	45	20.758	7	07	46.2	Deere.....	4.072813	11,825.3	38,797
				51	45	11.4	Rayville.....	2.618703	415.6	1,364
Rayville, Compress Co., stack, 1931.....	32	28	36.451	274	15	26.3	Holly.....	4.088298	12,254.6	40,205
	91	45	12.233	8	20	45.0	Deere.....	4.066208	11,646.8	38,211
				85	06	41.9	Rayville.....	2.741157	551.0	1,808
Holly, stake no. 2, 1931 ¹	32	28	04.46	199	14	37	Holly.....	1.858790	72.242	237.01
	91	37	25.17							
B.M. J-23-4 (U.S.E.), 1931 ¹	32	28	04.52	293	33	18	Holly, stake no. 2.....	0.619406	4.163	13.66
	91	37	25.32							
Delhi B, 1931 ¹	32	27	14.36	171	22	58	Delhi.....	2.992245	982.3	3,223
	91	29	25.02							
Delhi A, 1931 ¹	32	27	14.38	205	19	18	Delhi.....	3.030812	1,073.5	3,522
	91	29	48.23	270	04	40	Delhi B.....	2.782751	606.389	1,989.46

B.M. K-23-7 (U.S.E.), 1931 ¹	32	27	15.02	29	09	03	209	09	03	Delhi A.....	1.350907	22.434	73.60
	91	29	47.82										
Delhi, municipal water tank, 1931.....	32	27	21.442	9	20	35.5	189	20	02.5	Dupree.....	3.996153	9,911.8	32,519
	91	29	31.630	55	29	36.4	235	25	25.2	Mixon.....	4.172122	14,863.5	48,765
				96	28	32.6	276	24	18.9	Holly.....	4.094181	12,421.7	40,754
B.M. J-23-6 (U.S.E.), 1931 ¹	32	21	40.48	198	32	45	18	32	50	Dupree.....	2.881799	761.726	2,499.10
	91	30	42.45										
Vicksburg National Park, Louisiana Memorial (Miss.), 1931.....	32	21	25.099	249	46	29.7	69	50	48.4	Sliker.....	4.128935	13,450.6	44,149
	90	50	48.744	342	06	10.2	162	07	28.9	Hawkins.....	4.098395	12,542.8	41,151
				11	48	47.5	191	47	59.9	Powers.....	4.055860	11,372.6	37,312
Vicksburg National Park, Wisconsin Memorial (Miss.), 1931.....	32	21	54.648	252	41	28.0	72	45	34.0	Sliker.....	4.099480	12,574.2	41,254
	90	50	24.939	345	52	50.2	165	53	56.2	Hawkins.....	4.122099	13,246.4	43,459
				13	46	16.1	193	45	15.8	Powers.....	4.093357	12,398.2	40,676
Vicksburg National Park, observation tower (Miss.), 1931.....	32	21	27.530	345	45	35.3	165	46	37.6	Hawkins.....	4.093134	12,391.8	40,655
	90	50	17.943	15	37	34.9	195	36	30.9	Powers.....	4.065823	11,636.5	38,177
				30	41	21.3	210	38	07.7	Culley.....	4.269540	18,601.2	61,027
Park, R.M. 2 (Miss.), 1931.....	32	21	25.299	142	52	19.9	322	51	46.7	Vicksburg National Park, Union Navy Memorial.....	3.428794	2,684.1	8,806
	90	50	48.090	197	53	31.8	17	53	42.6	Park.....	3.235484	1,719.8	5,642
				265	00	55.1	85	01	11.2	Vicksburg National Park, observation tower.....	2.898293	791.2	2,596
Vicksburg National Park, south end, staircase tower (Miss.), 1931 ¹	32	19	22.26	22	00	37	201	58	57	Culley.....	4.117110	13,095.1	42,963
	90	53	13.06	90	41	20	270	35	00	Callman.....	4.269865	18,615.1	61,073
Vicksburg National Park, Minnesota Memorial (Miss.), 1931 ¹	32	21	20.62	28	56	48	208	53	50	Culley.....	4.256173	18,037.4	59,178
	90	50	47.10	169	51	40	349	51	39	Park R.M. 2.....	2.165333	146.3	480

¹ No check on this position.

GEOGRAPHIC POSITIONS—Continued

Mansfield-New Roads traverse

Station	Latitude and longitude	Azimuth	Back azimuth	To station	Distance		
					Logarithm (meters)	Meters	Feet
<i>Principal points</i>							
Field, 1919.....	31 59 39.953 93 43 10.600	27 37 52.90 57 25 53.94	207 34 55.62 237 21 40.07	Lula..... Hunter.....	4.2789810 4.1746898	19,009.95 14,951.67	62,368.5 49,053.9
Man, 1919.....	32 01 18.763 93 43 01.474	4 30 02.79 24 29 10.70 49 10 43.89	184 29 57.95 204 26 08.52 229 06 25.09	Field..... Lula..... Hunter.....	3.4847053 4.3394574 4.2296197	3,052.85 21,850.30 16,967.57	10,015.9 71,687.2 55,667.8
Oil, 1919.....	32 00 17.023 93 43 40.662	208 24 11.95	28 24 32.73	Man.....	3.3348464	2,161.95	7,093.0
Abo, 1919.....	32 00 32.872 93 42 28.474	148 30 21.37	328 30 03.88	Man.....	3.2195063	1,657.70	5,438.6
South, 1919.....	32 00 51.385 93 43 26.739	290 26 45.85 19 02 56.19	110 27 16.74 199 02 48.31	Abo..... Oil.....	3.2127303 3.0491049	1,632.038 1,119.708	5,354.44 3,673.58
Adams, 1919.....	31 59 31.069 93 43 35.444	174 28 21.86 247 14 12.06	354 28 19.09 67 14 25.22	Oil..... Field.....	3.1529078 2.8495611	1,422.027 707.231	4,665.43 2,320.31
Gordon, 1919.....	32 00 08.154 93 41 14.028	111 17 35.2	291 16 55.7	Abo.....	3.3216154	2,097.08	6,880.2
Mason, 1919.....	31 59 06.976 93 40 02.876	135 15 28.6	315 14 50.9	Gordon.....	3.4237646	2,653.17	8,704.6
Gleason, 1919.....	31 57 52.867 93 39 15.981	151 39 37.3	331 39 12.5	Mason.....	3.4138877	2,593.51	8,508.9
Oxford, 1919.....	31 55 33.013 93 37 47.119	151 33 25.9	331 32 38.9	Gleason.....	3.6901283	4,899.24	16,073.6
Pelican, 1919.....	31 52 56.071 93 35 10.267	139 33 36.5	319 32 13.6	Oxford.....	3.8029355	6,352.37	20,841.1
Soto, 1919.....	31 51 38.592 93 33 37.551	134 24 17.8	314 23 28.8	Pelican.....	3.5328658	3,410.87	11,190.5

42765°—34—3

Sodus, 1919.....	31 49 32.122 93 31 07.610	134 39 59.0	314 38 39.9	Soto.....	3.7436829	5,542.21	18,183.1
Miles, 1919.....	31 47 36.835 93 29 35.215	145 37 07.2	325 36 18.5	Sodus.....	3.6337567	4,302.85	14,116.9
Road, 1919.....	31 46 23.744 93 28 35.888	145 16 06.2	325 15 35.0	Miles.....	3.4376542	2,739.39	8,987.5
Hope, 1919.....	31 45 57.016 93 27 53.922	126 42 22.0	306 41 59.9	Road.....	3.1390482	1,377.36	4,518.9
Palm, 1919.....	31 45 38.236 93 27 28.648	131 00 49.2	311 00 35.9	Hope.....	2.9451841	881.42	2,891.8
Tan, 1919.....	31 45 24.312 93 27 05.272	124 52 54.7	304 52 42.4	Palm.....	2.8750164	749.92	2,460.4
Bolyne, 1919.....	31 45 00.118 93 26 24.140	124 32 42.5	304 32 20.9	Tan.....	3.1186663	1,314.21	4,311.7
Lambert, 1919.....	31 44 47.994 93 26 11.678	138 42 27.1	318 42 20.5	Bolyne.....	2.6963712	497.02	1,630.6
Tank, 1919.....	31 44 27.473 93 26 00.031	154 07 34.7	334 07 28.6	Lambert.....	2.8466224	702.46	2,304.7
Hickory, 1919.....	31 44 18.576 93 25 44.987	124 41 00.4	304 40 52.5	Tank.....	2.6826432	481.55	1,579.9
Peanut, 1919.....	31 44 15.663 93 25 15.435	96 34 53.7	276 34 38.2	Hickory.....	2.8937921	783.05	2,569.1
Marthaville, 1919.....	31 44 22.036 93 24 06.190	83 51 32.7	263 50 56.3	Peanut.....	3.2632272	1,833.27	6,014.7
Bat, 1919.....	31 44 15.642 93 23 09.029	97 27 38.4	277 27 08.3	Marthaville.....	3.1811215	1,517.47	4,978.6
Pine, 1919.....	31 44 07.600 93 22 37.730	106 44 08.2	286 43 51.7	Bat.....	2.9346591	860.32	2,822.6
Cabin, 1919.....	31 43 58.917 93 22 17.530	116 42 03.8	296 41 53.2	Pine.....	2.7746682	595.21	1,952.8
Robeline, 1919.....	31 41 06.061 93 17 27.636	124 54 54.8	304 52 22.4	Cabin.....	3.9687850	9,306.47	30,533.0
Dover, 1919.....	31 40 50.862 93 16 31.443	107 33 18.3	287 32 48.8	Robeline.....	3.1909777	1,552.31	5,092.9
White, 1919.....	31 40 42.984 93 16 16.989	122 30 35.1	302 30 27.5	Dover.....	2.6546113	451.45	1,481.1

GEOGRAPHIC POSITIONS—Continued

Mansfield-New Roads traverse—Continued

Station	Latitude and longitude	Azimuth	Back azimuth	To station	Distance		
					Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>							
Patch, 1919.....	31 40 25.656 93 15 56.945	135 18 38.5	315 18 28.0	White.....	2.8754797	750.72	2,463.0
Flat, 1919.....	31 40 17.579 93 15 35.742	114 00 34.2	294 00 23.1	Patch.....	2.7863388	611.42	2,006.0
Sign, 1919.....	31 40 15.725 93 15 15.506	96 06 59.2	276 06 48.6	Flat.....	2.7292440	536.10	1,758.9
Rainer, 1919.....	31 40 18.802 93 14 53.889	80 33 06.6	260 32 55.3	Sign.....	2.7613674	577.25	1,893.9
Victoria, 1919.....	31 40 16.257 93 14 30.247	97 10 35.5	277 10 23.1	Rainer.....	2.7977504	627.70	2,059.4
Provencal, 1919.....	31 38 45.247 93 11 16.781	118 49 20.8	298 47 39.3	Victoria.....	3.7646884	5,816.86	19,084.1
Bay, 1919.....	31 37 55.068 93 10 13.585	132 52 03.2	312 51 30.0	Provencal.....	3.3563936	2,271.92	7,453.8
Rum, 1919.....	31 37 41.802 93 09 46.485	119 46 35.7	299 46 21.5	Bay.....	2.9152898	822.79	2,699.4
Flora, 1919.....	31 37 00.310 93 07 08.081	107 01 50.3	287 00 27.2	Rum.....	3.6400881	4,366.04	14,324.2
Cypress, 1919.....	31 36 28.180 93 02 39.089	97 57 53.9	277 55 32.9	Flora.....	3.8548495	7,158.95	23,487.3
Weaver, 1919.....	31 36 43.724 93 04 52.015	98 06 58.7 277 46 15.0	278 05 47.4 97 47 24.7	Flora..... Cypress.....	3.5590203 3.5485596	3,622.60 3,536.39	11,885.1 11,602.3
Cain, 1919.....	31 36 10.984 93 02 01.863	118 21 33.0	298 21 13.5	Cypress.....	3.0473170	1,115.11	3,658.5

Lake, 1919.....	31 35 18.508 93 00 56.660	133 14 24.7	313 13 50.5	Cain.....	3.3728062	2,359.42	7,740.9
Montrose, 1919.....	31 34 16.017 92 59 38.834	133 10 12.8	313 09 32.0	Lake.....	3.4492372	2,813.44	9,230.4
Clark, 1919.....	31 32 42.068 92 57 41.982	133 12 11.9	313 11 10.7	Montrose.....	3.6260633	4,227.30	13,869.1
Derry, 1919.....	31 31 51.301 92 56 38.111	132 51 56.5	312 51 23.1	Clark.....	3.3614598	2,298.68	7,541.3
Hales, 1919.....	31 31 18.634 92 55 18.034	115 28 15.6	295 27 33.7	Derry.....	3.3692123	2,339.98	7,677.1
Chopin, 1919.....	31 29 39.543 92 51 10.709	115 04 46.3	295 02 37.0	Hales.....	3.8576146	7,204.68	23,637.4
Galbirth, 1919.....	31 28 59.191 92 49 12.321	111 41 52.0	291 40 50.2	Chopin.....	3.5266897	3,362.71	11,032.5
Spring, 1919.....	31 28 28.990 92 47 44.751	111 55 32.8	291 54 47.1	Galbirth.....	3.3964921	2,491.62	8,174.6
Derrick, 1919.....	31 28 10.827 92 47 20.411	131 02 40.1	311 02 27.4	Spring.....	2.9303884	851.90	2,794.9
Ditcher, 1919.....	31 27 53.512 92 46 54.381	127 48 56.7	307 48 43.1	Derrick.....	2.9394292	869.82	2,853.7
Lena, 1919.....	31 27 47.129 92 46 36.941	113 07 19.9	293 07 10.8	Ditcher.....	2.6995089	500.62	1,642.5
Quary, 1919.....	31 27 01.680 92 45 24.409	126 10 11.3	306 09 33.4	Lena.....	3.3751236	2,372.05	7,782.3
Rock, 1919.....	31 25 57.245 92 43 40.287	125 49 40.8	305 48 46.5	Quary.....	3.5303092	3,390.85	11,124.8
Mob, 1919.....	31 25 50.033 92 43 08.651	104 53 22.6	284 53 06.1	Rock.....	2.9367614	864.49	2,836.2
Dea, 1919.....	31 25 40.682 92 42 49.447	119 35 25.5	299 35 15.5	Mob.....	2.7658351	583.22	1,913.4
Con, 1919.....	31 25 28.207 92 42 32.357	130 24 24.2	310 24 15.3	Dea.....	2.7728596	592.73	1,944.6
Kate, 1919.....	31 25 13.253 92 42 18.664	141 51 35.1	321 51 28.0	Con.....	2.7675808	585.57	1,921.2
Zimmerman, 1919.....	31 24 55.739 92 42 08.360	153 13 36.4	333 13 31.0	Kate.....	2.7811699	604.18	1,982.2

GEOGRAPHIC POSITIONS—Continued

Mansfield-New Roads traverse—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
											Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>													
Wildcat, 1919.....	31 24 16.219 92 41 54.398	163 08 35.3	343 08 28.0	Zimmerman.....	3.1044125	1,271.78	4,172.5						
Dry, 1919.....	31 23 44.645 92 41 30.236	146 43 12.8	326 43 00.2	Wildcat.....	3.0656570	1,163.21	3,816.3						
Boyce, 1919.....	31 22 52.723 92 39 09.674	113 18 21.2	293 17 08.0	Dry.....	3.6067550	4,043.48	13,266.0						
Joyner, 1919.....	31 22 20.765 92 37 44.054	113 30 59.1	293 30 14.5	Boyce.....	3.3922188	2,467.28	8,004.7						
Rapides, 1919.....	31 21 50.652 92 35 12.903	103 04 54.9	283 03 36.2	Joyner.....	3.6128609	4,100.73	13,453.8						
Pecan, 1919.....	31 21 29.498 92 33 27.565	103 10 43.3	283 09 48.5	Rapides.....	3.4562441	2,859.20	9,380.6						
Flint, 1919.....	31 20 41.232 92 31 24.532	114 34 28.0	294 33 24.0	Pecan.....	3.5533493	3,575.60	11,730.9						
Alexandria, 1919.....	31 19 31.896 92 28 26.258	114 23 16.3	294 21 43.6	Flint.....	3.7138339	5,174.09	16,975.3						
Red, 1919.....	31 20 15.638 92 26 52.026	61 36 16.0	241 35 27.0	Alexandria.....	3.4521138	2,832.13	9,291.7						
Red B, 1919.....	31 21 08.008 92 26 32.423	17 48 46.2	197 48 36.0	Red.....	3.2289296	1,694.06	5,557.9						
Varges, 1919.....	31 19 17.785 92 27 56.951	119 17 15.9	299 17 00.7	Alexandria.....	2.9486206	888.42	2,914.8						
Monroe, 1919.....	31 18 44.101 92 27 16.201	133 54 58.3	313 54 37.1	Varges.....	3.1748480	1,495.71	4,907.2						
Lee, 1919.....	31 18 19.177 92 26 56.299	145 33 57.6	325 33 47.3	Monroe.....	2.9687999	930.68	3,053.4						
Foundry, 1919.....	31 17 56.188 92 26 44.076	155 27 44.9	335 27 38.5	Lee.....	2.8911499	778.31	2,553.5						
Zeman, 1919.....	31 16 06.554 92 24 36.869	135 06 31.6	315 05 25.5	Foundry.....	3.6782190	4,766.71	15,638.8						
Stafford, 1919.....	31 14 37.676 92 23 30.567	147 20 58.2	327 20 23.8	Zeman.....	3.5120291	3,251.09	10,666.3						
Guthier, 1919.....	31 12 44.224 92 22 06.420	147 29 34.2	327 28 50.6	Stafford.....	3.6173549	4,143.38	13,693.7						
Lat, 1919.....	31 10 54.630 92 19 58.498	134 54 41.0	314 53 34.7	Guthier.....	3.6795535	4,781.38	15,686.9						
Richland, 1919.....	31 09 29.650 92 18 19.845	135 03 25.8	315 02 34.7	Lat.....	3.5679605	3,697.95	12,132.4						
Bunnie, 1919.....	31 07 53.487 92 16 27.620	134 53 57.3	314 52 59.3	Richland.....	3.6228542	4,196.18	13,767.0						
Mollie, 1919.....	31 07 07.441 92 15 34.300	135 06 45.8	315 06 18.2	Bunnie.....	3.3013894	2,001.66	6,567.1						
Bijou, 1919.....	31 05 56.665 92 13 07.192	119 13 18.3	299 12 02.3	Mollie.....	3.6499439	4,466.26	14,653.1						
Due, 1919.....	31 05 24.833 92 12 00.206	118 54 41.3	298 54 06.7	Bijou.....	3.3070762	2,028.04	6,653.7						
Bell, 1919.....	31 05 03.811 92 11 16.811	119 22 34.0	299 22 11.6	Due.....	3.1205361	1,319.89	4,330.3						
Frog, 1919.....	31 04 24.214 92 10 24.395	131 16 33.2	311 16 06.1	Bell.....	3.2668547	1,848.65	6,065.1						
Compree, 1919.....	31 03 37.833 92 09 22.471	131 01 48.0	311 01 16.0	Frog.....	3.3376710	2,176.06	7,139.3						
Hessmer, 1919.....	31 03 33.879 92 07 19.030	92 08 23.5	272 07 19.8	Compree.....	3.5152164	3,275.04	10,744.9						
Amond, 1919.....	31 03 28.956 92 04 37.814	92 02 35.0	272 01 11.8	Hessmer.....	3.6311453	4,277.06	14,032.3						
Mansura, 1919.....	31 03 27.122 92 03 33.462	91 54 00.2	271 53 27.0	Amond.....	3.2322648	1,707.12	5,600.8						
Omar, 1919.....	31 03 13.801 92 02 01.838	99 35 30.4	279 34 43.1	Mansura.....	3.3915935	2,463.73	8,063.1						

GEOGRAPHIC POSITIONS—Continued

Mansfield-New Roads traverse—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
	°	'	"	°	'	"	°	'	"		Logarithm (meters)	Meters	Feet
<i>Principal points—Continued</i>													
Rue, 1919.....	31	02	50.683	99	29	35.0	279	28	12.1	Omar.....	3.6356690	4,321.84	14,179.2
	91	59	21.072										
Chauson, 1919.....	31	02	37.544	99	48	23.6	279	47	38.0	Rue.....	3.3760759	2,377.26	7,799.4
	91	57	52.730										
Will, 1919.....	31	04	06.184	43	46	17.9	223	45	25.9	Chauson.....	3.5871644	3,865.13	12,680.8
	91	56	11.896										
Lon, 1919.....	31	05	46.449	43	58	48.1	223	57	51.2	Will.....	3.6237601	4,204.94	13,795.7
	91	54	21.753										
Ville, 1919.....	31	05	53.211	69	38	52.3	249	38	41.4	Lon.....	2.7772266	598.72	1,964.3
	91	54	00.572										
Heaton, 1919.....	31	05	35.404	97	48	45.5	277	47	27.5	Ville.....	3.6063591	4,039.79	13,253.9
	91	51	29.555										
Root, 1919.....	31	05	16.783	97	42	28.5	277	41	05.8	Heaton.....	3.6316405	4,281.94	14,048.3
	91	48	49.455										
De Glaise, 1919.....	31	04	01.766	138	36	21.0	318	35	41.3	Root.....	3.4985319	3,079.87	10,104.5
	91	47	32.620										
Incline, 1919.....	31	02	00.067	128	46	31.1	308	45	00.3	De Glaise.....	3.7771423	5,986.08	19,639.3
	91	44	36.587										
Naples, 1919.....	31	01	14.115	173	31	03.1	353	31	00.0	Incline.....	3.1535828	1,424.24	4,672.7
	91	44	30.524										
Phi, 1919.....	31	01	29.913	181	49	48.6	1	49	49.2	Incline.....	2.9680537	929.08	3,048.2
	91	44	37.706	338	37	08.7	158	37	12.4	Naples.....	2.7180719	522.48	1,714.2
Engineer, 1919.....	31	00	44.869	166	46	07.6	346	46	03.5	Naples.....	2.9662455	925.22	3,035.5
	91	44	22.540										
Engineer base, 1919.....	31	00	38.135	103	07	07.7	253	06	50.4	Engineer.....	2.9608820	913.86	2,998.2
	91	43	48.988	135	09	56.9	315	09	35.5	Naples.....	3.1938403	1,562.57	5,126.5
Teller, 1919.....	31	00	28.631	116	14	52.7	296	14	41.2	Engineer base.....	2.8207668	661.86	2,171.5
	91	43	26.610	129	34	06.8	309	33	33.9	Naples.....	3.3422578	2,199.16	7,215.1
Royal Oak, 1919.....	31	00	19.656	96	08	25.1	276	07	35.1	Teller.....	3.4128019	2,587.03	8,487.6
	91	41	49.646										
Torras, 1919.....	30	59	22.898	135	37	24.9	315	36	51.7	Royal Oak.....	3.3883955	2,445.66	8,023.8
	91	40	45.170										
St. Joseph, 1919.....	30	58	14.896	145	46	26.8	325	45	59.2	Torras.....	3.4036824	2,533.28	8,311.3
	91	39	51.467										
Red River, 1919.....	30	57	27.443	183	15	05.2	3	15	06.8	St. Joseph.....	3.1653670	1,463.41	4,801.2
	91	39	54.595										
Smith, 1919.....	30	55	52.516	167	55	56.7	347	55	44.6	Red River.....	3.4755900	2,989.44	9,807.9
	91	39	31.047										
Lettsworth E, 1930.....	30	58	54.244	223	03	09.5	43	03	25.5	Torras.....	3.0819428	1,207.65	3,962.1
	91	41	16.243										
Morean, 1929.....	30	59	23.043	42	35	58.0	222	35	42.2	Lettsworth E.....	3.0609218	1,204.82	3,952.8
	91	40	45.509	296	25	32.6	116	25	32.8	Torras.....	1.0018202	10.04	32.9
Lettsworth, 1929.....	30	55	53.132	200	15	53.5	20	16	39.8	Morean.....	3.8382952	6,891.20	22,608.9
	91	42	15.469										
Batchelor, 1929.....	30	50	28.464	157	55	51.8	337	54	33.4	Lettsworth.....	4.0330059	10,789.61	35,398.9
	91	39	42.771	323	12	22.7	143	15	43.7	New roads, west base.....	4.2417393	17,447.74	57,243.1
<i>Supplementary points</i>													
Clark A, 1919.....	31	32	00.762	133	03	40.5	313	03	13.5	Clark.....	3.270295	1,863.35	6,113.3
	92	56	50.369	312	01	09.0	132	01	15.4	Derry.....	2.638777	435.3	1,428
Derry A, 1919.....	31	31	52.041	42	56	03.9	222	56	03.5	Derry.....	1.492907	31.1	102
	92	56	37.308	127	56	17.4	307	56	10.6	Clark A.....	2.640375	436.89	1,433.4
Derry B, 1919.....	31	31	45.273	116	39	10.3	296	39	03.0	Derry.....	2.616918	413.9	1,358
	92	56	24.088	120	52	04.3	300	51	57.4	Derry A.....	2.608844	406.30	1,333.0
				295	12	19.3	115	12	53.9	Hales.....	3.284694	1,926.17	6,319.4
P.B.M. A (M.R.C.), (Harmon, 1905), 1919.....	30	57	23.590	219	02	13.2	39	02	15.1	Red River.....	2.183970	152.75	501.1
	91	39	58.220										
B.M. 150/d (M.R.C.), 1919.....	30	55	52.366	264	54	54.7	84	54	55.7	Smith.....	1.715412	51.93	170.4
	91	39	32.995										

GEOGRAPHIC POSITIONS—Continued

Mansfield-New Roads traverse—Continued

Station	Latitude and longitude			Azimuth			Back azimuth			To station	Distance		
	°	'	"	°	'	"	°	'	"		Logarithm (meters)	Meters	Feet
<i>Supplementary points—Continued</i>													
P.B.M. Torras (M.R.C.), 1929.....	30	59	20.357	237	25	01.4	57	25	03.9	Morean.....	2.186388	153.60	503.9
	91	40	50.387	240	31	14.1	60	31	16.8	Torras.....	2.201402	159.00	521.7
New Roads, west base F, 1930.....	30	50	17.021	146	55	00.5	326	54	56.1	Batchelor.....	2.623825	420.56	1,379.8
	91	39	34.132										
New Roads, west base E, 1930.....	30	47	04.945	150	27	19.8	330	26	15.2	New Roads, west base F.....	3.832488	6,799.68	22,308.6
	91	37	27.961										
P.B.M. No. 156/4 (offset) (M.R.C.), 1930.....	30	46	46.238	108	43	27.7	288	42	55.0	New Roads, west base E.....	3.254053	1,794.95	5,888.9
	91	36	24.028										
P.B.M. No. 156/4 (M.R.C.), 1930.....	30	46	46.379	9	07	47.7	189	07	47.7	P.B.M. No. 156/4 (offset).....	0.644242	4.41	14.5
	91	36	24.000										
New Roads, west base D, 1930.....	30	43	24.135	150	26	59.4	330	25	45.2	New Roads, west base E.....	3.893059	7,817.35	25,647.4
	91	35	02.961										
New Roads, west base C, 1930.....	30	43	13.086	131	37	47.8	311	37	40.4	New Roads, west base D.....	2.709411	512.17	1,680.3
	91	34	48.572										
New Roads, west base B, 1929.....	30	43	07.650	111	20	41.8	291	20	33.6	New Roads, west base C.....	2.662715	459.96	1,509.1
	91	34	32.471										
New Roads, west base A, 1929.....	30	42	59.306	99	30	34.2	279	30	04.7	New Roads, west base B.....	3.192013	1,556.01	5,105.0
	91	33	34.793	282	26	33.2	102	26	45.9	New Roads, west base.....	2.829133	674.73	2,213.7
Survey mark: "U.S. Engineers Dept., New Orleans River Dist.", 1930.	30	43	00.681	281	19	58.3	101	20	02.4	New Roads, west base A.....	2.333331	215.44	706.8
	91	33	42.732										
Rapides depot, semaphore, 1919.....	31	21	50.624	283	10	36.6	103	11	31.3	Pecan.....	3.455246	2,852.6	9,359
	92	35	12.655	97	23	16.2	277	23	16.1	Rapides.....	0.819739	6.6	22
				103	04	22.1	283	03	03.3	Joyner.....	3.613556	4,107.3	13,475

Mansura, school belfry, 1919.....	31	03	38.368	67	24	02.4	247	23	46.2	Mansura.....	2.954804	901.2	2,957
	92	03	02.063	83	29	29.3	263	28	39.9	Amoud.....	3.407325	2,554.6	8,381
				88	51	20.8	268	49	08.2	Hessmer.....	3.833390	6,813.8	22,355
Mansura, Catholic church, tall white spire, 1919.	31	03	37.578	70	54	30.9	250	54	12.8	Mansura.....	2.993161	984.4	3,230
	92	02	58.377	84	15	20.0	264	14	28.7	Amoud.....	3.423200	2,649.7	8,693
				89	04	27.2	269	02	12.7	Hessmer.....	3.839580	6,911.6	22,676
Bordelonville church spire, 1919 ¹	31	06	19.86	289	09	30	109	10	47	Heaton.....	3.620036	4,169.0	13,678
	91	53	58.14	4	29	06	184	29	05	Ville.....	2.915432	823.1	2,700
Colored Baptist church, belfry, 1919.....	31	00	35.055	177	37	37.4	357	37	36.4	Naples.....	3.060600	1,203.9	3,950
	91	44	28.645	208	10	54.2	28	10	57.3	Engineer.....	2.535144	342.9	1,125
				276	51	03.7	96	51	35.6	Teller.....	3.219443	1,687.5	5,438
Naples, railway oil-storage tank, center, 1919.....	31	01	47.858	350	31	10.9	170	31	17.2	Engineer.....	3.293729	1,966.7	6,452
	91	44	34.752	353	50	28.1	173	50	30.3	Naples.....	3.019191	1,045.2	3,429
				172	37	23.0	352	37	22.1	Incline.....	2.578779	379.1	1,244
Naples, railway water tank, center, 1919 ¹	31	01	50.70	351	11	34	171	11	40	Engineer.....	3.312100	2,051.6	6,731
	91	44	34.38	354	48	38	174	48	40	Naples.....	3.053627	1,131.4	3,712
Angola, State convict farm, south end of building nearest Mississippi River, 1919 ¹ .	30	58	18.71	50	19	22	230	18	45	Red River.....	3.393137	2,472.5	8,112
	91	38	42.90	86	18	14	266	17	39	St. Joseph.....	3.260906	1,823.5	5,983

¹ No check on this position.

DESCRIPTION OF STATIONS

This list may be conveniently consulted by reference to the illustrations at the end of this publication or to the index. All azimuths given in the descriptions are reckoned continuously from true south around by west to 360° , south being 0° , west 90° , north 180° , and east 270° . Where magnetic azimuths are given they are indicated as such.

In general, except where the contrary is specifically stated, the surface and underground marks are not in contact, so that a disturbance of the surface mark will not necessarily affect the underground mark. The underground mark should be resorted to only in cases where there is evidence that the surface mark has been disturbed.

The name and dates given in each description immediately after the county or parish refer to the chief of party by whom the station was established, the date of the establishment of the station, and the date when the station was last recovered.

Any person who finds that one of the stations herein described has been disturbed or that the description no longer fits the facts is requested to send such information to the Director, Coast and Geodetic Survey, Washington, D.C.

MARKING OF STATIONS

The standard disk station and reference marks referred to in the following descriptions and notes consist of a disk and shank of bronze cast in one piece, as shown in figure no. 2. The disk of the station mark is 90 millimeters in diameter, with a hole at the center surrounded by a 20-millimeter equilateral triangle, and has the following inscribed legend: "U.S. Coast and Geodetic Survey Triangulation Station. For information write to the Director, Washington, D.C. \$250 fine or imprisonment for disturbing this mark." The shank is 25 millimeters in diameter and 80 millimeters long, with a slit at the lower end into which a wedge is inserted so that when it is driven into a drill hole in the rock it will bulge at the bottom and hold the mark firmly in place. Present practice is to spread the split end of the shank, and set it in a drill hole with cement. The marks used between 1915 and 1920 have grooves cut around the shank instead of the slit.

The standard disk reference mark, shown in figure no. 2, is the same size and shape as the station mark, with an arrow on the top in place of the triangle, which, when properly set, points to the station. The legend is the same, except the words "reference mark" take the place of the words "triangulation station."

The standard notes on the marking of stations which are given below serve as a guide to the field observer in selecting the best type of mark for each particular station. They are also useful to the observer in writing his descriptions, as he need not describe the marking used at a station but simply give the numbers of the standard notes which describe the station, underground, and reference marks. The notes were made as general as possible in order that it might not be necessary to describe small and unimportant variations.

For the convenience of the reader a brief description of the marking is given in each of the following descriptions of stations. In addition, where the marking of a station is described in detail in one of the following notes, the number of the note is also given,

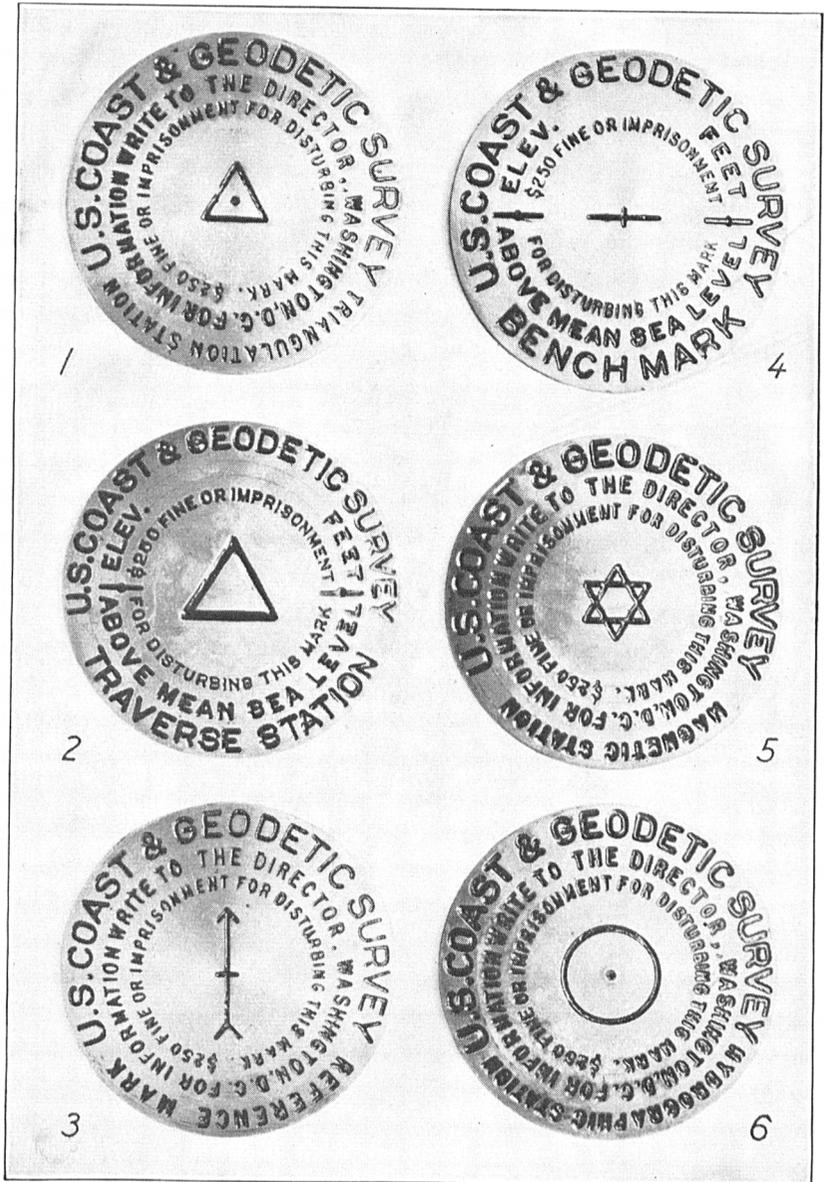


FIGURE 2.—STANDARD MARKS OF THE U.S. COAST AND GEODETIC SURVEY.

- | | |
|--------------------------------|-------------------------------|
| 1. Triangulation station mark. | 4. Bench mark. |
| 2. Traverse station mark. | 5. Magnetic station mark. |
| 3. Reference mark. | 6. Hydrographic station mark. |

STANDARD NOTES ON THE MARKING OF STATION

Surface marks

Note 1.—A standard disk triangulation station mark set in the top of (a) a square block or post of concrete, (b) a concrete cylinder, (c) an irregular mass of concrete.

Note 2.—A standard disk triangulation station mark wedged in a drill hole in outcropping bedrock (a) and surrounded by a triangle chiseled in the rock, (b) and surrounded by a circle chiseled in the rock, (c) at the intersection of two lines chiseled in the rock.

Note 3.—A standard disk triangulation station mark set in concrete in a depression in outcropping bedrock.

Note 4.—A standard disk triangulation station mark wedged in a drill hole in a boulder.

Note 5.—A standard disk triangulation station mark set in concrete in a depression in a boulder.

Note 6.—A standard disk triangulation station mark set in concrete at the center of the top of a tile (a) which is embedded in the ground, (b) which is surrounded by a mass of concrete, (c) which is fastened by means of concrete to the upper end of a long wooden pile driven into the marsh, (d) which is set in a block of concrete, and projects from 12 to 20 inches above the block.

Underground marks

Note 7.—A block of concrete 3 feet below the ground containing at the center of its upper surface (a) a standard disk triangulation station mark, (b) a copper bolt projecting slightly above the concrete, (c) an iron nail with the point projecting above the concrete, (d) a glass bottle with the neck projecting a little above the concrete, (e) an earthenware jug with the mouth projecting a little above the concrete.

Note 8.—In bedrock (a) a standard disk triangulation station mark wedged in a drill hole, (b) a standard disk triangulation station mark set in concrete in a depression, (c) a copper bolt set in cement in a drill hole or depression, (d) an iron spike set point up in cement in a drill hole or depression.

Note 9.—In a boulder 3 feet below the ground (a) a standard disk triangulation station mark wedged in a drill hole, (b) a standard disk triangulation station mark set in concrete in a depression, (c) a copper bolt set with cement in a drill hole or depression, (d) an iron spike set with cement in a drill hole or depression.

Note 10.—Embedded in earth 3 feet below the surface of the ground (a) a bottle in an upright position, (b) an earthenware jug in an upright position, (c) a brick in a horizontal position with a drill hole in its upper surface.

Reference marks

Note 11.—A standard disk reference mark with the arrow pointing toward the station set at the center of the top of (a) a square block or post of concrete, (b) a concrete cylinder, (c) an irregular mass of concrete.

Note 12.—A standard disk reference mark with the arrow pointing toward the station (a) wedged in a drill hole in outcropping bedrock, (b) set in concrete in a depression in outcropping bedrock, (c) wedged in a drill hole in a boulder, (d) set in concrete in a depression in a boulder.

Note 13.—A standard disk reference mark with the arrow pointing toward the station, set in concrete at the center of the top of a tile (a) which is embedded in the ground, (b) which is surrounded by a mass of concrete, (c) which is fastened by means of concrete to the upper end of a long wooden pile driven into the marsh, (d) which is set in a block of concrete and projects from 12 to 20 inches above the block.

Witness marks

Note 14.—A conical mound of earth surrounded by a circular trench.

Note 15.—A tree marked with (a) a triangular blaze with a nail at the center and each apex of the triangle, (b) a square blaze with a nail at the center and each corner of the square, (c) a blaze with a standard disk reference mark set at its center into the tree.

ADDITIONAL NOTES ON THE MARKING OF STATIONS

Station marks

Note 16.—The standard survey mark of the Mississippi River Commission consisting of a steel pipe, 4 inches in diameter and about 4 feet long, resting on a vitrified tile, 18 inches square and 4 inches thick. The bottom end of the pipe is split for several inches and spread out to about 10 inches in diameter. A brass cap is riveted on the top end of the pipe. The cap is marked "Mississippi River Commission. \$250 fine for disturbing this mark"; on each side of a small hole in the center are the letters "U.S."; below this are the words "Latitude", "Longitude", "Elevation above sea", with a blank space left after each for cutting in the data. In the tile is leaded a copper bolt surrounded with the inscription "Mississippi River Commission, U.S." in sunk letters.

MISSISSIPPI RIVER ARC, ARKANSAS STATE LINE TO DONALDSONVILLE

Principal points

Weise (Chicot County, Ark., H. W. Hemple, 1929).—About 10.6 miles by road southeast of Eudora. To reach from Eudora go south 9.2 miles on U.S. Route 65, to point where highway turns sharply to right and dirt road leads straight ahead (filling station is on curve to south). Go straight ahead on dirt road and take first left turn, and follow parallel to levee to station. Station is 1.2 miles from Route 65 and about 40 meters (131 feet) south of dirt road, on levee banquette at right angle in levee, and about 80 meters (262 feet) south of house occupied by Leslie Taylors (colored), manager of the B. Weise plantation. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference mark no. 1 is standard reference disk in concrete, note 11a, on north side of road, in edge of cultivated field, about 50 meters (164 feet) west of large cottonwood tree, and 0.4 mile from station in azimuth $84^{\circ}17'32''$. *Bench Mark 83/4* (see description thereof) is 82.894 meters (271.96 feet) from station in azimuth $197^{\circ}38'$.

Hanna (Chicot County, Ark., H. W. Hemple, 1929).—About 1 mile south of town of Eudora. To reach from Eudora, take Route 59 at junction of Routes 65 and 59 and follow for 1.3 miles to road leading across railroad tracks. Cross tracks and take first private road leading north. Station is in pasture, on highest land in vicinity, about 200 meters (656 feet) east of Route 65, about 200 meters (656 feet) north of church, 122.4 feet southwest of southwest corner of Negro house, 114 feet west of 48-inch oak tree, and 388 feet east of east rail of Missouri Pacific Railway. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 3 feet east of west fence line of pasture, 60 feet east of east rail of railway, 165 feet north of south fence line, 33 feet northwest of 42-inch oak tree, and 121.9 meters (400 feet) from station in azimuth $74^{\circ}38'18''$. No. 2 is 8 feet east of west fence line, 67 feet east of east rail of railway, 11 feet west of 16-inch locust tree, 400 feet south of railway crossing, and 332.7 meters (1,092 feet) from station in azimuth $186^{\circ}11'05''$.

Gage (East Carroll Parish, H. W. Hemple, 1929).—About 16 miles by road southeast of Eudora, 1.6 miles southeast of Millikin on the levee banquette one-fourth mile northeast of turn in U.S. Route 65 (where dirt road goes northeast across levee), northeast of small store, which is 100 yards south of the turn, one-half mile southwest of Pilcher Point Landing, and just south of wire fence crossing levee. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 mile south of small store mentioned above, 10 feet east of center line of Route 65, and two-fifths mile from station in azimuth $40^{\circ}03'04''$. No. 2 is 2 feet east of wire fence along west side of dirt road referred to above, and 78.6 meters (257.9 feet) from station in azimuth $106^{\circ}03'$. *B.M. Gage 89 (M.R.C.)* (see description thereof) is 390.33 meters (1,280.6 feet) from station in azimuth $43^{\circ}24'02''$.

Kilbourne (East Carroll Parish, H. W. Hemple, 1929).—About 1.7 miles southeast of Kilbourne, on land owned by Jes Tullios. Reached from Kilbourne on Route 59 by going east 1.3 miles along road to Millikin to road leading south, thence south 1.1 miles to station, which is about 200 meters (656 feet) northwest of derrick of dry oil well built by H. L. Hunt Co. of El Dorado, Ark., about 300 feet south of wide gully at east fence line, 36 feet east of the center line of north-and-south road, and 181 feet south of gate leading into first farmyard south of

gully on west side of north-and-south road. Station and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in southwest corner of the John Henderson farm at north fence line, 134 feet west of house, 15 feet north of center line of road, 48 feet east of where road turns north at the western end of Henderson's garden, and about one-fourth mile from station in azimuth $78^{\circ}11'09''$. No. 2 is at west fence line, 17 feet west of center line of north-and-south road, 69 feet south of gate to farmyard on the west side of the road, and 37.58 meters (123.3 feet) from station in azimuth $159^{\circ}42'$. Azimuth from station to Hunt Co. oil derrick is $339^{\circ}00'20''$.

Gate (East Carroll Parish, H. W. Hemple, 1929).—Station is 3.8 miles north of levee from Lake Providence, on levee banquette at point where levee makes right angle turn to east (the levee goes east 0.5 mile and then turns north), and just east of gate in fence at foot of levee. Reached from Lake Providence by going 3.8 miles north along banquette of levee. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on levee banquette, 283.15 meters (929.0) feet from station in azimuth $270^{\circ}23'02''$. No. 2 is on levee banquette, 75.52 meters (247.8 feet) from station in azimuth $48^{\circ}18'$.

Bennett (East Carroll Parish, H. W. Hemple, 1929).—About $5\frac{1}{2}$ miles northwest of town of Lake Providence on road to Oakgrove, about 1 mile west of Route 65, on large plantation of which M. O. Bennett of Lake Village, Ark., is superintendent and S. L. House overseer, 75 feet south of center line of road leading to Oakgrove, across road from residence of Mr. House, 86.5 feet north by east of northeast corner of sheet metal warehouse, 84.5 feet west of fence line running north and south, and 143 feet east of 60-inch cottonwood tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 51 feet north of center line of road, 53 feet south of southwest corner of plantation store, 35 feet west of fence corner on north side of road, and 145 feet from station in azimuth $220^{\circ}44'$. No. 2 is 52 feet south of center line of road, 34 feet northwest of northwest corner of frame house, in northeast fence corner, and 1,135.5 feet from station in azimuth $276^{\circ}29'23''$.

Wilman (East Carroll Parish, H. W. Hemple, 1929).—About 5 miles, airline, south of Lake Providence, at prominent angle in levee, on the banquette. To reach from Lake Providence go 5.0 miles south of U.S. Route 65 to road leading east at Wilman railroad sign board, cotton gin, and store, turn east across tracks and go 0.4 mile to fork, take left fork 0.3 mile to levee and station, which is 50 meters (164 feet) northeast of wooden gate across road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on levee banquette, beside gate in fence crossing levee, and 473.17 meters (1,552.4 feet) from station in azimuth $176^{\circ}00'34''$. No. 2 is on south side of east-and-west road, beside gate in front of house, about 100 yards east of Route 65, and about one-half mile from station in azimuth $71^{\circ}06'50''$.

Goode (East Carroll Parish, H. W. Hemple, 1929).—About 8.5 miles southwest of town of Lake Providence, on the west side of Lake Providence-Epps Road, about 150 meters (492 feet) south of home of Mr. Goode, in northeast corner of yard surrounded by thorn bushes. Station is 23.4 meters (77 feet) west of center line of main highway, 29.6 meters (97 feet) southeast of southeast rail of old logging road just after it crosses highway, and 28.7 meters (94 feet) north of center of 30-inch pecan tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 6.4 meters (21 feet) southeast of a dipping vat, 9.4 meters (31 feet) west of center line of highway, 4.3 meters (14 feet) east of small iron pump, and 21.49 meters (70.5 feet) from station in azimuth $251^{\circ}27'$. No. 2 is in southeast corner of yard about a negro shack, 23.16 meters (76.0 feet) southeast of northeast corner of house, 14.16 meters (46.5 feet) west of center line of highway, 19.51 meters (64.0 feet) east of southeast corner of brick fireplace on south side of negro shack, 27.27 meters (89.5 feet) south of 30-inch pecan tree, and 55.32 meters (181.5 feet) from station in azimuth $23^{\circ}16'$.

Homestead (East Carroll Parish, H. W. Hemple, 1929).—About 8 miles southeast of Lake Providence, on the levee banquette. To reach from Main Street, Lake Providence, go 7.4 miles south on U.S. Route 65 to small white school on west side of road, continue 0.2 mile south of school to dirt road leading east, follow dirt road 2.9 miles to forks; take right fork 0.2 mile to levee, turn

right onto levee banquette and go 0.5 mile to station, which is 0.9 mile by road southeast of plantation house of old Homestead plantation. At station, levee makes sharp bend from west to southeast. It extends west about 1 mile, then southeast about 400 meters (1,312 feet), and then turns northeast. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is opposite bend in levee, 25 feet south of center line of east-and-west road, about one-fourth mile east of long tin hay barn, and 210.95 meters (692.1 feet) from station in azimuth $200^{\circ}10'43''$. No. 2 is on north side of road, just west of entrance to tin hay barn, and two-fifths mile from station in azimuth $118^{\circ}56'47''$.

Elliott (East Carroll Parish, H. W. Hemple, 1929).—About 2.3 miles by road west of Transylvania, a town on U.S. Route 65, on land owned by Jeff Elliott, 14.6 meters (48 feet) south of center line of road, 80.92 meters (265.5 feet) east of northeast corner of colored church, 55.5 meters (182 feet) west of where dirt road forks off to southwest, and 25.3 meters (83 feet) northwest of center line of this road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 18 inches below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is near the northeast corner of a yard, 24.2 meters (79 feet) southeast of dirt road mentioned above, 6.1 meters (20 feet) south of an east-and-west road, 43.0 meters (141 feet) east of intersection of east-and-west and southwest-and-northeast dirt roads, 28.65 meters (94.0 feet) northeast of northwest corner of house porch, 12.80 meters (42.0 feet) southeast of $\frac{1}{4}$ -inch iron pipe projecting 3 feet on north side of road, and about one-half mile from station in azimuth $52^{\circ}53'04''$. No. 2 is 10.0 meters (33 feet) northeast of northeast corner of church, 7.3 meters (24 feet) south of center line of gravel road, and 73.46 meters (241.0 feet) from station in azimuth $106^{\circ}33''$.

Loop (East Carroll Parish, H. W. Hemple, 1929).—About 2.0 miles by road and levee from the railroad station at Alsatia, on the levee banquette. To reach from U.S. Route 65 at Alsatia railroad station, go east 1.5 miles to construction camp at levee, follow levee one-half mile south to station, which is just south of junction of old and new levees. A better route starts at Roosevelt railroad station (on Route 65) and goes east 5.0 miles to levee, then turns left and follows levee 3.3 miles to station. Station is about 100 yards south of angle in old levee where its direction changes from southeast to northeast. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark no. 2 is standard reference disk in concrete, note 11a, at foot of levee banquette, and 0.35 mile from station in azimuth $357^{\circ}19'06''$. Another reference mark, no. 1, was apparently established by signal-building party, but not found by observing party.

Alsatia (East Carroll Parish, H. W. Hemple, 1929).—About 1.8 miles by road west of town of Alsatia, 17.7 meters (58 feet) northwest of road that forks off to south from the main road, 9.8 meters (32 feet) south of center line of an east-and-west road which is south of and parallel to drainage ditch, and 23.62 meters (77.5 feet) northwest of northwest corner of fireplace of deserted negro cabin at southeast corner of forks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 8.5 meters (28 feet) south of center line of east-and-west road, 4.6 meters (15 feet) southeast of center line of road leading south, 24.4 meters (80 feet) north by east of northwest corner of fireplace on west side of deserted cabin, and 29.93 meters (98.2 feet) from station in azimuth $269^{\circ}27''$. No. 2 is near northeast corner of yard, 20.27 meters (66.5 feet) northeast of northeast corner of house, 5.03 meters (16.5 feet) west of center line of road, 7.77 meters (25.5 feet) southeast of southeast corner of barn, 3.6 meters (12 feet) south of yard fence, and about one-fourth mile from station in azimuth $31^{\circ}51'43''$.

Henderson (East Carroll Parish, H. W. Hemple, 1929).—About 2.7 miles by levee from Henderson's post office and store, on levee banquette at fifth angle in levee from store. To reach from Tallulah go north about 12 miles on U.S. Route 65 to town of Roosevelt, turn east on gravel road at south end of railroad station and go 6.4 miles to Henderson's post office, go on to levee banquette, turn right and follow banquette to station, which is opposite 60-inch cottonwood tree with top broken out 20 feet up. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at southwest corner of fence around house occupied by Aaron Moe, about 30 feet north of center line of dirt road, and about one-fourth mile from station in azimuth $82^{\circ}08'47''$. No. 2 is east of northeast corner of Galilee Church (colored) between forks in dirt road, and two-fifths mile

from station in azimuth $155^{\circ}37'48''$. *P.B.M. Vista (M.R.C.)* (see description thereof) is 29.92 meters (98.2 feet) from station in azimuth $137^{\circ}56'$.

Sondheimer (East Carroll Parish, H. W. Hemple, 1929).—In the town of Sondheimer, 1 block south and 1 block west of railroad station, in east part of yard used by Sondheimer Lumber Co. for storing lumber, 28.6 meters (94 feet) west of center line of Route 65 where it jogs east for about 30 meters (98 feet), 30.33 meters (99.5 feet) northwest of 16-inch poplar tree, 13.1 meters (43 feet) northwest of northwest post of open lumber shed, and 51.8 meters (170 feet) south of center line of road to sawmill. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in southwest corner of yard, 6.7 meters (22 feet) east of center line of Route 65, 0.6 meter (2 feet) west of yard fence, and 35.51 meters (116.5 feet) from station in azimuth $249^{\circ}53'$. No. 2 is 21.3 meters (70 feet) west of center line of Route 65, 2.7 meters (9 feet) north of center line of road to sawmill, 4.3 meters (14 feet) southwest of southwest corner of corner house, and 54.56 meters (179.0 feet) from station in azimuth $165^{\circ}10'$.

Talla (Madison Parish, H. W. Hemple, 1929).—About 8 miles northeast of Tallulah, on the levee banquette. To reach from Tallulah go north 6.6 miles on U.S. Route 65 to Tallabena's store, turn east across railroad and follow dirt road 1.8 miles to levee and station, which is 105 feet north of center line of dirt road crossing levee and leading to Buckhorn Landing. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about 40 feet northeast of northeast corner of deserted negro cabin at foot of levee, and 160.59 meters (526.9 feet) from the station in azimuth $352^{\circ}08'21''$. No. 2 is about 30 feet north of center line of dirt road, southwest of southwest corner of Mercy Seat Church (colored), and 0.6 mile from station in azimuth $88^{\circ}19'53''$. *B.M. 100/d (M.R.C.)*, marked by a pipe and cap, is at foot of levee, about 20 feet north of center line of dirt road, and 50.91 meters (167.0 feet) from station in azimuth $60^{\circ}51'$.

Bena (Madison Parish, H. W. Hemple, 1929).—About 0.2 mile south and 1.4 miles west of town of Tallabena, on land owned by R. Taylor, 6.4 meters (21 feet) north of center line of dirt road, near point where road enters woods, 11.6 meters (38 feet) south of center of 30-inch cottonwood tree, 7.0 meters (23 feet) west of shallow drainage ditch, and 20.7 meters (68 feet) northwest of northwest corner of fenced lot on south side of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 10.4 meters (34 feet) south of road, 29.9 meters (98 feet) east of fence corner, 0.4 meter (1.3 feet) north of fence corner, and 42.21 meters (138.5 feet) from station in azimuth $294^{\circ}16'$. No. 2 is 2.1 meters (7 feet) west of center line of faint dirt road, 55.8 meters (183 feet) south of center line of east-and-west dirt road, and 63.12 meters (207.1 feet) from station in azimuth $13^{\circ}24'$.

King (Madison Parish, H. W. Hemple, 1929).—About 17.5 miles by road, southeast of Tallulah and 6.5 miles by road northeast of Quimby, on the King plantation. To reach from Tallulah go 13 miles south on Route 65 to Johnson's, which is about 1.5 miles north of Quimby, then take main road leading east for 4.5 miles to King store and plantation. Station is on north side of Boundary Bayou, near northwest corner of old cotton gin, about 125 meters (410 feet) west of old King store, 195 feet east of north-and-south road, and 231 feet north of east-and-west road, which roads make T intersection just west of old King store. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 420 feet east of north-and-south road, 21 feet south of east-and-west road, and 94.5 meters (310 feet) from station in azimuth $247^{\circ}14'$. No. 2 is 24 feet east of center line of north-and-south road, 201 feet north of east-and-west road, 14 feet west of 30-inch tree, and 52.4 meters (172 feet) from station in azimuth $27^{\circ}55'$.

Culley (Warren County, Miss., H. W. Hemple, 1929; 1931).—About 10 miles south-southwest of Vicksburg, on land owned by J. W. Culley. To reach from Vicksburg, go 10 miles south on U.S. Route 61 to Glass railroad station, continue about one-fourth mile south, then turn east (left) on private road through brush, across small bridge, through gate, across railroad, through another gate, then one-eighth mile to first cabin, turn south (right) in front of cabin across pasture to another cabin, turn southeast, up ridge one-fourth mile by old road to top of

For notes in regard to marking of stations see p. 71.

bluff and station. Station is three-fourths mile southeast of Glass railroad station, one-half mile east of Route 61, and 100 feet north of old road crossing bluff. Surface and underground marks are standard station disks set in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on top of bluff, 120.58 meters (395.6 feet) from station in azimuth $342^{\circ}09'32''$. No. 2 is on top of bluff, 38.49 meters (126.3 feet) from station in azimuth $78^{\circ}36'$.

Callman (Madison Parish, H. W. Hemple, 1929; 1931).—About 5 miles southwest of Mounds, near crossroads store known locally as the "Blue Front". Reached from Mounds by gravel road leading southwest from U.S. Route 80. Station is 22.2 meters (73 feet) south of center line of east-and-west road, 40.8 meters (134 feet) west of north-and-south road, 26.4 meters (87 feet) northwest of twin locust tree, and 36.0 meters (118 feet) northeast of 30-inch tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 4.6 meters (15 feet) south of center of dirt road, and 300 meters (984 feet) from station in azimuth $56^{\circ}57'37''$. No. 2 is near southwest corner of crossroads store, 6.7 meters (22 feet) north of center line of road, and 27.43 meters (90.0 feet) from station in azimuth $150^{\circ}54'$.

Mounds southeast base (Madison Parish, H. W. Hemple, 1929; 1931).—About one-half mile west of town of Delta Point, on bench of levee, 14.0 meters (46 feet) northwest of crest of levee, and at point of intersection of tangents of first curve of Illinois Central Railroad west of Delta Point. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 56.1 meters (184 feet) northwest of junction of narrow dirt road leading west from old gravel road (formerly a part of Route 80), 30.5 meters (100 feet) northwest of "Danger" sign on gravel road, 9.1 meters (30 feet) west of center line of gravel road, 9 meters (30 feet) northeast of northeast rail, and 202.7 meters (665 feet) from station in azimuth $108^{\circ}23'54''$. No. 2 is 9.4 meters (31 feet) south of center line of highway, 31.1 meters (102 feet) west of northeast corner of cotton field, 93.0 meters (305 feet) north of near rail measured on line with station, and 155.4 meters (510 feet) from station in azimuth $179^{\circ}40'56''$. *Delta southwest base* (C. & G. S.) (*P.B.M. 107/S* (*M.R.C.*)) (see description thereof) is 146.52 meters (480.7 feet) from station in azimuth $103^{\circ}58'14''$.

Mounds northwest base (Madison Parish, H. W. Hemple, 1929; 1931).—In town of Mounds, about opposite east end of Mounds railroad station, in narrow strip of land between U.S. Route 80 and railroad, 6 paces south of edge of pavement and 5 paces east of path to railroad station. The surface mark is a standard station disk in concrete block 24 by 24 by 28 inches, projecting 6 inches. Underground mark is standard station disk in concrete, note 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 (Mounds base A), is on north edge of roadbed of Illinois Central Railroad, about 250 meters (820 feet) east of Mounds railroad station, 20 paces east of switch for northerly siding, 21 paces west of switch for southerly siding, 4 feet north of north rail of main track, 10 meters (33 feet) south of telephone pole no. 8 on south side of Route 80, and 855.0 feet from station in azimuth $291^{\circ}37'25''$. No. 2 is at northeast corner of railroad station, 118.55 feet from station in azimuth $46^{\circ}26'$.

Johnson (Madison Parish, H. W. Hemple, 1929; 1931).—About one-half mile south of railroad flag station, Thomastone, and U.S. Route 80, on the west side of Walnut Bayou, on land owned by W. G. Johnson, 6.1 meters (20 feet) west of center line of settlement road leading along west side of bayou, 37.8 meters (124 feet) southeast of 24-inch chinaberry tree which is the southernmost of group of three, 6.1 meters (20 feet) east of garden fence, and 22.40 meters (73.5 feet) northeast of northeast corner of brick fireplace on third cabin south of Mr. Johnson's house. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 6.7 meters (22 feet) east of center line of road, 23.2 meters (76 feet) east-southeast of 24-inch cottonwood tree, and 39.93 meters (131.0 feet) from station in azimuth $310^{\circ}52'$. No. 2 is 5.2 meters (17 feet) east of center line of road, 18.9 meters (62 feet) northeast of chinaberry tree mentioned above, 25.6 meters (84 feet) south-southeast of garden fence corner, 24.7 meters (81 feet) southeast of center of old windmill, and 51.38 meters (168.6 feet) from station in azimuth $164^{\circ}25'$.

Duck (Madison Parish, H. W. Hemple, 1929).—About 2.6 miles north of Mounds and 1 mile south of Duck Port, on top of levee. To reach from Mounds

on U.S. Route 80, go north 1.9 miles from railroad station on gravel road to where road makes a sharp turn to left, take dirt road leading right 0.5 mile to the levee, turn left and go 0.2 mile by road at foot of levee to station, which is at south end of new levee and north end of old levee (which has no banquette), just south of road crossing levee, and about 300 meters (984 feet) southeast of large frame house with three brick chimneys. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in edge of cultivated field, at foot of levee, and 227.07 meters (745.0 feet) from station in azimuth $341^{\circ}52'50''$. No. 2 is on west side of dirt road leading northwest from levee, about 50 feet north of northeast corner of fence around negro cabin (second cabin along road), and about one-fourth mile from station in azimuth $120^{\circ}01'51''$.

Tallulah (Madison Parish, H. W. Hemple, 1929; 1931).—About 4.2 miles northeast by road of Tallulah, 0.8 mile north of the airport and landing field, on the east bank of a north-and-south drainage ditch, 11.0 meters (36 feet) west of center line of gravel road, just south of where road turns east, and 25.9 meters (85 feet) west of north corner of brick fireplace of cabin on east side of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 11.3 meters (37 feet) southeast of center line of road, 0.6 meter (2 feet) northwest of northwest corner of cotton shed, 17.1 meters (56 feet) northeast of northeast corner of fireplace, 2.7 meters (9 feet) southwest of center line of road leading to cotton field, and 32.46 meters (106.5 feet) from station in azimuth $258^{\circ}35'$. No. 2 is 8.8 meters (29 feet) southeast of center line of road, 11.1 meters (36 feet) southwest of center of 18-inch tree, 11.6 meters (38 feet) from corner of house, and 281.84 meters (924.7 feet) from station in azimuth $29^{\circ}26'35''$.

Junction (Madison Parish, H. W. Hemple, 1929).—About 9 miles east of Tallulah, on top of levee, at junction of old and new levee; where road along banquette rises within 3 feet of top of levee. To reach from Tallulah go 2.1 miles east on U.S. Route 80 from highway intersection, turn left on gravel road, passing airport, 3.3 miles to T intersection, turn left and go 1 mile to fork, take right fork 1.8 miles to levee, and then south 3.8 miles on banquette road to station. Station and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on levee banquette, 279.7 meters (918 feet) from station in azimuth $317^{\circ}20'38''$, No. 2 is on levee banquette, 0.3 mile from station in azimuth $103^{\circ}17'57''$.

Millikin (Madison Parish, H. W. Hemple, 1929).—About 7 miles northeast of Tallulah, at old town site of Millikin Bend, and on levee banquette, at point where road from west meets levee and turns north and south on banquette. To reach from highway intersection at Tallulah go 2.1 miles east on U.S. Route 80 to gravel road, turn left (pass airport) and go 3.3 miles to T intersection, turn left and go 1.0 mile to fork; take right fork 1.8 miles to levee and station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on north side of road, near large oak tree, and 177.39 meters (582.0 feet) from station in azimuth $35^{\circ}35'23''$. No. 2 is on levee banquette, 374.17 meters (1,227.6 feet) from station in azimuth $157^{\circ}36'48''$.

McMellin (Tensas Parish, H. W. Hemple, 1929).—About 7 miles by road, northeast of Newelton, $2\frac{1}{2}$ miles east of Balmoral's store, 2 miles east of Route 65, 0.9 mile east of McMellin's store on McMellin plantation, about 300 meters (984 feet) west of plantation house, 15.8 meters (52 feet) north of center line of sand road and 11.0 meters (36 feet) east-northeast of 20-inch chinaberry tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 150 meters (492 feet) west of plantation house, 6.4 meters (21 feet) north of center line of road, 18.9 meters (62 feet) north of center of 48-inch oak tree, 1.7 meters (5.6 feet) west of fence, and 189.28 meters (621.0 feet) from station in azimuth $270^{\circ}01'31''$. No. 2 is 8.3 meters (27 feet) south of center line of road, 4.0 meters (13 feet) northeast of center of 48-inch stump, and 24.08 meters (79.0 feet) from station in azimuth $4^{\circ}42'$.

Tyler (Claiborne County, Miss., H. W. Hemple, 1929).—About 12 miles northwest of Port Gibson, on top of bluffs overlooking small village of Grand Gulf, on land owned by William Tyler. To reach from Port Gibson courthouse go 4.1 miles north on U.S. Route 61 to Ingleside Road, turn left onto this road and go 1.6 miles to fork, take left fork 0.8 mile to another fork, take right fork over bridge 0.7 mile

For notes in regard to marking of stations see p. 71.

to a T intersection, turn right and go 0.8 mile to lane leading left to Tyler's house and station which is on highest point of knoll between Tyler's house and his tool shed, and about 70 yards south of Grand Gulf-Ingleside Road. Surface and underground marks are standard station disks set in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in fence line beside lane, 27.88 meters (91.5 feet) from station in azimuth $280^{\circ}00'$. No. 2 is under large oak tree on edge of bluff, 28.04 meters (92.0 feet) from station in azimuth $125^{\circ}08'$.

Peek (Tensas Parish, H. W. Hemple, 1929).—About 7 miles south of Newelton, three-fourths mile south of J. S. Peek's store, on the levee banquette, and 122 meters (400 feet) south of angle in levee where it bends abruptly to westward. This bend is about one-half mile northwest of point where levee broke in 1927. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on levee banquette at bend referred to above, and 124.37 meters (408.0 feet) from station in azimuth $164^{\circ}23'14''$. No. 2 is on crest of levee, 9.90 meters (32 feet) from station in azimuth $75^{\circ}53'$. A P.B.M. is about three-fourths mile from station in azimuth $281^{\circ}57'48''$. Traverse mark, C.P. 148 (U.S.E.) is 16.65 meters (54.6 feet) southwest of reference mark no. 1, and in azimuth $157^{\circ}28'57''$ from station.

B.M. Point Pleasant (M.R.C.) (Tensas Parish, H. W. Hemple, 1929).—On right bank of Mississippi River, $1\frac{1}{2}$ miles below Point Pleasant Landing and mouth of Old River or Palmyra Lake, $1\frac{1}{2}$ miles west of Buckridge Landing, 310 meters (1,017 feet) west of prominent angle in levee at junction of old and new levees, 93 meters (305 feet) north of top of levee, on small mound formerly occupied by house, 6.9 meters (23 feet) in azimuth 20° from remains of brick chimney, 64 meters (210 feet) from lower end of mound, 19.5 meters (64 feet) from upper end of mound, 7.6 meters (25 feet) from back of mound, and about 6 meters (20 feet) north of wire fence. Station is about $8\frac{1}{2}$ miles by road east of Balmoral store on Route 65, and 5.4 miles by road south and east from corner store on Buckridge plantation. To reach from Balmoral store go one-fourth mile east on Route 65 to road leading east, go 3 miles on this road to corner store, then turn south and follow main road 0.8 mile to T intersection, follow main road east to levee, turn right on levee and follow bench of levee 0.5 mile to station. Station marked by standard mark of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below, as described in note 16. Witnesses are two blazed 6-inch cottonwoods, 66.6 meters (219 feet) from station in azimuth 315° , and 64.7 meters (212 feet) in azimuth 320° .

Trim (Claiborne County, Miss., H. W. Hemple, 1929).—About 15 miles southwest of Port Gibson. To reach from Port Gibson by the Port Gibson-Alcorn-Rodney gravel road go to fork with a sign "Alcorn College", take right fork and go 3.4 miles to station which is west of road, in small clearing, on knoll between old and new gravel roads, and about 0.3 mile north of Mike Trim's house. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on south side of road, 91.68 meters (300.8 feet) from station in azimuth $244^{\circ}51'$. No. 2 is on side of road, near intersection of old and new roads, and 58.28 meters (191.2 feet) from station in azimuth $4^{\circ}07'$.

Osceola (Tensas Parish, H. W. Hemple, 1929).—About 5 miles by road north of St. Joseph, on the Osceola plantation, about 300 meters (984 feet) south of Lake Bruin, about 200 meters (656 feet) southwest of plantation house, in cleared space south of east row of negro tenant houses, 16.4 meters (54 feet) north of fence along Route 65, and 12 meters (39 feet) west of north-and-south fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 10 meters (33 feet) south of center line of Route 65, in center of dirt road leading south from Route 65, and approximately 310 meters (1,017 feet) from station in azimuth $324^{\circ}03'53''$. No. 2 is 0.3 meter (1 foot) north of fence, in the same lot as station, and 15.98 meters (52.4 feet) from station in azimuth $66^{\circ}02'$.

Joseph (Tensas Parish, H. W. Hemple, 1929).—In southeast end of town of St. Joseph, in east end of courthouse square, 26.36 meters (86.5 feet) northwest of northwest corner of Masonic Temple, 13.1 meters (43 feet) south of gravel street, 55.8 meters (183 feet) west of gravel street, 22.9 meters (75 feet) west of 18-inch tree, and 23.8 meters (78 feet) east of 20-inch tree. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. P.B.M. *St. Joseph (M.R.C.)* (see description thereof) is 29.03 meters (95.2 feet) from

station in azimuth $17^{\circ}22'$. *Prim. Trav. Sta. No. 78 (U.S.G.S.)* is 34.73 meters (113.9 feet) from station in azimuth $17^{\circ}37'$. *B.M. Courthouse (M.R.C.)* (see description thereof) is 173.47 meters (569.1 feet) from station in azimuth $113^{\circ}48'24.7''$. *South Meridian (G.L.O.)* (see description thereof) is 53.51 meters (175.6 feet) from station in azimuth $50^{\circ}03'$.

Bang (Tensas Parish, H. W. Hemple, 1929).—About 7 miles south of St. Joseph railroad station, on land owned by J. H. Bangham, on small mound about 6 feet higher than surrounding country, about 200 meters (656 feet) south of manager's house, 19.0 meters (62 feet) west of center of clump of willow trees, 19.0 meters (62 feet) east of fence, and 8.5 meters (28 feet) north of fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete note 11a. No. 1 is inside fence corner, 10.4 meters (34 feet) west of center line of Route 65, 5.8 meters (19 feet) north of center line of dirt road leading west from Route 65, 0.5 meter (1.6 feet) north of fence line, and 1.0 meter (3 feet) west of fence post at corner, and about one-fourth mile from station in azimuth $273^{\circ}18'39''$. No. 2 is near north side of base of mound, 0.6 meter (2 feet) south of fence line, and 24.38 meters (80.0 feet) from station in azimuth $170^{\circ}22'$.

Jones (Jefferson County, Miss., H. W. Hemple, 1929).—About 25 miles north of Natchez, on mound on bluffs, on land owned by Jesse Brock. To reach from Natchez go 20.0 miles north on U.S. Route 61 to L. D. Stower's store, go 1 mile north of this store to road leading west and follow 1.9 miles to fork, take left fork 1.8 miles and turn right into lane leading to Brock's house and station, which is about 40 yards north of house, northwest of small barn, and southwest of cabin, both at foot of mound. Surface and underground marks are standard station disks in concrete notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on east side of road opposite intersection of lane to station, and 84.00 meters (275.6 feet) from station in azimuth $323^{\circ}55'$. No. 2 is under tree beside yard fence in front of Brock's house, and 55.47 meters (182.0 feet) from station in azimuth $49^{\circ}58'$.

Waterproof (Tensas Parish, H. W. Hemple, 1929).—In town of Waterproof, at angle in levee, $56\frac{1}{2}$ feet south of dirt road crossing levee on crown, about 200 meters (656 feet) northeast of town water tank, and 131 feet southeast of point where road running along base of levee turns west into main part of town. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, $167\frac{1}{2}$ feet south of reservoir at base of water tank, on top of levee, 103 feet east of center line of Route 65, and 200.4 meters (657 feet) from station in azimuth $66^{\circ}49'34''$. *P.B.M. LXXI* (see description thereof) is 74.51 meters (244.5 feet) from station in azimuth $191^{\circ}46'$. Azimuth from station to *Waterproof, black water tank*, is $83^{\circ}06'25''$.

Stout (Adams County, Miss., H. W. Hemple, 1929).—About 13 miles north of Natchez, on north-and-south ridge known as Pine Ridge, on land owned by John Stout. To reach from Natchez post office go 0.4 mile east on Main Street to Pine Street, turn left onto Pine Street and keep gravel road (Pine Ridge Road) to end of paving 2.1 miles to fork just beyond bridge, take left fork and go 5.1 miles to another fork, take left fork and go 1.9 miles to fork, keep to left and go 2.1 miles to fork with negro school on left, keep left road and go 1.7 miles to dim wagon road and stock trail which turns sharply to right along pine-covered ridge, follow this trail to station, which is in pine grove, on knoll to right just before an open space, and about 200 yards east of bluffs. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in trail, 120.21 meters (394.4 feet) from station in azimuth $13^{\circ}20'00''$. No. 2 is at edge of open space mentioned above, and 104.69 meters (343.5 feet) from station in azimuth $126^{\circ}35'$.

Smith (Concordia Parish, H. W. Hemple, 1929).—About 6 miles south of railway station at Waterproof, 22.6 meters (74 feet) northwest of center line of Route 65, 57.9 meters (190 feet) northeast of northeast corner of church on northwest side of road, and 11.73 meters (38 feet) northwest of northwest fence line of road. Surface and underground marks are standard disks in concrete, notes 1a and 7a, except that reference disk was used in upper mark, which is 18 inches below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on southeast shoulder of road, 6.1 meters (20 feet) northwest of fence corner, 10.4 meters (34 feet) southwest of southwest edge of wood bridge of road leading southeast from Route 65, 4 meters (13 feet) southeast of center line of Route 65, 0.82 meter (2.7 feet) northeast of northeast corner of concrete culvert, and about one-fourth mile from station in azimuth $222^{\circ}15'26''$. No. 2

For notes in regard to marking of stations see p. 71.

is 8.5 meters (28 feet) southeast of center line of Route 65, and 31.08 meters (102.0 feet) from station in azimuth 298°35'.

Car (Concordia Parish, H. W. Hemple, 1929).—About 5½ miles by road northeast of railroad station in Ferriday, on bench of levee, 92 feet southeast of southeast corner of yard fence surrounding home of Percy Jones, 42 feet west of top of levee, and 57 feet east of center line of the levee road. To reach from Ferriday go north 5.5 miles on Route 65 to dirt road to levee, turn left and go 0.1 mile to first bend in levee and station. Dirt road is 0.6 mile north of Zion Church (colored), and 2.3 miles north of gravel road leading west to Monroe. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 2 inches below the surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 20 feet west of center line of levee road, 13 feet south of south fence line of Percy Jones' house, and 24.5 meters (80 feet) from station in azimuth 200°54'. No. 2 is at northeast corner of junction where dirt road to station leaves Route 65, 10.7 meters (35 feet) east of center line of Route 65, 5.5 meters (18 feet) north of center line of dirt road, and 215 meters (705 feet) from station in azimuth 108°30'18''.

Natchez (Adams County, Miss., H. W. Hemple, 1929).—About 3 miles north of Natchez, on land owned by J. S. Giles. To reach from Natchez post office go north on street west of post office 0.2 mile to railroad, cross and go 0.1 mile to left-and-right jog, continue 0.4 mile to end of concrete, continue 2.7 miles on main-traveled highway to small culvert and catch basin on left and V-shaped guard rail on right, turn left (west) here and cross pasture about 150 yards to station, which is on highest knoll in pasture, 33 feet south of 4-strand barbed wire fence which extends east to road from knoll, and about 100 yards south of two large pine trees in middle of pasture. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on west side of road, about 50 yards north of small culvert, 20 feet west of road, and 174.62 meters (572.9 feet) from station in azimuth 195°56'16''. No. 2 is on fence line south of road at curve east of station, and 149.13 meters (489.3 feet) from station in azimuth 258°33'35''. Azimuth from station to *Vidalia, municipal water tank, final*, is 33°17'42''.

Ferriday (Concordia Parish, H. W. Hemple, 1929; 1930).—In southeast part of town of Ferriday, on land owned by Fisher Lumber Corporation, on prolongation of tangent of Texas & Pacific Railway tracks to town of Willetts, 17.5 meters (57 feet) west of west rail, 60.0 meters (197 feet) north of center line of gravel street along south side of lumber yard, 79.0 meters (259 feet) north of north rail of east-and-west branch of Louisiana & Arkansas Railway, 81.7 meters (268 feet) north by west of northwest intersection of railway crossing at Concordia Junction. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 9.0 meters (30 feet) north of north rail of Louisiana & Arkansas Railway, 13.7 meters (45 feet) northwest of northwest crossing, 7.8 meters (26 feet) west of west rail of Texas & Pacific Railway, and 71.0 meters (233 feet) from station in azimuth 350°42'. No. 2 is 5.2 meters (17 feet) north of north rail, 5.2 meters (17 feet) south of center line of road on south side of lumberyard, about 205 meters (673 feet) east of center line of Route 65, and 139.3 meters (457 feet) from station in azimuth 47°04'35''. No. 3 is 64.9 meters (213 feet) west of center line of Route 65, 48.8 meters (160 feet) west of switch point on main line of east-and-west branch of Louisiana & Arkansas Railway, 3.3 meters (11 feet) south of south rail of main line, 3.7 meters (12 feet) east of northeast corner of freight house platform, 19.2 meters (63 feet) north of center line of street, 13.4 meters (44 feet) north of north rail of siding along north side of street and one-fourth mile from station in azimuth 55°01'55''.

Frogmore (Concordia Parish, H. W. Hemple, 1929).—About 1 mile west of railway station at Frogmore, at the first curve in tracks of Louisiana & Arkansas Railway, 20.4 meters (67 feet) south of south rail, 11.9 meters (39 feet) west of dirt road leading into cotton field, 41.8 meters (137 feet) south of center line of main highway into Jonesville, and 60.0 meters (197 feet) southwest of white whistle post alongside telegraph pole 217/5. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete note 11a. No. 1 is 8.5 meters (28 feet) south of center line of highway, 8.8 meters (29 feet) east of road into cotton field, 35.4 meters (116 feet) west of whistle post mentioned above, and 37.5 meters (123 feet) from the station. No. 2 is 9.8 meters (32 feet) east of center line of dirt road

(the first one crossing main highway west of Frogmore), 11.3 meters (37 feet) south of center line of main highway, 9.4 meters (31 feet) north of north rail of railway, 94.2 meters (309 feet) west of switch post, and 349.2 meters (1,146 feet) from the station. The position of this station was not determined.

P.B.M. LXIII (M.R.C.) (East base, Coast and Geodetic Survey) (Concordia Parish, _____, 1878; 1929).—In town of Vidalia just across the river from Natchez, in lot owned by J. Conti, immediately back of courthouse and jail, 55 meters (180 feet) from northwest corner of courthouse and jail, and 55 meters (180 feet) above Lake Concordia Road or Trinity Street. Marked by 14-inch square concrete post with copper bolt in center. Stone projects about 14 inches and is marked "1878" on its river side, and "U.S.C.S." on the opposite side.

Willetts (Concordia Parish, H. W. Hemple, 1929; 1930).—About 1 mile south of Willetts, a town about 7 miles southwest of Vidalia, on right of way of Texas & Pacific Railway, 45 feet south of center line of first dirt road crossing right of way south of Willetts, 29.7 feet east of east rail, 33 feet south of southwest corner of section house, and 537 feet south of south end of switch track below Willetts. Reached from Vidalia by following river road to point about 1 mile below where this road leads into Willetts. At this point a dirt road leads west to houses occupied by railway employees. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 5.5 feet south of center of 4-foot culvert, 28.5 feet west of west rail, and 219.6 meters (720 feet) from station in azimuth $357^{\circ}01'36''$. No. 2 is 81.2 feet west of west rail of Texas & Pacific Railway, 22 feet north of center line of east-and-west dirt road, 2 feet east of southeast corner of yard fence (painted white) about the houses occupied by railway section hands, and 30.08 meters (98.7 feet) from station in azimuth $130^{\circ}13'$.

Minor (Adams County, Miss., H. W. Hemple, 1929).—About 6 miles south of Natchez, on old Mount Hope plantation, owned by Mr. D. C. Minor of Natchez. To reach from Natchez, follow U.S. Route 61 to first road leading west after passing through underpass about 1.7 miles from post office, then go 2.3 miles on this road to fork, go 4.0 miles on left fork to side road leading right, take this road 0.5 mile, then take left fork 1.5 miles to road leading right, and follow this 0.5 mile to old deserted cabin on south side of east-and-west fence line. Here take road leading to right uphill to station, which is on top of knoll about 100 meters (328 feet) off large slip bank. An old fence of one strand of barbed wire is around knoll to northward. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is alongside trail leading to top of knoll and 65.0 meters (213 feet) from station in azimuth $261^{\circ}17'$. No. 2 is about 20 meters (66 feet) from edge of slip bank, and 37.03 meters (121.5 feet) from station in azimuth $44^{\circ}09'$.

Boger (Adams County, Miss., H. W. Hemple, 1929).—About 9 miles southeast of Natchez, on land owned by Dr. Charles Boger of Natchez. To reach from Natchez post office, go east 1.3 miles on U.S. Route 61 to end of concrete, turn right onto Liberty Road (gravel) and follow 6.8 miles to fork and sign "Kingston 9 mi.", turn right and go 1.5 miles to iron bridge over second creek, take right fork at east end of bridge and go 1.3 miles to another fork, turn right and go 0.8 mile to crest of ridge and colored graveyard. Station is south of road, up a 10-foot embankment, and east of graveyard. Surface and underground marks are standard station disks set in concrete, notes 1a and 7a. Reference marks are standard reference disks set in concrete, note 11a. No. 1 is 1 foot east of wire fence on high bank at east side of road, and 116.43 meters (382.0 feet) from station in azimuth $202^{\circ}40'$. No. 2 is in woods on west side of road leading from main road to graveyard, and 23.34 meters (76.6 feet) from station in azimuth $289^{\circ}34'$.

Ratcliff (Adams County, Miss., H. W. Hemple, 1929).—About 8 miles east of Natchez, and one-fourth mile west of Fenwick, a railroad crossing with one store, on land owned by Wallace H. Ratcliff. To reach from Natchez post office go east on U.S. Route 61 toward Vicksburg, 7.1 miles to town of Washington, turn right onto Route 22 and go 3.3 miles to gate on right leading into pasture. Station is about 200 yards from gate on top of highest land in pasture, 40 yards south of Route 22, and 74 feet northwest of old cistern. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in clearing, 60.74 meters (199.3 feet) from station in azimuth $336^{\circ}11'$. No. 2 is 10 feet south

of edge of bank overlooking Route 22, just south of wire fence, and 62.82 meters (206.1 feet) from station in azimuth $153^{\circ}37'$.

Foster (Wilkinson County, Miss., H. W. Hemple, 1929).—About 24 miles south-southeast of Natchez, on pine-covered knoll, on long ridge south of Homochitto Creek, known locally as the "Devil's Backbone", on land owned by Foster Creek Lumber & Manufacturing Co. To reach from Main Street in Natchez go 24 miles south on U.S. Route 61 to top of ridge. Station is in small clearing about 75 yards north of tip of wedge formed at crest of hill by telephone line through woods and U.S. Route 61, and about 60 yards west of U.S. Route 61. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on east side of U.S. Route 61, and 62.54 meters (205.2 feet) from station in azimuth $297^{\circ}43'$. No. 2 is about 40 yards north of where telephone line crosses road, and 34.14 meters (112.0 feet) from station in azimuth $5^{\circ}15'$.

Helena (Wilkinson County, Miss., H. W. Hemple, 1929).—About 13 miles northwest of town of Woodville, on the old Helena plantation, on land owned by R. B. Row of Lessley. To reach from Woodville go 1.8 miles northwest toward Fort Adams, then take left fork 1.7 miles to another fork, take left fork 7.4 miles to five-road intersection, follow Pleasant Valley road 1.9 miles, then take road to right 1.1 miles to negro tenant house and station, which is south of house, on small knoll, 30 feet west of center line of dirt road. Surface and underground marks are standard station disks set in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is across road from station, and distant therefrom 15.03 meters (49.3 feet) in azimuth $306^{\circ}01'$. No. 2 is on southwest side of road, 69.22 meters (227.1 feet) from station in azimuth $42^{\circ}55'$.

Red Bug (Wilkinson County, Miss., H. W. Hemple, 1929).—About 26 miles south-southeast of Natchez, on long ridge south of Homochitto Creek known locally as the "Devil's Backbone", on land owned by the Foster Creek Lumber & Manufacturing Co. of Stevenson. Reached from Main Street, Natchez, by going south 26 miles on U.S. Route 61. Station is on east side of road, about 30 feet east of edge of 5-foot embankment overlooking road, and east of two 110-foot pine trees on west side of road, one of which is blazed with triangle. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on east side of Route 61, 47.00 meters (154.2 feet) from station in azimuth $46^{\circ}52'$. No. 2 is on west side of Route 61, 44.81 meters (147.0 feet) from station in azimuth $185^{\circ}33'$.

Grimes (Wilkinson County, Miss., H. W. Hemple, 1929).—About 9 miles west of town of Woodville, on land owned by Grimes brothers. To reach from Woodville water tank, go 6.4 miles on Fort Adams Road, follow left fork to Grimes' farm and station, which is on crest of ridge, north of road, 21.5 feet west of southwest corner of shed, and 27.5 feet east of southwest corner of fence about the farmyard. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 155 feet north of center line of main road, 11 feet east of road leading into farmyard, and 94.9 meters (311.4 feet) from station in azimuth, $336^{\circ}13'$. No. 2 is 25 feet north of center line of main road, 52.5 feet northwest of northwest corner of concrete abutment of culvert, and 106.4 meters (349.1 feet) from station in azimuth $28^{\circ}20'46''$.

Woodville (Wilkinson County, Miss., H. W. Hemple, 1929).—In town of Woodville, on property owned by the county, across Main Street (U.S. Route 61) from the courthouse, in front of Presbyterian Church, and just east of concrete walk leading to church from Main Street. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. One reference mark is standard reference disk set flush in concrete walk at intersection of walk along north side of Main Street and walk to church, and 36.02 meters (118.1 feet) from station in azimuth $312^{\circ}53'$. Other reference mark is in walk at corner of Boston Row and Main Street, and 87.29 meters (286.4 feet) from station in azimuth $7^{\circ}48'$.

Ferguson (Wilkinson County, Miss., H. W. Hemple, 1929).—About 10 miles southwest of town of Woodville, on land owned by W. L. Ferguson. To reach from water tank at Woodville, go 3.4 miles on Fort Adams road, follow left fork or side road, crossing Dunbar Creek twice at fords, to Bell's store on right which is 11.2 miles from water tank. Take left fork 0.2 mile to another fork, then 0.1 mile on right fork to station, which is on highest point of land in vicinity, 12.2 meters (40 feet) north of center line of road, 43.9 meters (144 feet) west of faint

road leading off main dirt road, and about 10 meters (33 feet) northeast of group of black walnut trees on north side of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is about 12 inches below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 3.6 meters (12 feet) south of center line of road, 64.9 meters (213 feet) east of center line of faint road mentioned above, and 108.8 meters (357 feet) from station in azimuth $229^{\circ}03'23''$. No. 2 is on south edge of road, 19.04 meters (62.5 feet) from station in azimuth $330^{\circ}45'$.

Walker (West Feliciana Parish, H. W. Hemple, 1929).—About 9 miles south of Woodville, on land owned by L. M. Walker. To reach from Woodville go $9\frac{1}{2}$ miles south on road leading out of town by railroad station, to an up-grade turn to the left marked by red clay banks and an 8- by 10-foot building marked "Corner P.O." on the left, go 0.3 mile east to private road (0.1 mile east of Walker's store) leading up hill through gate by barn, follow this road about one-fourth mile to top of grade, turn left just east of edge of wood lot and go through cultivated area to top of round hill covered with scattered growth of young pine trees and to station, which is one-fourth mile north of road at crest of hill, and about two-fifths mile east of Walker's store. Also reached from U.S. Route 61 by turning east across railway at Laurel Hill (village about 12 miles south of Woodville) and going 1.3 miles to crossroads, then straight ahead to road leading to right and "Corner P.O." mentioned above. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 has been destroyed. No. 2 is beside stock trail through grass, and 78.15 meters (256.4 feet) from station in azimuth $54^{\circ}41'$.

Brown (West Feliciana Parish, H. W. Hemple, 1929).—About 13 miles north-northwest of St. Francisville, and 10 miles northwest of Bains, on land owned by M. E. Lemming Lumber Co. of Tunica. To reach from Bains go 8 miles northwest on Tunica road to two small bridges about 75 yards apart, turn left from main road on first road beyond these bridges and go 2.8 miles to fork, take left fork 1.8 miles to another fork, take left fork over Polly Creek and go 1.1 miles to station, which is 19 feet south of the fence in front of Jim Brown's house, 45 feet south of center line of road, 42 feet southeast of northwest corner of fence, and 46 feet west of 20-inch black locust tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 12 feet north of road, and 77.1 meters (253 feet) from station in azimuth $271^{\circ}39'$. No. 2 is 8 feet south of center line of road, and 37.2 meters (122 feet) from station in azimuth $117^{\circ}11'$.

Allain (West Feliciana Parish, H. W. Hemple, 1929).—About 5 miles south of Laurel Hill, and 8 miles north of St. Francisville, on old Wakefield plantation now owned by Mrs. Helen Allain, about 200 yards southwest of Brothers railroad station, on small bare hill on north side of road from Route 61 to plantation house, 75 feet north of second telephone pole west of highway, and about 50 yards west of 2-foot pine tree. Reached by U.S. Route 61. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 beside plantation road, near northernmost of two large pine trees on opposite sides of road, in azimuth $306^{\circ}52'51''$, from station. No. 2 is on south side of plantation road, in azimuth $42^{\circ}31'07''$ from station. Distances to reference marks were not recorded.

Barrow (West Feliciana Parish, H. W. Hemple, 1929).—About 7 miles north-northwest of St. Francisville, and 5 miles northwest of Bains, on land owned by Mrs. A. F. Barrow of St. Francisville. To reach from U.S. Route 61 at Bains go on Tunica Road to west end of Bayou Sara Bridge, turn left and go south 0.1 mile to Little Bayou Sara Bridge, then down river about 0.6 mile and turn northwest 0.2 mile to gate, through gate and 1.0 mile to crossroads and turn right, then 1.0 mile to a fork, take right fork 1.0 mile to side road on left, then go left 1.6 miles to three abandoned lumber racks. Station is on knoll south of fork just south of head of ravine making to westward, about 100 yards west of lumber racks referred to above, and near 3-foot oak and 10-inch bay trees with triangular blazes. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at west edge of knoll, and 27.44 meters (90.0 feet) from station in azimuth $61^{\circ}33'$. No. 2 is in narrow V at fork of roads, and 44.05 meters (144.5 feet) from station in azimuth $167^{\circ}11'$.

Bradley (West Feliciana Parish, H. W. Hemple, 1929).—About 1 mile north of St. Francisville, on land owned by L. J. Bradley of New Orleans, on east side

of U.S. Route 61, opposite top of small grade, in northwest corner of pecan orchard which is north of Bradley's house. Reached from St. Francisville P.O. 1.8 miles by road, and from Bains 1.5 miles south on highway. Turn in driveway in front of Bradley's house (just south of top of grade), and go north about 200 yards to pecan orchard and station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on south side of fence line near shed, and 24.89 meters (81.7 feet) from station in azimuth $244^{\circ}31'$. No. 2 is 20 feet east of gate at southwest corner of pecan orchard, and 91.75 meters (301.0 feet) from station in azimuth $350^{\circ}42'$.

New Roads west base (LaBarre) (Pointe Coupee Parish, H. W. Hemple, 1929; 1930).—About 7 miles by air line north of west of town of New Roads, 3 miles southeast of town of Morganza, and one-half mile west of town of LaBarre, on farm owned by Michael Provosty of New Orleans and farmed by Elphage Le Blanc, in northwest corner of farmyard, 126 feet northwest of northwest corner of Le Blanc's house, 35 feet southwest of west gate post leading into farmyard, 18 feet south of fence line, and 76 feet south of south rail of Texas & Pacific Railway. To reach from New Roads, take road toward Morganza to a lane leading south into Mr. La Blanc's farmyard, about one-half mile west of LaBarre. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 21 feet south of south rail of railway, and 23.1 meters (76 feet) from station in azimuth $234^{\circ}42'$. No. 2 is 23 feet south of south rail, and 41.7 meters (137 feet) from station in azimuth $122^{\circ}34'$. Azimuth from station to *B. M. Gage 43 (M. R. C.)* (see description thereof), about 1 mile distant, is $217^{\circ}36'00'$.

New Roads east base (Pointe Coupee Parish, H. W. Hemple, 1929; 1930).—In northwest part of town of New Roads, on land belonging to Texas & Pacific Railway, about 100 meters (328 feet) northwest of Standard Oil bulk plant, 30.6 meters (100 feet) south of south rail of southernmost switch of railway, 26.9 meters (88 feet) southeast of northeast corner of fence, and 10.2 meters (33 feet) east of fence line. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark no. 1 is standard reference disk in concrete, note 11a, on railroad right of way, 0.7 meter (2.3 feet) south of north fence line of right of way, 6.6 meters (22 feet) west of southeast corner of fence, 10.4 meters (34 feet) west-southwest of southwest corner of shed, 25.1 meters (82 feet) north of north rail of railway, and 65.6 meters (215 feet) from station in azimuth $189^{\circ}11'$. Azimuth from station to New Roads stand pipe, a black water tank, is $323^{\circ}16'24''$. In 1930 name of station was changed from *New Roads* to *New Roads east base*.

New Roads (Pointe Coupee Parish, H. W. Hemple, 1929; 1930).—See *New Roads east base* (above).

Hudson (East Feliciana Parish, H. W. Hemple, 1929).—About 10 miles southeast of St. Francisville and 5 miles west-southwest of Plains, on land owned by T. Williams, of Baton Rouge. To reach from Plains (small town, on U.S. Route 61) go west on gravel side road just north of Rhodes and Mills store, which has a gas pump in front and large Coca Cola sign painted on side, 3.8 miles to crossroads, keep straight ahead 0.4 mile to railway (Port Hudson railway station is 50 yards to left), cross railway and continue 0.9 mile to station in triangular plot of land formed by forks in road and covered with briars and honeysuckle with a path through center. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 15 feet north of road at southeast corner of deserted schoolhouse, and 46.04 meters (151.0 feet) from station in azimuth $149^{\circ}49'$. No. 2 is 10 feet south of road, at south corner of triangle, and 48.34 meters (158.6 feet) from station in azimuth $37^{\circ}34'$.

Chenal (East Feliciana Parish, H. W. Hemple, 1929).—About 7 miles southeast of New Roads, and $2\frac{1}{2}$ miles southwest of town of Glynn, in area enclosed by False River, which is known locally as "The Island", on land owned by J. O. Le Beau, 18.1 meters (59 feet) north of fence along north side of road, near southeast corner of farmyard, 18.3 meters (60 feet) west of 20-inch pecan tree, and 10.1 meters (33 feet) south of 30-inch triple pecan tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 4.6 meters (15 feet) east of center line of road, and 113.6 feet from station in azimuth $324^{\circ}07'$. No. 2 is 6.8 meters (22 feet) southeast of 20-inch pecan tree, 0.6 meter (2 feet) north of fence along north side of road, and 111.1 feet from station in azimuth $48^{\circ}32'$.

For notes in regard to marking of stations see p. 71.

Samuel (East Baton Rouge Parish, H. W. Hemple, 1929).—About 4 miles northwest of Baker, on plantation owned by Mrs. Edgar Samuel of Zachary. To reach from Plains go about 8.5 miles south on U.S. Route 61 to gravel road (about 75 yards north of a drain ditch and small concrete bridge) leading northwest along east side of the Louisiana & Arkansas Railway, turn right onto this road and go 2.5 miles to railway station Irene, turn left across tracks and go 0.6 mile to Mrs. Samuel's house, which is first large house on left. Station is 72 feet south of gate at entrance. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in fence line about 50 feet north of gate, and 47.55 meters (156.0 feet) from station in azimuth $191^{\circ}51'$. No. 2 is in fence line about 200 feet south of gate, and 48.91 meters (160.5 feet) from station in azimuth $55^{\circ}35'$.

Devall (West Baton Rouge Parish, H. W. Hemple, 1929).—About 10 miles north of Baton Rouge, 13 miles southeast of New Roads, 4.5 miles southeast of Ervingville, and $2\frac{1}{2}$ miles west of Chamberlain store, on northeast side of lengthened curve on Route 30, on bed of old road which turns at right angles at this point, 15.6 meters (51 feet) north of 12-inch locust, 12.2 meters (40 feet) east of fence along east side of highway, and 21.0 meters (69 feet) east of center line of highway. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 7.6 meters (25 feet) east of center line of highway, and 50.9 meters (167 feet) from station in azimuth $335^{\circ}17'$. No. 2 is 7.6 meters (25 feet) east of center line of highway, in fence line along north side of highway, and 134.7 meters (442 feet) from station in azimuth $102^{\circ}17'07''$.

Barrowza (West Baton Rouge Parish, H. W. Hemple, 1929).—About 8 miles northwest of Baton Rouge, and $2\frac{1}{2}$ miles south of Chamberlin, on Barrowza plantation owned by Catherine Sugar Co., of Lobdell, three-fourths mile southwest of Route 30, near crossroad, 32.0 meters (105 feet) south of south rail of spur track, 25.9 meters (85 feet) west of picket fence, and 35.0 meters (115 feet) southwest of 24-inch chinaberry tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is across road from station, 2.6 meters (8.5 feet) west of picket fence, 13.87 meters (45.5 feet) southwest of southwest corner of fireplace of tenant house, and 25.26 meters (82.9 feet) from station in azimuth $196^{\circ}51'$. No. 2 is 10.0 meters (33 feet) south of south rail of spur track, 0.6 meter (2 feet) east of northeast fence corner of fenced lot west of station, and 72.8 meters (239 feet) from station in azimuth $58^{\circ}44'$.

Scott (East Baton Rouge Parish, H. W. Hemple, 1929).—About 6 miles north of Baton Rouge, on Scott Bluff, on property owned by Southern University (colored). To reach from Scotland on U.S. Route 61 go 1.0 mile west on gravel road just north of railway crossing to Southern University, turn left and go about 200 yards to loop in the road. Station is between loop and edge of bluff and about 75 yards southwest of girl's dormitory no. 1. Surface and underground marks are standard station disks in concrete, notes 1 and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about 15 feet east of center line of road, 20 feet south of southeast corner of frame house, and 41.29 meters (135.5 feet) from station in azimuth $188^{\circ}48'$. No. 2 is beside telephone pole at north end of loop on east side, and 32.06 meters (105.2 feet) from station in azimuth $270^{\circ}39'$.

Baker (East Baton Rouge Parish, H. W. Hemple, 1929).—About 1 mile north of Baker, a village on the Yazoo & Mississippi Valley Railroad, on land owned by H. H. Epperson and managed by his son, Harry Epperson, who lives in third house on right to north. To reach from Plains go south 7.5 miles on U.S. Route 61 to gravel road, then turn right and go 2.2 miles to Baker. To reach from Baton Rouge go north on U.S. Route 61 to Scotland, then follow gravel road along Yazoo & Mississippi Valley Railroad tracks, 5.6 miles to Baker. Station is inside curve on Route 61 just west of where highway crosses railroad, and just west of large spreading live oak tree which stands on edge of ditch inside the curve just before coming to gate to large gray house about 150 yards to south. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects about 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is south of road, in fence line and 28.14 meters (92.3 feet) from station in azimuth $9^{\circ}45'$. No. 2 is west of road, in fence line, and 40.51 meters (132.9 feet) from station in azimuth $122^{\circ}23'$.

For notes in regard to marking of stations see p. 71.

Hooper (East Baton Rouge Parish, H. W. Hemple, 1929).—About 8 miles northeast of Baton Rouge, and 6 miles east of Scotland, on land owned by Mrs. S. L. Hooper, about 0.1 mile east (?) of Hooper's store, 6.7 meters (22 feet) south of center line of road, 0.2 meter (0.7 foot) north of fence line, and 128.9 meters (423 feet) west (?) of center line of Hooper Road at Hooper's store. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 6.3 meters (21 feet) north of center line of road, and 14.2 meters (47 feet) from station in azimuth $180^{\circ}33'$. No. 2 is 5.5 meters (18 feet) north of center line of road, 22.3 meters (73 feet) west of southeast corner of fence, and 78.20 meters (256.6 feet) from station in azimuth $234^{\circ}38'$. Azimuth from station to top of brick chimney, center of southwest face, distant $\frac{1}{4}$ mile, is $175^{\circ}55'50''$.

Babin (East Baton Rouge Parish, H. W. Hemple, 1929).—About 1 mile north of Baton Rouge, on land owned by L. U. Babin of Baton Rouge, 19.96 meters (65.5 feet) northeast of northeast rail of most easterly track of railroad yards in north part of Baton Rouge at point where road crosses tracks, 36.0 meters (118 feet) southeast of nearest telegraph pole, 79.3 meters (260 feet) northwest of northwest corner of house, and about 40 meters (131 feet) southeast of cattle run along east side of tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 41.4 meters (136 feet) northwest of northwest corner of house, and 37.8 meters (124 feet) from station in azimuth $283^{\circ}02'$. No. 2 is 19.8 meters (65 feet) southwest of southwest rail of spur track leading southeast from railroad yards, 26.1 meters (86 feet) southeast of switch post, and 63.8 meters (209 feet) from station in azimuth $16^{\circ}21'$.

Connell (East Baton Rouge Parish, H. W. Hemple, 1929).—About 5.0 miles east of Baton Rouge, on land owned by W. P. Connell. To reach from Baton Rouge go east on North Boulevard to junction with U.S. Route 61, then along Route 61, 4.4 miles to paved road (U.S. Route 190), turn left and go 0.9 mile to farm road on top of slight rise just west of mail box of D. Davis on north side of road, turn left and go through two gates to triangular plot formed by farm roads. Station is in this plot just south of large live oak. A small marsh is on left and stock loading pens are inside gate. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is beside the gate to barn, and 27.81 meters (91.2 feet) from station in azimuth $267^{\circ}41'$. No. 2 is beside second gate coming in from highway, and 44.60 meters (146.3 feet) from station in azimuth $29^{\circ}46'$.

Gianelloni (East Baton Rouge Parish, H. W. Hemple, 1929).—About 6 miles southeast of Baton Rouge, on right of way on south side of highway, between property-line fence of V. J. Gianelloni and road. Reached from Baton Rouge post office by going 7.3 miles southeast on Highland Road, passing Louisiana State University. Station is 0.4 mile beyond school and 0.2 mile beyond an arched terra cotta gate, both on right of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on east side of highway, 17.60 meters (57.7 feet) from the station in azimuth $198^{\circ}30'$. No. 2 is on side of highway, 3 feet east of wire fence with concrete posts, and 66.32 meters (217.6 feet) from station in azimuth $312^{\circ}37'$. Azimuth from station to *Gianelloni sugar refinery smoke stack*, about 2 miles distant, is $23^{\circ}52'21''$.

Brusle (West Baton Rouge Parish, H. W. Hemple, 1929).—About 5 miles southwest of Port Allen, and 7 miles north of Plaquemine, at the Brusle station of the Texas & Pacific Railway, 9.83 meters (32.2 feet) northeast of loading platform at north end of station, 15.15 meters (49.7 feet) east of east rail, 16 meters (52 feet) south of center line of east-and-west gravel road, and 20.6 meters (68 feet) southeast of intersection of this road and railway. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in front of home of N. Hanjaras, 7 feet west of entrance to his yard, 23 feet north of center line of gravel road, 25 feet west of driveway into Mr. Hanjaras' garage, 118 feet west of small plank bridge on gravel road over small creek, and 149 meters (489 feet) from station in azimuth $284^{\circ}37'53''$. No. 2 is 7.8 meters (26 feet) west of near rail of railway, 8 meters (26 feet) north of center line of gravel road, 13.1 meters (43 feet) southwest of railway switch, and 31.81 meters (104.4 feet) from station in azimuth $162^{\circ}26'$.

For notes in regard to marking of stations see p. 71.

Burtville (East Baton Rouge Parish, H. W. Hemple, 1929; 1930).—In village of Burtville, which is about 9 miles south-southeast of Baton Rouge, on land owned by D. E. Sheridan of Baton Rouge. To reach from Baton Rouge post office go 7.4 miles southeast on Highland Road, turn right and go 2.4 miles to levee, then turn left and follow road along levee 0.9 mile to Burtville. Station is on west side of Illinois Central Railroad and 26 meters (85 feet) west of milepost "N.O.—80 M.—375" which is about 50 yards south of Burtville railroad station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at west edge of gravel ballast of railroad, 6 feet north of milepost "N.O.—80 M.—375", and 26.12 meters (85.7 feet) from station in azimuth 254°30'. No. 2 is on west side of railroad, in the ballast, at first private road crossing south of Burtville railroad station, and about one-fourth mile from station in azimuth 332°28'44''.

Plaquemine (Iberville Parish, H. W. Hemple, 1929).—In Plaquemine, on Lock Reservation belonging to United States Government, on north side of locks, directly opposite easternmost door on northern face of lock building, 12.2 meters (40 feet) north of north concrete face of lock basin, 30.2 meters (99 feet) west-by-north of northern end of second lock from Mississippi River, 54.9 meters (180 feet) west of concrete coping on levee, and 57.9 meters (190 feet) southwest of high-water tide staff north of outer lock. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in cement sidewalk on north side of locks, 0.98 meter (3.2 feet) north of north face of lock, 24.7 meters (81 feet) east of third lock from Mississippi River, and 40.39 meters (132.5 feet) from station in azimuth 31°36'. No. 2 is in sidewalk at southwest corner of house on lock reservation occupied by assistant keepers, 46.3 meters (152 feet) north of north face of locks, 17.3 meters (57 feet) west of gate leading into yard surrounding assistant keepers' house, 47.5 meters (156 feet) west of high-water tide staff mentioned above, and 35.56 meters (116.7 feet) from station in azimuth 154°27''.

St. Gabriel (Iberville Parish, H. W. Hemple, 1929; 1930).—In village of St. Gabriel, about 14 miles south-southeast of Baton Rouge, and 5.5 miles south-southeast of Burtville, on right-of-way of Illinois Central Railroad and 100 feet west of St. Gabriel railroad station. To reach from Burtville go 7.5 miles southerly along levee to St. Gabriel, then left 0.3 mile to railroad station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is between main track and switch, 3½ rails north of frog and east of chute to stock-loading pen, and 114.42 meters (375.4 feet) from station in azimuth 174°02'29''. No. 2 is 16 feet west of west rail, in west edge of passenger ramp, and 30.05 meters (98.6 feet) from station in azimuth 230°13'. *P.B.M. St. Gabriel (M.R.C.)* (see description thereof), is 38.37 meters (125.9 feet) from station in azimuth 355°52'25''.

Whitecastle (Iberville Parish, H. W. Hemple, 1929).—In Whitecastle, a town on Route 30, on property belonging to E. E. Barby of Whitecastle, 150 meters (492 feet) east of main street, 21.3 meters (70 feet) south of south rail of Texas & Pacific Railway tracks, 10.5 meters (34 feet) south of right-of-way fence, and 20.7 meters (68 feet) northwest of near rail of spur track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is across tracks from station, in sidewalk in front of negro hotel, and 48.0 meters (157 feet) from station in azimuth 195°02'. No. 2 is in east edge of sidewalk, in front of F. Ricca's grocery store, about 30 inches northwest of fire hydrant, and 157.2 meters (515.7 feet) from station in azimuth 107°51'18''.

Winchester (St. James Parish, H. W. Hemple, 1930; 1931).—About 6½ miles southeast of Donaldsonville, and 1 mile east of the Texas & Pacific Railway station Winchester, on Minnie plantation, in field under cultivation. To reach from Donaldsonville go 9.9 miles south on Route 30 to gate opening onto private road on Minnie plantation, and follow this road 1.1 miles to T intersection, just west of narrow gage railroad track. Station is in southwest corner of intersection of left road of T and railroad, 17.7 meters (58 feet) west of center line of T road, 24.0 meters (79 feet) west of near rail of narrow gage track, and 14.2 meters (47 feet) south of graded road leading off Route 30. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 50.3

meters (165 feet) south of graded road leading off Route 30, 2.0 meters (6.6 feet) east of center line of dirt road leading south, 3.6 meters (12 feet) west of near rail of narrow gage railroad, and 42.5 meters (139 feet) from station in azimuth $269^{\circ}02'$. No. 2 is on prolongation of center line of dirt road leading south, 3.4 meters (11 feet) north of center line of graded road, 5.8 meters (19 feet) west of near rail of narrow gage railroad, and 24.2 meters (79 feet) from station in azimuth $166^{\circ}53'$. Azimuth from station of *Lauderville sugar refinery water tank* is $165^{\circ}50'23''$.

Wilton (St. James Parish, H. W. Hemple, 1929).—About 8 miles east of Donaldsonville, at Central, on the old Wilton plantation, recently purchased by S. T. Christina from Denis E. Hymel. To reach go to store of J. I. Hymel, Central, and then east about 100 yards on U.S. Route 61 to plantation road leading north, between two rows of negro cabins, and across Illinois Central Railroad tracks, and straight ahead 1.3 miles to station, on south side of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on east side of plantation road, 36.16 meters (118.6 feet) from station in azimuth $33^{\circ}22'$. No. 2 is on west side of plantation road, 23.86 meters (78.3 feet) from station in azimuth $79^{\circ}15'$.

Donaldsonville (Ascension Parish, H. W. Hemple, 1929; 1931).—In town of Donaldsonville, about opposite river end of pavement of Mississippi Street, in area between street and levee, directly behind small idle filling station, north of fire station, 22.3 meters (73 feet) southwest of crown of levee, 47.5 meters (156 feet) northeast of near curb of Mississippi Street, 53.6 meters (176 feet) east of southeast corner of fence around swimming pool, and 50 feet northeast of some large steel pipes. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark no. 1 is standard reference disk in concrete sidewalk in line with fire hydrant and corner of building occupied by Louisiana State fair offices which is on southwest corner of Mississippi Street directly opposite the swimming pool, 2.4 meters (8 feet) northeast of the northeast corner of the above mentioned building, 4.5 meters (15 feet) south of near curb of Mississippi Street, 3 meters (10 feet) west of fire hydrant, and 84.7 meters (278 feet) from station in azimuth $55^{\circ}15'$. *B. M. Donaldsonville (M. R. C.)* (see description thereof) is 95.40 meters (313.0 feet) from station in azimuth $331^{\circ}33'$. Azimuth from the station to *Donaldsonville municipal water tank* is $300^{\circ}38'16''$.

Miles (Ascension Parish, H. W. Hemple, 1929; 1931).—About 6 miles northeast of Donaldsonville, and 1.6 miles north on U.S. Route 61 from railroad crossing at Burnside railroad station, on land owned by Miles Plantation & Manufacturing Co., between a ditch (south of east-and-west plantation road) and burnt straw stack, and 44 feet west of center line of Route 61. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is east of Route 61, on north side of plantation road, and 23.55 meters (77.3 feet) from station in azimuth $285^{\circ}16'$. No. 2 is on west side of Route 61, and 74.30 meters (243.8 feet) from station in azimuth $6^{\circ}39'$. Azimuth from station to *Donaldsonville Catholic Church spire* is $44^{\circ}05'06''$.

McCall (Ascension Parish, H. W. Hemple, 1929).—About $4\frac{1}{2}$ miles north of west of Donaldsonville, and 0.25 mile east of the Texas & Pacific Railway station McCall, on land owned by Hibernia Bank of New Orleans and farmed by E. C. Bessonnet, 21.6 meters (71 feet) south of the center line of east-and-west road leading from Route 30 to McCall railway station, 0.35 mile west of Route 30, 63.4 meters (208 feet) west of dirt road leading north and south, 7.9 meters (26 feet) east of fence line on east side of Bessonnet home, and 8.4 meters (28 feet) south of fence on south side of east-and-west road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in field at northwest corner of intersection of Route 30 and road leading west to McCall railway station, 84 meters (276 feet) west of top of levee, 10.4 meters (34 feet) west of center line of Route 30, 5.8 meters (19 feet) north of center line of road to railway station, and about 0.35 mile from station in azimuth $245^{\circ}32'08''$. No. 2 is 8.8 meters (29 feet) north of center line of road to railway station, and 33.0 meters (108 feet) from station in azimuth $169^{\circ}19'$.

Geismar (Ascension Parish, H. W. Hemple, 1929).—In Geismar, a town on Illinois Central Railroad, about 25 miles south-southeast of Baton Rouge, on land owned by M. L. Geismar, inside of fence, opposite southeast wing of store,

and on the southeast side of the road leading from levee to Geismar railroad station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in fence line on southeast side of road, northwest of second house on same side of road, west of railroad, and 94.13 meters (308.8 feet) from station in azimuth $46^{\circ}26'$. No. 2 is on northwest side of road, opposite station, 20 feet northwest of center line of road, and 10 feet east of southeast wing of Picard and Geismar's store, and 23.38 meters (76.7 feet) from station in azimuth $138^{\circ}43'$. Station *P.B.M. New River (M. R. C.)* (see description thereof) is 61.89 meters (203.0 feet) from station in azimuth $191^{\circ}01''$

Supplementary points

B.M. 83/4 (M. R. C.) (Chicot County, Arkansas, H. W. Hemple, 1929).—On right bank of Mississippi River, in Sterling, about 700 meters (2,297 feet) from river bank, at point three-fourths mile above Sterling Landing, 76 meters (249 feet) back of center of levee at point 50 meters (164 feet) above angle in levee, 180 meters (591 feet) below prominent angle in levee, 26 meters (85 feet) west of bank of bayou and 17 meters (56 feet) north of same bayou below bend, about 40 meters (131 feet) north of dirt road along foot of levee, 50 meters (164 feet) east of Leslie Taylor's house, and 8 meters (26 feet) west of old cabin now being used as barn. Marked by stone post 6 inches square with top broken off, projecting 12 inches above surface. Stone is solid and has small hole drilled in center of top. Station *Weise* (see description thereof) is distant 82.894 meters (271.96 feet) in azimuth $17^{\circ}38'$. Witness marks are: Locust tree, 30 meters (98 feet) distant in azimuth 85° , and pipe well, 7.2 meters (24 feet), in azimuth 345° .

B.M. Gage 89 (M. R. C.) (East Carroll Parish, H. W. Hemple, 1929).—On right bank of Mississippi River, about 16 miles by road south of Eudora, three-fourths mile directly back of Pilcher Point Landing, 400 meters (1,312 feet) below prominent angle in levee near junction of old and new levees, 83 meters (272 feet) back of center of levee, in corner of yard of plantation residence, and 4 meters (13 feet) south of southwest corner of small store which is about 100 yards south of turn in U.S. Route 65. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above and copper bolt in tile below, as described in note 16. Pipe projects 6 inches above ground. Station *Gage* (see description thereof) is 390.33 meters (1,280.6 feet) from station in azimuth $223^{\circ}23'56''$. Distances and azimuths to following objects are: northeast corner of large brick house, 141 meters (463 feet), 250° ; leaning stone monument of Gen. W. Gazo, 43 meters (141 feet), 290° ; blazed 24-inch cottonwood, 55 meters (180 feet), 270° ; and blazed 36-inch elm, 42.5 meters (139 feet), 320° .

Lake Providence, water tank (M.R.C.) (East Carroll Parish, H.W. Hemple, 1929).—The final of Lake Providence municipal water tank, located in Lake Providence, on Hood Street, about 150 meters (492 feet) south of courthouse. Tank has red top and silver-colored sides. Station *Lake Providence north base 2*, marked by copper bolt in stone post (see description thereof), is 88.07 meters (288.9 feet) distant in azimuth $28^{\circ}22'$.

Lake Providence north base 2 (East Carroll Parish, H. W. Hemple, 1929).—In center of Hood Street, Lake Providence, 15 meters (49 feet) west of small colored church, and about 225 meters (738 feet) south of courthouse. Marked by large stone post projecting about 3 inches, with copper bolt in center of top. Lake Providence municipal water tank is 88.07 meters (288.9 feet) from station in azimuth $208^{\circ}22'$.

NOTE.—While the marks of *Lake Providence north base* were apparently recovered, computation showed them to have been shifted in position, and this is to be considered a new station.

P.B.M. Vista (M.R.C.) (East Carroll Parish, H. W. Hemple, 1929).—On right bank of Mississippi River, 515 meters (1,690 feet) back of river bank, back of center of bar forming in Terrapin Neck cut-off, $1\frac{1}{4}$ miles below Henderson and Vista (low-water) Landing, about 2.7 miles by levee southwest of Henderson post office and store, 32 meters (105 feet) back of center of levee at point 92 meters (302 feet) above prominent angle in levee, at lower end of mile of straight levee, in open ground between levee and field, and 3 meters (10 feet) N. 60° E. of a blazed 60-inch cottonwood with broken top. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below, as described in note 16. Station *Henderson* (see description thereof) is 29.92 meters (98.2 feet) distant in azimuth $317^{\circ}58'$

For notes in regard to marking of stations see p. 71.

Delta southwest base (C. & G.S.) P.B.M. 107/3 (M.R.C.) (Madison Parish, C. Hosmer, 1878; 1929).—On right bank of Mississippi River, about one-half mile southwest of town of Delta Point, 390 meters (1,280 feet) below Grants Canal, near west end of first curve of Illinois Central Railroad, 10 meters (33 feet) south of south rail, 7 meters (23 feet) east of a "Stop" sign on south side of tracks, on prolongation of northwest-southeast tangent (southwest edge of roadbed), and about 135 meters (410 feet) back of levee. Marked by limestone monument, 14 inches square on top, with copper bolt in top and inscription "U.S.C.S. 1878." Station *Mounds southeast base* (see description thereof) is distant 146.52 meters (480.7 feet) in azimuth 283°56'11".

P.B.M. St. Joseph (M.R.C.) (Tensas Parish, H. W. Hemple, 1929).—In town of St. Joseph, in east end of courthouse square, 180 meters (591 feet) southeast of courthouse, 71 meters (233 feet) west of crest of levee, 42.5 meters (139 feet) south of street on upper side of square, 30.5 meters (100 feet) north of center line of street on lower side of square, 14.3 meters (47 feet) from upper back corner of old Masonic Hall, and 14.5 meters (48 feet) from lower back corner of hall. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above and copper bolt in tile below as described in note 16. Pipe projects about 2 feet. A 36-inch gum tree is 2.6 meters (8.5 feet) from station in azimuth 200°. A 30-inch soft maple tree is 10 meters (33 feet) southeast of station. *B.M. Courthouse (M.R.C.)* (see description thereof) is 179.0 meters (587 feet) from station in azimuth 123°03'. Station *Joseph* (see description thereof) is 29.03 meters (95.2 feet) from station in azimuth 197°22'.

South Meridian (G.L.O.) (Tensas Parish, H. W. Hemple, 1929).—In town of St. Joseph, in southeast end of courthouse square, 10.5 meters (34 feet) north of center line of street on lower side of square, 5.49 meters (18.0 feet) east of center of 24-inch gum tree, 33.62 meters (110.3 feet) west of southwest corner of old Masonic Hall, and 27.37 meters (89.8 feet) south-southwest of 24-inch gum tree. Station mark is cross chiseled in top of stone post flush with surface of ground and covered with turf. Station *Joseph* (see description thereof) is 53.51 meters (175.6 feet) from station in azimuth 230°03'.

B.M. Courthouse (M.R.C.) (Tensas Parish, H. W. Hemple, 1929).—In courthouse yard at St. Joseph, near east projecting corner of building, 6.06 meters (19.9 feet) from northeast corner of projection, 6.15 meters (20.2 feet) from southeast corner of building, about 245 meters (804 feet) back of levee, 15.30 meters (50.2 feet) west of west edge of sidewalk, and 21.81 meters (71.6 feet) north of cannon ball on north side of sidewalk at entrance to courthouse. Station mark is 1½-inch hole in center of top of marble post about 3 inches below ground. Post bears inscription "U.S.B.M. 1881." *P.B.M. St. Joseph (M.R.C.)* (see description thereof) is 179.0 meters (587 feet) from station in approximate azimuth 303°03'. Station *Joseph* (see description thereof) is 173.47 meters (569.1 feet) from station in azimuth 293°48'21".

P.B.M. LXXI (Coast and Geodetic Survey) (Tensas Parish, H. W. Hemple, 1929).—In town of Waterproof, 1½ miles back of river bank, in front yard of A. P. Martin, whose residence is the southern one on street along base of levee, 0.5 meter (1.6 feet) in front of gallery, 5.5 meters (18 feet) north of south corner of gallery, at south end of steps, and 36.5 meters (120 feet) back of center of levee, at points 45 meters (148 feet) above angle at junction of old and new levees. Station mark is marble post, 5 inches square on top, about 2½ feet long, with a square cavity in the top, about 1¼ inches to a side, and about 1 inch deep. It projects 6 inches, and bears inscription "U.S.—1881 BM". Station *Waterproof* (see description thereof) is distant 74.51 meters (244.5 feet) in azimuth 11°46'.

Deer Park (M.R.C.) (Concordia Parish, H. W. Hemple, 1929).—About 18 miles by levee road south of Vidalia, at foot of levee in Deer Park (a plantation store), 275 feet west of crown of levee, 29 feet north of center line of east-and-west road crossing levee and 2 feet south of fence line. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tiles below, as described in note 16.

B.M. Gage 43 (M.R.C.) (Pointe Coupee Parish, H. W. Hemple, 1929; 1930).—About 7 miles northwest of town of New Roads, about 3 miles southeast of town of Morganza, about 1½ miles below old Morganza crevasse, about 1 mile above Brunswick Landing, about 1 mile north of Texas & Pacific Railway station at La Barre, 6 meters (20 feet) west of gate, 1 meter (3 feet) south of plantation fence along south side of old road along levee, and 90 meters (295 feet) west of old ramp over levee. To reach from highway at La Barre, go east 0.1 mile from railway station to gate leading into field on north side of road. Follow this lane

0.8 mile to fork. Keep to left for 0.3 mile to gate near station. It may also be reached from point $1\frac{1}{2}$ miles east and north of railway station by following levee road west about one half mile to same gate. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below, as described in note 16. *New Roads west base* (see description thereof) is 1,822.66 meters (5,979.8 feet) from station in azimuth $37^{\circ}36'21''$. Blazed trees are at the following distances and azimuths from station: 30-inch cottonwood, 11.4 meters (37 feet), 25° ; 30-inch cottonwood, 6.5 meters (21 feet), 50° ; 26-inch cottonwood, 20.6 meters (68 feet), 255° ; 24-inch cottonwood, 5.5 meters (18 feet), 280° . These trees are dead.

Arbroth (West Baton Rouge Parish, H. W. Hemple, 1929).—About 10 miles southeast of the town of New Roads, and 3 miles southeast of Glynn, in vacant lot about 70 meters (230 feet) south of Arbroth store, 15.3 meters (50 feet) west of fence on west side of road, 10.9 meters (36 feet) north of picket fence along north side of yard of A. A. Glynn, 12.8 meters (42 feet) northwest of 36-inch pecan tree, and 12.5 meters (41 feet) northeast of 16-inch osage orange tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at base of levee on east side of road; about 75 meters (246 feet) south of Arbroth store, and 29.17 meters (95.7 feet) from station in azimuth $273^{\circ}38'$. *B. M. Arbroth (M.R.C.)* (see below) is distant 13.26 meters (43.5 feet) in azimuth $9^{\circ}25'$.

B.M. Arbroth (M.R.C.) (West Baton Rouge Parish, H. W. Hemple, 1929).—On right bank of Mississippi River, about 100 meters (328 feet) below and 200 meters (656 feet) back of False River railroad landing, about 100 meters (328 feet) below tramway, 75 meters (246 feet) below Arbroth store and post office, 45 meters (148 feet) back of levee, in front yard of plantation residence, 0.5 meter (2 feet) inside north fence, and 6 meters (20 feet) west of northeast corner of yard. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below, as described in note 16. Witness marks are at following distances and azimuths: 36-inch double oak tree, 5.5 meters (18 feet), south; northeast corner of residence, 13.5 meters (44 feet), 65° ; chimney of residence, 17.5 meters (57 feet), 70° ; 2-inch double pecan tree, 5.5 meters (18 feet), 265° ; angle in levee, 58.5 meters (192 feet), 325° . (See description of Arbroth.)

P.B.M. Poplar Grove (M.R.C.) (West Baton Rouge Parish, 1929).—About 3 miles above Baton Rouge, on Poplar Grove plantation, 70 meters (230 feet) back of levee, in front yard of plantation residence, on downstream side of front steps to gallery, 0.4 meter (1.3 feet) from steps, and 1.4 meters (4.6 feet) out from face line of brick pillars under gallery. Marked by standard marks of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below as described in note 16. Witness trees: 12-inch cedar, distant 12 meters (39 feet) in azimuth 240° ; 12-inch cedar distant 11 meters (36 feet) in azimuth 270° .

P.B.M. St. Gabriel (M.R.C.) (Iberville Parish, H. W. Hemple, 1929).—On left bank of Mississippi River, directly back of St. Gabriel Landing and town, on south side of road leading from landing to railroad station, 31 meters (102 feet) west-southwest from southwest corner of St. Gabriel railroad station, 47 meters (154 feet) toward river from center of main track of railroad, 0.6 meter (2 feet) above fence on lower side of road, and 0.8 meter (3 feet) west of Geological Survey post. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below, as described in note 16. In 1929 mark was recovered and described as pipe with 5-inch cap; inscribed "U.S. Engineers Dept., New Orleans River District." Station *St. Gabriel* (see description thereof) is 38.37 meters (125.9 feet) distant in azimuth $175^{\circ}52'$.

P.B.M. New River (M.R.C.) (Ascension Parish, H. W. Hemple, 1929).—In town of Geismar, in center of open space between railroad and store building, beside telephone pole, 14.5 meters (48 feet) west of center of railroad track, and 15 meters (49 feet) north of east-and-west road running from levee and crossing railroad. Mark is iron pipe and 5-inch cap with inscription "U.S. Engineers Dept., New Orleans River District." Station *Geismar* (see description thereof) is 61.89 meters (203.0 feet) from station in azimuth $11^{\circ}01'$.

B.M. Donaldsonville (M.R.C.) (Ascension Parish, H. W. Hemple, 1929).—In town of Donaldsonville, directly back of steamboat landing, near eastern end of middle of three grass plots, in parked center of Mississippi Street, in front of playgrounds, 9 meters (30 feet) south of north curb of park, 4.9 meters (16 feet) north of south curb of park, 6.0 meters (20 feet) west of west line of Houma Street, and 6.1 meters (20 feet) above lower end of park. Marked by standard

mark of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below, as described in note 16. Station *Donaldsonville* (see description thereof) is distant 95.40 meters (313.0 feet) in azimuth $151^{\circ}33'$.

Hymel (St. James Parish, H. W. Hemple, 1929).—In town of Central, on banquette of levee, about 100 yards east of store owned by J. I. Hymel. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is north of U.S. Route 61, and 95.77 meters (314.2 feet) from station in azimuth $98^{\circ}22'$. No. 2 is north of U.S. Route 61 and 24.38 meters (80.0 feet) from station in azimuth $160^{\circ}20'$.

MISSISSIPPI STATE LINE TO DONALDSONVILLE

Principal points

Brown (Hancock County, Miss., F. L. Gallen, 1931).—About $9\frac{1}{2}$ miles west of Bay St. Louis, on low, flat, cut-over, uninhabited land, about 55 feet south of center line of U.S. Route 90, about 735 feet east of small concrete culvert under road, and about 25 feet west of highway survey station 475 which is marked by pine stake. To reach from Bay St. Louis post office, follow main street north to U.S. Route 90, turn west onto highway, and continue 9.6 miles to station site, which is 2.3 miles west of crossroads at Luxich service station and 5 miles east of fire lookout tower at Logtown Y. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Surface mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about 750 feet east of above-mentioned culvert, 10 meters (33 feet) north of center of road, about 3 meters (10 feet) northeast of highway survey station 475, and 150.52 feet from station in azimuth $204^{\circ}37'$. No. 2 is in north concrete abutment of culvert which is about 30 feet west of highway survey station 475, and 740.8 feet from station in azimuth $98^{\circ}25'56''$.

Seal (Hancock County, Miss., F. L. Gallen, 1931).—About 14 miles northwest of Bay St. Louis, 8 miles west of Kiln, in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 30, T. 7 S., R. 15 W., on land owned and occupied by Hiram Seal. To reach from Bay St. Louis, go west 0.6 mile on U.S. Route 90 to crossroads, proceed north 9.0 miles on Kiln road to Texas Flat Road, turn west, and follow 6.1 miles to station site. Station is one fourth mile northwest of Hiram Seal's house, about 0.1 mile northwest of bridge over small creek, in fence line, 45.5 feet southwest of center line of Texas Flat Road, and 80.5 feet south of wooden 4- by 4-inch right-of-way marker on north side of road which projects 2 feet and is marked 17. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Surface mark projects 4 inches. Reference marks are standard reference disks in concrete, note 11a. Both reference marks project 4 inches. No. 1 is almost opposite station, 28 feet northeast of center line of road, 43.2 feet east of right-of-way stake, 17.3 feet northeast of telephone line, and 72.90 feet from station in azimuth $214^{\circ}03'$. No. 2 is 37 feet southwest of center line of road, at slight angle in road, 4 feet northeast of fence line, and approximately 0.15 mile from station in azimuth $120^{\circ}16'32''$.

Pearl (Hancock County, Miss., F. L. Gallen, 1931).—On east bank of East Pearl River, in village of Pearlinton, about 130 feet southeast of southeast corner of old Portevant mansion, about 75 feet inshore from crest of river bank, and about 10 feet towards river from old picket fence line. To reach from U.S. Route 90 at Logtown Y which is about 14.7 miles west of Bay St. Louis, and about one fourth mile west of fire lookout tower, go south 1.7 miles on Logtown graveled road to angle at pecan grove where gravel road turns to right and sand dirt road continues straight ahead. Follow dirt road straight ahead to Pearlinton, take first right-hand fork at edge of village, continue 0.3 mile to crossroads, turn right into lane, and follow about 100 yards to river and Portevant mansion. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Surface mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. Both reference marks project 6 inches. No. 1 is on river bank just at crest of slope, about 140 feet south of main entrance to Portevant home, and 22.602 meters (74.15 feet) from station in azimuth $31^{\circ}40'$. No. 2 is in fence line (perpendicular to river) of Portevant home, about 30 feet northeast of gate, 100 feet from crest of river bank, and 31.670 meters (103.90 feet) from station in azimuth $144^{\circ}58'$.

Gaines (Hancock County, Miss., F. L. Gallen, 1931).—About 10 miles northeast of Slidell, La., on east bank of Pearl River, in village of Gainesville, on highest

For notes in regard to marking of stations see p. 71.

part of flat-topped bluff, about 150 yards northeast of bow in river, 124 feet west of village church, 173 feet north of unpaved street, and 41 feet southeast of 2-foot pecan tree. To reach from Bay St. Louis, go west 14.7 miles on U.S. Route 90 to Logtown Y, continue northwest 4.6 miles on Route 90 to third dirt road leading west, and follow $1\frac{1}{4}$ miles to Gainesville. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Surface mark projects 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 3 inches, on center of west side of vacant square, about 200 feet north of Mr. Feazel's residence, 170 feet north of and 14 feet east of center lines of unpaved streets, and approximately 425 feet from station in azimuth $259^{\circ}11'50''$. No. 2 projects 3 inches, on south edge of growth of small pine trees, 142 feet northwest of northwest corner of church, 77.5 feet west of southwest corner of vacant plot north of church, and 100.66 feet from station in azimuth $146^{\circ}58'$.

Pike (Orleans Parish, F. L. Gallen, 1931).—About 8 miles southeast of Slidell, on west edge of old Fort Pike, at south end of the new Rigolets bridge on U.S. Route 90, about 35 yards south of bridge tender's house, 100 yards south of south end of bridge, 148.1 feet east of center line of pavement, and between the moat of the fort and the pavement. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about one fourth mile south of south end of bridge, 25.6 feet east of center of pavement near beginning of first curve south of bridge, and 926.5 feet from station in azimuth $47^{\circ}22'49''$. No. 2 is 36.7 feet east of center of pavement, about 100 yards south of south end of bridge, and 111.43 feet from station, in azimuth $128^{\circ}15'$. Azimuth from station of *West Rigolets Lighthouse* is $148^{\circ}40'39''$.

Slidell (St. Tammany Parish, F. L. Gallen, 1931).—In the town of Slidell, 3 blocks north of the depot, 2 blocks east of U.S. Route 90, in extreme northeast corner of athletic field adjoining high school. Station is about 500 feet northeast of high school building, 80 feet west of a bungalow, 39 feet west of center line of one unpaved street and 36 feet south of another. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 3 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 4 inches, and is in west side center of block east of station, about 200 feet south of a street, 26 feet east of another street, 5.7 feet south of a fence corner, and 170.09 feet from station in azimuth $339^{\circ}11'$. No. 2 projects 4 inches, and is in extreme southwest corner of block which is north of school, 200 feet northwest of school, 42.4 feet northeast of a fire plug, 30 feet east of center line of one street, and 20 feet north of another, and approximately 665 feet from the station in azimuth $95^{\circ}02'30''$. Azimuth from station of *Slidell municipal water tank* is $35^{\circ}46'46''$.

North Shore (St. Tammany Parish, F. L. Gallen, 1931).—About 5 miles south, southwest of Slidell, on the filled approach to the Pontchartrain toll bridge, on land used for parking and owned by the bridge company. To reach from New Orleans go by U.S. Route 90 to junction with Pontchartrain bridge road, in the outskirts of Slidell, and follow right hand road 4.3 miles to bridge. Station is about 280 feet northeast of north end of bridge, about 150 feet northeast of toll house, 38 feet southeast of center line of highway, 12.5 feet north of ornamental concrete lamp post, and 12 feet west of edge of fill. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference mark no. 1 is standard reference disk set flush in the top of a concrete retaining wall which is under bridge, 45 feet south of its end, 15 feet east of center line of bridge and just outside east rail, 5 feet below highway level and about 303 feet from station in azimuth $47^{\circ}43'34''$. Reference mark no. 2 is standard reference disk in concrete, note 11a. It projects 6 inches, is at the northeast corner of garage which is on the west side of road about 50 feet north of toll house, 35 feet northwest of center line of highway, and 91.07 feet from station in azimuth $98^{\circ}42'$. Azimuth from the station of *West Rigolets Lighthouse* is $301^{\circ}51'52''$.

Herbes (Orleans Parish, F. L. Gallen, 1931).—On Point Aux-Herbes about 20 miles northeast of New Orleans, on land owned by the Ponchartrain Bridge Co. To reach from New Orleans go by U.S. Route 90 to junction with Pontchartrain bridge road, then take left road and follow 5.7 miles to south end of toll bridge. Station is on east shoulder of filled approach, 46 feet east of center line of paved road, in a parking space, 192 feet south of end of the bridge, and 19.6 feet south of second concrete lamp post from end of the bridge. Surface and underground

For notes in regard to marking of stations see p. 71.

marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference mark no. 1 is standard reference disk set flush in top of the curbing on west side of bridge, 0.65 foot north of its end, at base of end post which is topped by a lamp, 15 feet west of center line of bridge, 0.5 foot above surface of road, and 201.49 feet from station in azimuth $182^{\circ}27'$. No. 2 is standard reference disk in concrete, note 11a, and is flush with surface. It is 241 feet south of end of bridge, 42 feet west of center line of highway, 21.9 feet south of second lamp post from west end of the bridge, and 100.18 feet from station in azimuth $81^{\circ}06'$. The following azimuths are from station: *Slidell, municipal water tank*, $207^{\circ}53'42''$; *West Rigolets Lighthouse*, $258^{\circ}34'13''$; *Slidell, Gulf States Creosoting Co. tank*, $205^{\circ}46'32''$; *Slidell, Pan-American Oil Co. tank*, $206^{\circ}21'17''$; *Slidell, Standard Brick and Tile Co. water tank*, $206^{\circ}32'04''$.

Macomb (Orleans Parish, F. L. Gallen, 1931).—About 15 miles south of Slidell and 18 miles northeast of New Orleans. To reach, go by U.S. Route 90 to south end of the Chef Menteur Bridge. At foot of wooden trestle approach to bridge take gravel road leading east and southeast keeping right-hand branch along outer edge of moat of Old Fort Macomb about one fourth mile to its end. Station is at the extreme end of road about 10 feet east of brickwork that marks extreme southeast salient of moat. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 6 inches, is about 60 feet north of point of southeast salient of fort, 8 feet east of moat wall and 68.815 feet from station in azimuth $199^{\circ}50'$. No. 2 projects 6 inches, is about 150 feet north of tip of southeast salient on west side of road leading along moat, about 15 feet west of outer edge of moat and 120.25 feet from station in azimuth $132^{\circ}17'$. Azimuth from the station of *West Rigolets Lighthouse* is $205^{\circ}27'28''$.

Pontchartrain (Orleans Parish, F. L. Gallen 1931).—About 10 miles northeast of down-town New Orleans, at a lakeside resort known as Little Woods, and about one fourth mile south of Little Woods station of Southern Railway Co. To reach from New Orleans go by U.S. Route 90 to point 0.9 mile west of Gentilly station on Louisville & Nashville Railroad, turn northwest on gravel road 1.8 miles to lake, turn northeast on shell road paralleling Southern Railway tracks on east, and go 5.7 miles to road end and station. Station is on top of levee south of drainage canal, 42 feet south of where canal bends from east to north, 130 feet north of west of northwest corner of old pumping station, and 124.5 feet east of center line of two main tracks of railway. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with ground. Reference mark no. 1 is set flush in top of retaining wall which is 12 inches thick and 5 feet high and which protects old pumping station on north, in a right angle bend of wall 4.5 feet northwest of northwest corner of old building, and 129.78 feet from station in azimuth $329^{\circ}07'$. Reference mark no. 2 is standard reference disk in concrete, note 11a. It is flush with surface, 130 feet west of pumping station, 80 feet south of top of levee, 50 feet northwest of small wooden bridge over large ditch, 120 feet east of center line of main line railway tracks, and 80.28 feet from station in azimuth $50^{\circ}53'$. The following azimuths are from the station: New Orleans, WSMB, west tower, $33^{\circ}34'25''$; New Orleans, WSMB, east tower, $32^{\circ}45'34''$.

Milneburg (Orleans Parish, F. L. Gallen, 1931).—On the south shore of Lake Pontchartrain, in a city park, in the Milneburg section of New Orleans between sea wall and old lighthouse, and 50.5 feet west of north of outside center of old lighthouse. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference mark no. 1 is standard reference disk set flush in the sea wall, 0.6 inch south of first drop in the face, 0.7 inch east of first construction joint west of memorial tablet which is on top of wall about 18 feet west, and about 500 feet from station in azimuth $253^{\circ}03'25''$. Reference mark no. 2 is standard reference disk, set flush in top of sea wall about 235 feet northwest of old lighthouse, 0.6 inch south of edge of first drop, 0.65 foot west of a construction joint, and 212.98 feet from station in azimuth $122^{\circ}51'$. The following azimuths are from station: *Hibernia Bank, dome*, $5^{\circ}48'52''$; *Industrial Canal, white flashing light*, $246^{\circ}56'59''$.

Chalmette 2 (St. Bernard Parish, F. L. Gallen, 1931; 1934).—On the left bank of the Mississippi River, about 6 miles east of down-town New Orleans, on the Chalmette Monument Reservation belonging to the War Department, 30 meters (98 feet) southwest of the base of the monument, and about 6 meters (20 feet) southwest of the outer curb of the circular drive around the monument. The

station mark, a standard bronze disk as described in notes 1 a and 7a, projects about 6 inches above the surface of the ground. Reference mark no. 1, a standard bronze disk, is set in the bottom marble step at the southwest corner of the monument and is 26.088 meters (85.59 feet) from the station in azimuth $245^{\circ}28'$. Reference mark no. 2, a standard bronze disk, is set in the southwest concrete footing of a water tank and is 420 paces from the station in azimuth $174^{\circ}15'01''$. The southwest corner of the base of the obelisk is 30.313 meters (99.45 feet) from the station in azimuth $246^{\circ}48'$. (See description of *Chalmette Monument*.)

American (Jefferson Parish, H. W. Hemple, 1929; 1931).—On top of the American Bank Building, 210 Carondelet Street, New Orleans. Mark is standard station disk set in the coping at the southeast corner of the highest part of the wall which is just east of the dome, 0.762 meter (2.50 feet) west of the southeast corner of the top of the building.

Harvey (Jefferson Parish, H. W. Hemple, 1930; 1931; 1934).—Across the river from New Orleans, in the town of Harvey, on the west side of the Harvey Canal Locks Reservation, west of the new lock (under construction), on the east side of the road leading from the ferry landing south along the west side of the reservation, 13 meters (43 feet) east of the center line of the road, 75 meters (246 feet) north of the Harvey post office, 37.8 meters (124 feet) north of the north rail of the Texas & Pacific Railway, and 8.4 meters (28 feet) east of the line of telephone poles. The station is marked by a standard bronze disk as described in notes 1a and 7a. Reference mark no. 1, a standard bronze disk, note 11a, is in the sidewalk on the corner of Fourth Street and Destrehan Avenue and 104.6 meters (343 feet) from the station in azimuth $24^{\circ}29'19''$. Reference mark no. 2, a standard bronze disk, note 11a, is 7.6 meters (25 feet) east of the center line of the road and 32.9 meters (108 feet) from the station in azimuth $154^{\circ}07'$.

New Orleans east base (Jefferson Parish, H. W. Hemple, 1929; 1931).—About 5 miles east of Kenner, 1.5 miles west of city line on west side of New Orleans, on right-of-way of Louisiana & Arkansas Railway, opposite Jefferson service station, 43 feet south of center line of Air Line Highway, 24 feet north of north rail of tracks, and 98 feet west of center line of road crossing railway. Reached from New Orleans by Air Line Highway to Jefferson service station which is located where Air Line Highway leaves railway and turns north. Another hard-surfaced road turns south here, crosses railway and joins U.S. Route 61 along river. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 3 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1, flush with surface, is about 125 feet south of railway crossing, 30 feet west of center line of north-and-south highway, and 53.97 meters (177.1 feet) from station in azimuth $339^{\circ}00'$. No. 2 is 4 feet north of north rail of railway, just east of private crossing, and 80.49 meters (264.1 feet) from the station in azimuth $90^{\circ}12'$. Azimuth from station to *New Orleans Compress Co. west water tank* is $289^{\circ}52'51''$.

Chasse (Plaquemines Parish, F. L. Gallen, 1931; 1934).—About 2 miles northeast of the Belle Chasse station of the Lower Coast Railroad Co., on the top of a levee, 455 feet northeast of a large live oak tree marked with a triangular blaze, and on an extended line of the southeast side of the gravel on the road to the southwest. To reach the station from the post office in Gretna, go 7.0 miles on Highway 31 to the old railway station site, at this point an old mansion can be seen to the northeast near the levee, turn left on the gravel road crossing the railroad track and go 0.5 mile to a large live oak tree on the left side of the road marked with a triangular blaze, continue straight ahead on a dim road to the levee and the station. The station mark, a standard bronze disk as described in notes 1a and 7a, projects 3 inches above the surface of the ground. Reference mark no. 1, a standard bronze disk, note 11a, projecting 3 inches above the surface of the ground, is in the top of the levee, 9 feet west of the east slope, 200 feet north of where the road from the town crosses the levee, 100 feet east of the northeast corner of the old mansion, and 0.5 mile from the station in azimuth $8^{\circ}15'45''$. Reference mark no. 2, a standard bronze disk, note 11a, projecting 4 inches above the surface of the ground, is 125 feet north of where the road crosses the track, 85 feet east of the center line of highway 31, 27 feet west of another gravel road, 37.5 feet east of the east rail of the main track, and 0.6 mile from the station in azimuth $25^{\circ}29'08''$. The English Bend river light is in azimuth $207^{\circ}30'14''$.

Westwego (Jefferson Parish, H. W. Hemple, 1930).—In town of Westwego, on the levee, just north of U.S. Food Products plant, 9.1 meters (30 feet) west of top of levee, 25.6 meters (84 feet) west of large fuel storage tank just inside levee, and 28.3 meters (93 feet) east of center of levee road. Surface and underground

marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 6.1 meters (20 feet) west of center of levee road, 0.3 meter (1 foot) west of wire fence, and 34.4 meters (113 feet) from station in azimuth $86^{\circ}44'$. No. 2 is at the first curve in the levee road north of station, 6.1 meters (20 feet) west of center line of road, and 109.1 meters (358 feet) from station in azimuth $245^{\circ}26'$. *B.M. 212/3 (M.R.C.)* (see description) is 63.76 meters (209.2 feet) from station in azimuth $159^{\circ}39'07''$.

New Orleans west base (Jefferson Parish, H. W. Hemple, 1929).—About 0.3 mile east of Kenner, on the right-of-way of the Louisiana & Arkansas Railway, 43 feet south of the center line of highway, 29 feet north of rail of railway and 60 feet west of center line of private road crossing railway. Reached from railway station at Kenner by going 0.3 mile east of Air Line Highway. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is just east of private road, on the railway right-of-way, and 23.41 meters (76.8 feet) from station in azimuth $293^{\circ}30'$. No. 2 is just east of private road, on railway right-of-way, and 116.95 meters (383.7 feet) from station in azimuth $90^{\circ}37'36''$.

Willswood (Jefferson Parish, H. W. Hemple, 1930).—About 10 miles west of New Orleans, and 1 mile west of Texas & Pacific and the Southern Pacific Railway station Waggeman, in rear of sugar mill of Willswood plantation, about 30 meters (98 feet) south of mill, 18.6 meters (61 feet) north of northeast corner of barn, 14.0 meters (46 feet) south of south rail of sugar railway, and 6.0 meters (20 feet) southwest of southwest corner of abandoned shed. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 6.3 meters (21 feet) southeast of northeast corner of barn, 13.3 meters (44 feet) northwest of switch post on a narrow gage railroad and 23.7 meters (78 feet) from the station in azimuth $20^{\circ}19'06''$. No. 2 is 9.3 meters (31 feet) south of the narrow gage railway, 19.5 meters (64 feet) southeast of northeast corner of tenant house, and 74.7 meters (245 feet) from station in azimuth $130^{\circ}03'$.

Almedia (St. Charles Parish, H. W. Hemple, 1929).—About 3 miles west-northwest of Kenner, on land owned by J. W. Sheldon of New Orleans. To reach from Shell service station at Kenner, go 3.8 miles west on U.S. Route 61 to Almedia road with sign "Almedia" on east gate post and three "Times-Picayune" paper boxes on the west post. Turn north on this road and go 0.7 mile to station, about 50 feet west of road and 40 yards north of dwelling house of A. Croft which is on north side of Louisiana & Arkansas Railway. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on east side of Almedia road, 26.44 meters (86.7 feet) from station in azimuth $209^{\circ}41'$. No. 2 is on east side of Almedia road, 49.72 meters (163.1 feet) from station, in azimuth $322^{\circ}09'$.

Davis (St. Charles Parish, H. W. Hemple, 1930).—About 3 miles east of town of Luling, about 300 meters (984 feet) back from levee, 35.4 meters (116 feet) north of north rail of the Texas & Pacific Railway, 79.2 meters (260 feet) northwest of northwest corner of block signal at east end of railroad curve and 195 meters (640 feet) south of 60-inch live oak tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 8.3 meters (27 feet) south of center line of Route 30, 1.4 meters (4.6 feet) south of wire fence along south side of road, 1.8 meters (6 feet) east of north gate post, 7.6 meters (25 feet) north of center of narrow bridge just inside gate, 10.7 meters (35 feet) north of picket fence around tenant house, and 257 meters (843 feet) from station in azimuth $141^{\circ}50'42''$. No. 2 is 4.3 meters (14 feet) north of east-and-west drainage ditch which runs through small levee along west side of pond formed when the levee broke in the vicinity in 1927, and 24.6 meters (81 feet) from station in azimuth $191^{\circ}03'$.

Hope (St. Charles Parish, H. W. Hemple, 1929).—In town of Good Hope, on property of General American Tank Car Co., 15 feet west of fence between tank farm and tank car repair shop, about 100 feet northeast of office building (gray one-story frame house), about 0.7 mile north of U.S. Route 61, and 0.2 mile north of station Good Hope, Illinois Central Railroad. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on fence line, 35.52 meters (116.5 feet) from station in azimuth $217^{\circ}29'$. No. 2 is on fence line, 26.60 meters (87.3 feet) from the station in azimuth $21^{\circ}27''$.

For notes in regard to marking of stations see p. 71.

Luling (St. Charles Parish, H. W. Hemple, 1930).—About 2.1 miles west of Luling, on levee bench, 140 meters (459 feet) east of irrigation siphon pipe over the levee (the only one on long straight stretch of levee), 22 meters (72 feet) north of center line of Route 30, and 13.1 meters (43 feet) south of crest of levee. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on south side of Route 30, 24.7 meters (81 feet) east of northeast corner of lone store owned by Mr. Eparanga, 15.8 meters (52 feet) east of gate leading into yard east of store, and 302 meters (991 feet) from station in azimuth $306^{\circ}08'30''$. No. 2 is at fence line, 6.4 meters (21 feet) south of center line of Route 30, and 34 meters (112 feet) from station in azimuth $358^{\circ}07'$.

Perilloux (St. John the Baptist Parish, H. W. Hemple, 1929).—About 2 miles northeast of Laplace, on land owned by J. D. Perilloux, Jr., Woodland Poultry Farm, Laplace. Reached from Louisiana & Texas Railroad crossing in Laplace by going 1.5 miles northeast on U.S. Route 51 to Mr. Perilloux's house. Station is in calf pen in front of barn, about 200 yards in rear of Mr. Perilloux's house. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in fence line in front of barn, 54.41 meters (178.5 feet) from station in azimuth $332^{\circ}43'$. No. 2 is in fence line in front of barn 25.97 meters (85.2 feet) from station in azimuth $124^{\circ}19'$. Following azimuths are from station: *Reserve, Godchaux Sugar Refinery, highest smokestack, $78^{\circ}07'55''$; Reserve, Godchaux Sugar Refinery, shortest concrete stack, $78^{\circ}12'50''$.*

Killona (St. Charles Parish, H. W. Hemple, 1930).—In Killona, a town on Route 30, about 6 miles northwest of Hahnville, on land midway between the properties of Tom Davis and Madison Green, one fourth mile east of railroad station, 13.1 meters (43 feet) north of road to railroad station, and 27.4 meters (90 feet) east of 18-inch maple tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 5.8 meters (19 feet) south of road and 21.1 meters (69 feet) from the station in azimuth $278^{\circ}32'$. No. 2 is in southeast corner of yard surrounding home of Tom Davis, 5.8 meters (19 feet) north of the road, 7.9 meters (26 feet) west of 18-inch maple tree, and 35.0 meters (115 feet) from the station in azimuth $24^{\circ}27'$.

Gramercy east base (St. John the Baptist Parish, H. W. Hemple, 1929).—About 8 miles east-northeast of Litcher, and 0.7 mile north of the Illinois Central Railroad Station Reserve, on right-of-way of Louisiana & Arkansas Railway. To reach from junction of U.S. Route 61 and gravel road running north just east of Godchaux Sugar Refinery, go 0.4 mile to Illinois Central Railroad tracks (railroad station reserve is to east), cross railroad and continue north on plantation road 0.7 mile to Louisiana & Arkansas Railway tracks and station site, which is 39 feet north of north rail, and about 39 feet east of plantation road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on east side of road, about 70 yards from railway, at ditch crossing, and 83.81 meters (275.0 feet) from station in azimuth $3^{\circ}19'$. No. 2 is on west side of road, about 20 feet north of telephone pole, and 24.32 meters (79.8 feet) from station in azimuth $121^{\circ}45'$. Azimuth from station to *Reserve, Godchaux Sugar Refinery, water tank is $7^{\circ}45'57''$.*

Edgard (St. John the Baptist Parish, H. W. Hemple, 1930).—About 2 miles south of Edgard post office on Route 30, on opposite side of Texas & Pacific Railway tracks from Edgard railway station, 12.8 meters (42 feet) northwest of center line of dirt road which is prolongation of main gravel road from center of town to railway station, 7.9 meters (26 feet) northwest of near rail of Columbia Plantation Railroad, 28.3 meters (93 feet) west of southwest corner of vegetable loading shed of railroad, 28.6 meters (94 feet) south of north rail of main track of Texas & Pacific Railway, and 32.5 meters (107 feet) south of southeast corner of loading platform at railway station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 15 inches below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at east fence line, 8.6 meters (28 feet) south of southwest corner of vegetable shed, 15.1 meters (50 feet) south of near rail of Texas & Pacific Railway, 12.5 meters (41 feet) east of center line of dirt road, and 25.9 meters (85 feet) from station in azimuth $274^{\circ}33'$. No. 2 is at northeast corner of railway station, 2.0 meters (7 feet) west of west rail of Columbia Plantation Railroad, 5.5 meters (18 feet) west of center line of main road, 9.8 meters (32 feet) north

of north rail of Texas & Pacific Railway, 10.2 meters (33 feet) northeast of southeast corner of depot loading platform, and 38.3 meters (126 feet) from station in azimuth $191^{\circ}25'$. Station semaphore of Texas & Pacific Railway is 35 meters (115 feet) from the station in azimuth $146^{\circ}18'$.

Gramercy west base (St. James Parish, H. W. Hemple, 1929).—About 2.5 miles north-northeast of Lutecher, on land owned by Colonial Sugars Co., Gramercy. To reach from U.S. Route 61 in front of Colonial Sugars Co.'s refinery, take main road leading around west side, turn right (east) in rear of refinery, and follow road in front of Negro cabins about one fourth mile, turn left (north) on plantation road, and go 1.4 miles to the station, which is east of road, about 150 yards west of Louisiana & Arkansas Railway station, Gramercy, about 100 yards south of railway crossing, and southeast of plantation crossroads. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on north side of ditch parallel to railroad, and 37.43 meters (122.8 feet) from station in azimuth $219^{\circ}36'$. No. 2 is on east side of plantation road, and 94.31 meters (309.4 feet) from station in azimuth $349^{\circ}58'$.

Johnson (St. John the Baptist Parish, H. W. Hemple, 1930).—South of Johnson railroad station, and about 20 meters (66 feet) west of plantation road leading south therefrom, 22.4 meters (73 feet) southwest of the southeast corner of abandoned brick sugar house, 10.0 meters (33 feet) north of triple elm tree in small east-and-west drainage ditch, and 27.3 meters (90 feet) northwest of north-west corner of northernmost concrete gate post on east side of plantation road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 0.3 meter (1 foot) west of wire fence, 21.3 meters (70 feet) north of northernmost gate post, 20.6 meters (68 feet) southeast of southeast corner of old sugar house, and 25.25 meters (82.8 feet) from station in azimuth $264^{\circ}53'$. No. 2 is 6.4 meters (21 feet) east of plantation road, 0.6 meter (2 feet) west of woven wire fence, 6.7 meters (22 feet) north of north gate post, and about 340 meters (1,115 feet) from station in azimuth $5^{\circ}05'28''$.

Remy (St. James Parish, H. W. Hemple, 1929).—About 3 miles west of Lutecher, and 1.7 miles north of Remy railroad station, on land owned by Colonial Sugars Co. To reach from Reymaud's service station in Lutecher go 3.3 miles west on U.S. Route 61 to gravel road leading to Remy railroad station, take this road 0.3 mile to railroad, cross the railroad and continue 1.7 miles to left turn. Station is in angle formed by this turn. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on north side of road, about 90 yards from bend, and 82.15 meters (269.5 feet) from station in azimuth $91^{\circ}58'$. No. 2 is on east side of road, southeast of telephone line intersection, and 125.52 meters (411.8 feet) from station in azimuth $337^{\circ}47'33''$. Azimuth from station of *Paulina, St. Josephs Church spire* is $298^{\circ}43'44''$.

Vacherie (St. James Parish, H. W. Hemple, 1930).—About 7 miles east by south of St. James, and 2.2 miles south of the Texas & Pacific Railway station Vacherie, on land owned by Waguespack and Haydel plantation, south of two tenant houses, which are just south of narrow gage railroad crossing, and are the first houses on west side of gravel road leading south from railway station at Vacherie, in square pasture lot, 23.0 meters (75 feet) south of picket fence along north edge of the pasture, 21.0 meters (69 feet) west of center line of road, 11.9 meters (39 feet) west of west rail of narrow gage railway track, 6.2 meters (20 feet) west of wire fence along west side of road, and 37.0 meters (121 feet) north of wire fence on south edge of pasture. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 9.1 meters (30 feet) east of center line of road, and 30.3 meters (99 feet) from station in azimuth $251^{\circ}59'$. No. 2 is in southeast corner of pasture, 0.4 meter (1.3 feet) from both fences, 14.8 meters (49 feet) west of center line of road, and 38.1 meters (125 feet) from station in azimuth $325^{\circ}57'$.

St. James (St. James Parish, H. W. Hemple, 1930).—About $1\frac{1}{2}$ miles east of town of St. James, 5.1 miles west (by road) of road to Vacherie, about one half mile below and on opposite side of river from College Point, a little west of south of navigation light on river opposite College Point, reached just before river turns north. Station is on bench of levee, 23.8 meters (78 feet) north of center line of U.S. Route 30, and 11.0 meters (36 feet) south of crown of levee. Surface and underground marks are standard station disks in concrete, notes 1a and 7a.

Reference marks are standard reference disks in concrete, note 11a. No. 1 is 6.4 meters (21 feet) south of center line of Route 30, 12.5 meters (41 feet) east of northeast corner of picket fence, and 0.3 mile from station in azimuth $236^{\circ}05'23''$. No. 2 is 4.9 meters (16 feet) south of center line of Route 30, 3.6 meters (12 feet) west of gate leading into vacant farmhouse, and 28.6 meters (94 feet) from station in azimuth $312^{\circ}35'$. *B.M. 194/3 (M.R.C.)* (see description thereof) is 27.35 meters (89.7 feet) from station in azimuth $314^{\circ}58'$.

Supplementary points

St. Patricks Church (New Orleans Parish, H. W. Hemple, 1930).—On stone tower of St. Patricks Church on Camp Street between Julia and Girod Streets, in New Orleans. A triangulation station was established on this church in 1859, but it was destroyed in 1918 when tower was rebuilt. Station mark is brass disk in coping on west side (Camp Street) of tower, and in vertical position about 1 foot above tinned roof. An eccentric point was occupied in 1930 with distances as follows: Southeast spire, 7.278 meters (23.88 feet) in azimuth $327^{\circ}53'$; inner corner of northwest spire, 2.75 meters (9.0 feet); inner corner of northeast spire, 5.18 meters (17.0 feet); inner corner of southwest spire, 4.67 meters (15.3 feet); and station, 2.043 meters (6.70 feet) in azimuth $110^{\circ}09'$ from the eccentric point. The four spires rise about 12 feet above roof.

Chalmette Monument (St. Bernard Parish, C. H. Boyd, 1873; 1930).—About 6 miles east of downtown New Orleans, on left bank of Mississippi River, and on Chalmette Monument Reservation belonging to War Department. (See description of station *Chalmette 2* for directions on how to reach station site.) Station mark is brass disk at head of stairs, directly under peak of 100-foot high marble monument, 2.05 meters (6.7 feet) from inner southeast and 2.05 meters (6.7 feet) from inner southwest corner. Original station was established in uncompleted monument, which was finished in 1908. Peak of monument was determined by intersection from main scheme stations.

Basin (Orleans Parish, F. L. Gallen, 1931).—On the shore of Lake Pontchartrain in New Orleans, near the end of a pile-butressed, earth-filled mole at southeast corner of clubhouse of the Southern Yacht Club station, in middle of mole, about 10 meters (33 feet) from outer end, and in center of a small circular raised plot about 10 feet in diameter which is 1 foot higher than surrounding ground. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark no. 1 is standard reference disk in the east concrete abutment support of a horizontal, cylindrical tank about 20 feet long which is close to south end of clubhouse. It is 337.46 feet from the station in azimuth $45^{\circ}35'43''$. Reference mark no. 2 is center of an iron bolt in concrete-filled 2-inch iron pipe set in an irregular block of concrete which is flush with the surface, about half-way down and in center of mole, about 40 meters east of southeast corner of clubhouse, and 129.38 feet from station in azimuth $39^{\circ}56'$. Azimuth from the station of Milnerburg Lighthouse is $264^{\circ}33'01''$.

B.M. 194/3 (M.R.C.) (St. James Parish, H. W. Hemple, 1930).—On right bank of Mississippi River, about half mile below College Point, about $1\frac{1}{2}$ miles, by road, east of town of St. James, on south side of Highway 30, on line between Home and Pikes Peak plantations, inside of fence along road behind levee, 2 meters (7 feet) above fence running back and forming small enclosure for house and garden, 10 meters (33 feet) south of levee, 9 meters (30 feet) from small ditch running back, and 40 meters (131 feet) from house (now vacant) on south side of Highway 30. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below, as described in note 16. Station *St. James* (see description thereof), is distant 27.35 meters (89.7 feet) in azimuth $134^{\circ}58'$.

B.M. 200/3 (M.R.C.) (St. John the Baptist Parish).—On right bank of Mississippi River, on south side (in plain sight) of Route 30, about one-half mile east of Catholic Church at Edgard, on Becknel plantation, inside fence along road behind levee, between road and ditch which leads back to Becknel's sugarhouse, 25 meters (82 feet) below fence corner, 70 meters (230 feet) north of house, 60 meters (197 feet) from river bank, and about 10 meters (33 feet) south of base of levee. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below, as described in note 16. Following azimuths are from station: Becknel chimney, $10^{\circ}49'$; Carle sugarhouse, $28^{\circ}08'$.

Pecan (St. Charles Parish, H. W. Hemple, 1929).—About 7 miles west of Kenner, on the old Pecan plantation, in charge of L. Gus Elfer. To reach from

Shell service station at Kenner go 6.9 miles west on U.S. Route 61 to partially graveled road, turn right and go 0.4 mile to railroad and station, which is 61 feet south of south rail of Illinois Central Railroad tracks and 47 feet east of center line of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. *P.B.M. 206/1 (M.R.C.)*, (see description thereof), is 134.83 meters (442.4 feet) from station in azimuth $256^{\circ}04'03''$.

P.B.M. 206/1 (M.R.C.) (St. Charles Parish, H. W. Hemple, 1929).—On left bank of Mississippi River, on Pecan Grove plantation, on right of way of Yazoo & Mississippi Valley Railroad, 7 meters (23 feet) in front of track, 125 rail lengths below milepost 17, and 48 rail lengths below upper switch to siding. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above and copper bolt in tile below, as described in note 16. Station *Pecan* (see description thereof) is distant 134.83 meters (442.4 feet) in azimuth $76^{\circ}04'05''$.

B.M. 212/3 (M.R.C.) (Jefferson Parish, H. W. Hemple, 1930).—On right bank of Mississippi River, about 400 meters (1,312 feet) below Company Canal, on west side of levee road, inside fence, at intersection of ditch leading back from levee and road ditch behind levee, 10 meters (33 feet) behind levee, 220 meters (722 feet) below angle in levee where new levee was joined to old, and about 175 meters (574 feet) from river bank. Marked by standard mark of Mississippi River Commission, brass cap on steel pipe above and copper bolt in tile below, as described in note 16. Station *Westwego* (see description thereof) is distant 63.76 meters (209.2 feet) in azimuth $339^{\circ}39'07''$.

GULF COAST ARC, NINETY-FOURTH MERIDIAN TO DONALDSONVILLE

Principal stations

Reese (Orange County, Tex., F. L. Gallen, 1931).—About 8 miles north of Orange, on land belong to Mr. Duhig of Lake Charles, La., in southwest corner of small cleared field east of road and opposite house occupied by George Reviea. To reach from Orange go by Route No. 87 for 5.2 miles to fork, then take right-hand fork 2.8 miles to station. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at southeast corner of yard around brown bungalow, and 100.3 feet from station in azimuth $85^{\circ}07'$, no. 2 is 24 feet east of center line of road, 13 feet southeast of 18-inch pine tree standing about 4 feet east of bank of ditch, and 298 yards (paced) from station in azimuth $170^{\circ}15'45''$. A 2-foot sweet-gum tree with double top stands about 12 feet north of the pine tree. Station P.T. No. 4M (U.S.G.S.) 1926 is slightly south of west from station.

Orange (Orange County, Tex., F. L. Gallen, 1931).—In city of Orange, in courthouse grounds, 51.60 feet north of northwest corner of jail, 63.15 feet northwest of northeast corner of jail, and 43.9 feet east of curbing on east side of Border Street. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Surface mark is flush with ground. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in corner of sidewalk at northwest corner of intersection of Border and Henderson Streets, 3.24 feet west of east edge of west curb of Border Street and 11.8 feet southeast of southeast corner of house no. 118 Border Street, and 160.12 feet from station in azimuth $31^{\circ}47'$. It projects 2 inches above sidewalk. No. 2 is flush with surface on east side of cement walk in front of no. 203 Ninth Street, 25 feet west of center line of street, 39.87 feet southeast of northeast corner of that house, 31.27 feet east of southeast corner of same house, and approximately 0.15 mile from station in azimuth $141^{\circ}13'14''$.

Vinton (Calcasieu Parish, F. L. Gallen, 1931).—About 5 miles northwest of Vinton, on land owned by Dr. Ford of Vinton, in northeast corner of a T-intersection of dirt road with State Route 121, 62 feet north of center line of dirt road, and 64 feet east of center line of State road. To reach from U.S. Route 90 at its junction with State Road 121, go north 5.5 miles along State road to dirt road leading east along section line at station site. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 25 feet west of center line of road, and 96.0 feet from station in azimuth $79^{\circ}12'$. No. 2 is 25 feet west of center line of road, 6 feet north of power-line pole A2/32, and 0.3 mile from station in azimuth $178^{\circ}33'33''$.

Ged (Calcasieu Parish, F. L. Gallen, 1931).—About 4 miles south of Vinton, 1 mile southwest of Ged oil field, on a low knoll, about 800 feet southwest of

schoolhouse, and 750 feet southwest of pond, on land owned by Henry Gray of Lake Charles. Station is 100 feet north of west from frame house, 45 feet northwest of small garage with galvanized iron roof, in wire fence line 40 feet north of a pig lot, and 30 feet south of gate to lane leading to house one fourth mile to west. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Surface mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 8 inches, and is about 500 feet south of pond, 400 feet east of white schoolhouse, east of fork in dirt road leading south from main gravel road, 156 feet south of gravel road which skirts pond on south, 89.5 feet south of front yard fence of small house, 71 feet east of middle of three 20-inch trees in row, 33.5 feet east of center line of dirt road, and approximately 0.2 mile from station in azimuth $236^{\circ}06'08''$. No 2 projects 12 inches, and is one fourth mile west of schoolhouse, 400 feet south of pond, 150 feet north of east from house, 175 feet north of lane to house, in southeast corner of garden, 3.20 feet west of fence corner and gate post, 1 foot south of fence, and 234.32 feet from station in azimuth $136^{\circ}23'$. Azimuth from station to red brick chimney on east side of white house, distant three fourths mile, is $119^{\circ}23'45''$. To reach from U.S. Route 90 at Vinton go along main street to south of town, thence 3 miles southwest on main gravel road to Ged oil field. From center of field take main gravel road south, then west on south side of pond three fourths mile to dirt road leading south about 100 yards east of schoolhouse; follow this road south, bear west at forks one fourth mile to top of knoll and station site.

Edgerly (Calcasieu Parish, F. L. Gallen, 1931).—About $1\frac{1}{4}$ miles north of the village of Edgerly, on land owned by the Gulf Producing Co., which has an office in Vinton, La. To reach from U.S. Route 90 from a point one half mile south of Edgerly, follow an old gravel road to railroad crossing in Edgerly, then 1.2 miles north on Route 380 to south edge of oil field and station, which is near house with garage in northwest corner of yard and plank road along side fence to the highway. Station is 47.5 feet west of center line of the highway, 54.6 feet north of 2-foot oak tree, 2 feet north of picket fence around house, and nearly opposite dim road leading east into the oil field just north of string of tenant houses. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 30 feet east of center line of road, in the northeast intersection of the dim road, and 80.6 feet from the station in azimuth $245^{\circ}31'$. No. 2 is 30 feet east of center line of the road, 15 feet south of power line pole number 20 which is about 25 yards south of concrete culvert and opposite the north end of power house on the west side of the road, and 0.2 mile from the station in azimuth $355^{\circ}48'17''$.

Rice (Calcasieu Parish, F. L. Gallen, 1931).—About 10 miles southwest of Sulphur and 6 miles southeast of Vinton in the right-of-way of Highway No. 381, adjoining land owned by the Southern States Realty Co. of New Orleans. To reach from Vinton go by gravel highway east 2.5 miles, then south 3 miles, then east 2 miles to station, which is 42 feet north of center line of Highway No. 381, near southeast corner of cultivated field, 1 mile east of gravel road leading south, on a mound about 80 feet in diameter and 2 feet above the general level, 76 feet west of center line of lane going north on section line from the main highway, just west of end of an irrigation canal on north side of highway, one fourth mile south of small frame house, 55 feet west of southeast corner of field, and 0.8 foot south of wire fence line. Surface and underground marks are standard station disks in concrete, note 1a and 7a. Upper mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is flush with ground, near the northeast corner of cultivated field, in the right-of-way and 32 feet south of the center line of Route 381, 47 feet southwest of its intersection with the dirt lane section-line road, 1.3 feet east of a wire fence corner, and 83.76 feet from station in azimuth $330^{\circ}35'$. No 2 projects 5 inches, is 0.15 mile east of gravel road leading south, in the right-of-way of and 31 feet south of center line Route 381, near side center of garden plot, 65 feet northeast of frame bungalow, 33 feet east of fence corner and double trees, 1.25 feet north of fence line, and 0.85 mile from station in azimuth $88^{\circ}41'59''$.

Stine (Calcasieu Parish, F. L. Gallen, 1931).—About 2 miles north of Sulphur, in small pasture lot owned by Mrs. Minnie M. Stine. Reached from Sulphur by following State Route 104, 1.5 miles to station, which is in a small cluster of trees, 46 feet west of center line of road, 12.5 feet west of fence, one fourth mile north of large rice canal, and about 25 yards north of small square box house which stands opposite a large house on east side of the road belonging to Burns

Haggett. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 25 feet east of center line of road, 5 feet south of power-line pole no. BO 30, and 0.12 mile from station in azimuth $190^{\circ}35'51''$. No. 2 is east of road, 10 feet northwest of front gate to house of Burns Haggett, and 97.5 feet from station in azimuth $308^{\circ}47'$.

Wright (Calcasieu Parish, F. L. Gallen, 1931; 1932).—About 10 miles southwest of Lake Charles and 6 miles south of Sulphur, on cultivated land owned and occupied by C. J. Wright. To reach from Sulphur, go south on the main street to Highway 104, then south 5.7 miles, then east 0.5 mile, then south 1 mile to intersection with Route 381, a section corner where there is a small store and filling station. Station is 660 feet south of center line of gravel Highway 381, 130 feet east of center line of Highway 104, 103.2 feet east of fence corner, 115.8 feet west of fence corner and garden plot, and 1 foot north of wire fence between two cultivated fields. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 5 inches, is 0.2 mile east of road intersection mentioned above, in fence line on the north side of section-line road, and on south side of a cultivated field. It is 315 feet west of fence corner which is on west side of a lane, 27.5 feet north of center line of gravel section-line road, 0.67 foot south of wire fence line, and one fourth mile from station in azimuth $228^{\circ}18'38''$. No. 2 projects 8 inches, is 500 feet south of road intersection referred to above, in fence line on the east side of Route 104 on the west side of a cultivated field, 158.5 feet north of southwest fence post of Mr. Wright's 10-acre field, 25.5 feet east of center line of Route 104, and 189.16 feet from station in azimuth $146^{\circ}19'$.

Charles (Calcasieu Parish, F. L. Gallen, 1931).—About $3\frac{1}{2}$ miles northwest of Lake Charles and 2 miles north of Westlake, on land owned by Jackson Pillely and occupied by David Goss. Reached from Lake Charles by U. S. Route 90 to Westlake. At school in Westlake where U S 90 turns west keep straight ahead on shell road, north 2 miles to lane leading to Goss's house which is about 250 yards west of road. Station is about 100 yards northeast of the house, in the northeast intersection of lane and the United Gas Co.'s right-of-way, near center of small mound which has pine trees on the east and south, on a line between 20-inch pine tree and first telephone pole north of lane leading to house, 54.4 feet southeast of the pole and 18 feet northwest of the tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks set in concrete, note 11a. No. 1 is on east bank of the road and 168 yards from the station in azimuth $312^{\circ}56'08''$. No. 2 is at southeast corner of Mr. Goss's garden fence and 332.8 feet from station in azimuth $62^{\circ}15'$.

Davies (Calcasieu Parish, F. L. Gallen, 1931).—About 6 miles south of the center of the city of Lake Charles. To reach station go south on South Street and gravel road, 3.5 miles to forks, take the west fork 0.9 mile to main road, then south 0.5 mile to where main road crosses the levee on the west, and south 2.1 miles on lightly shelled road to station, which is in fence line between the right-of-way of section-line road and the property of D. M. Davies, who lives about 600 feet west of north, on top of small mound, 158.8 feet north of fence corner marking southeast corner of a cultivated field, 31 feet west of the center line of road, and 191 feet north of an intersecting dirt road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects about 12 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 12 inches, is on the west side of a cultivated field, about 600 feet southeast of Mr. Davies' house, in fence line between the field and right-of-way of section-line road, 28 feet east of center line of road, 249 feet north of center line of intersecting dirt road, 0.5 foot west of fence line, 216.8 feet north of a fence corner, and 83.01 feet from station in azimuth $225^{\circ}28'$. No. 2 projects 8 inches, is on west side of large cultivated field, in a fence line marking right-of-way of road, about 0.4 mile south of Mr. Davies' house one fourth mile south of section-corner road intersection, 39 feet east of center line of road, on a 3-foot mound, 0.75 foot west of wire fence line, and approximately 0.3 mile from station in azimuth $357^{\circ}34'54''$. The following distances and azimuths are from the station: Lake Charles, Majestic Hotel, airways beacon, 6 miles, $188^{\circ}58'43''$; Lake Charles rice mill, tall silver tank, 7 miles, $191^{\circ}36'48''$.

Iowa (Calcasieu Parish, F. L. Gallen, 1931).—About 8 miles east of Lake Charles, 4 miles west of Iowa, and 2 miles east of Chloe station on the Southern Pacific, on land owned by Calcasieu Parish. To reach from Lake Charles go by

U.S. Route 90 east 6 miles to junction with brick half slab road leading north to Chloe one half mile, then east 2.6 miles to right angle turn. Station is on outside of this turn, 52 feet from center line of road, 52.5 feet east of north-and-south fence, and 14 feet south of east-and-west fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 33 feet south of center line of road near lane leading south, and 0.45 mile from station in azimuth $270^{\circ}12'26''$. No. 2 is east of road, 3 feet west of a north-and-south fence line, and 115.6 feet from station in azimuth $349^{\circ}18'$.

Homewood (Calcasieu Parish, F. L. Gallen, 1931).—In the small hamlet of Homewood which is about 10 miles southeast of Lake Charles, at the junction of State Route 98 and U.S. Route 171. Station is 161 feet west of center line of Route 171, 6.2 feet northwest of the northwest corner of fence around house and blacksmith shop of Alcide Richard, 1.1 feet west of fence line between right-of-way of the Southern Pacific and the property of the Yount-Lee Oil Co., and 46.7 feet east of east rail of railroad. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 3 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is flush with surface, 45 feet northwest of northwest corner of first wooden culvert about 0.3 mile north of junction of the highways mentioned above, 48 feet west of center line of Route 171, 1.85 feet southeast of southeast corner of the Yount-Lee Oil Co.'s fence and about 0.25 mile from station in azimuth $183^{\circ}46'02''$. No. 2 is flush with surface, in vacant field on opposite side of road from Richard's blacksmith shop, 30 feet east of center line of Route 171, 64 feet north of an east-and-west fence line, and 206.20 feet from station in azimuth $292^{\circ}19'$. An azimuth mark (probably a standard disk set in concrete) is about 3 miles from station on property owned by E. O. Doughenbourg. To reach from the station, go north 2 miles on Route 171 to a left turn in the road; then on 1 mile to bridge crossing a ditch, take road about 50 yards east of railroad crossing leading north 0.7 mile to Mr. Doughenbourg's house, which is a fairly large painted house west of road. The mark is 30 feet west of center line of road, 13.71 feet northwest of northeast corner of fence around barnyard and is set 12 inches below surface. Its azimuth from station is $160^{\circ}42'20''$.

Lacassine (Jefferson Davis Parish, F. L. Gallen, 1931).—In the village of Lacassine also known as Rice, in easterly edge of school grounds. To reach from U.S. Route 90 go north one half mile, then east one fourth mile to school grounds. The station is 80 paces east of most easterly school building, 6.25 meters (20.5 feet) west of east fence line of yard, and 20.68 meters (67.9 feet) south of north fence line. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on north side of dirt road which makes a sharp turn to the south at this point, 0.20 meter (0.7 foot) north of fence line, 8.28 meters (27.2 feet) north of center line of road, and 36.12 meters (118.5 feet) from station in azimuth $177^{\circ}59'$. No. 2 is on east side of gravel road leading up from U.S. Route 90, 0.73 meter (2.4 feet) west of fence line, 10.95 meters (35.9 feet) west of center line of the road, and 0.25 mile from station in azimuth $39^{\circ}16'44''$.

Hayes (Calcasieu Parish, F. L. Gallen, 1931).—In the village of Hayes, which is reached from Lake Arthur or Lake Charles by Route 98. In Hayes go west 1 block from the main street on gravel road north of Southern Pacific tracks, then north 1 block to station, which is about one fourth mile northwest of railroad station, in the southwest corner of school grounds, about 65 feet northeast of street intersection, in line with a row of ornamental trees, 284.5 feet west of south of southwest corner of the brick school building which is in the angle where Route 98 turns from north to west, 44 feet east of center line of gravel street, 57 feet north of center line of unsurfaced street, 30.3 feet northeast of a fence corner, and 14.27 feet east of a wire fence. Surface and underground marks are standard station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 5 inches, is about one fourth mile southwest of railroad station, 400 feet west of Route 98, near the northwest corner of cultivated field, 35 feet west of center line of unsurfaced street, 27 feet south of center line of dirt street, 14.3 feet east of fence corner, 1 foot north of a wire fence, and one-fourth mile from station in azimuth $9^{\circ}31'18''$. No. 2 projects 3 inches, is 29 feet west of center line of gravel street, about 250 feet southwest of southwest corner of school building, about 400 feet south of Route 98, 87 feet

For notes in regard to marking of stations see p. 71.

north of fence corner, 0.67 foot east of a wire fence line, and 100.40 feet from station in azimuth $139^{\circ}25'$.

Welsh (Jefferson Davis Parish, F. L. Gallen, 1931).—About 2 miles southeast of the town of Welsh, on property owned by W. L. Tremble of Shreveport and occupied by O. J. McMillan. To reach from Welsh go south 0.5 mile on Route 105, then east 0.5 mile to where road turns south, then east $1\frac{1}{4}$ miles to McMillan's house. Station is one half mile south of U.S. Route 90 in the northeast corner of the lot, about 80 yards northeast of house, 0.59 meters (1.9 feet) west of east fence line, 14.31 meters (46.9 feet) south of north fence line, and about 28 meters (92 feet) east of gate at the entrance to yard. Surface and underground marks are standard station disks in concrete notes, 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 19.58 meters (64.2 feet) south of center line of Route 90, 0.3 meter (1 foot) north of fence line, and one half mile from the station in azimuth $174^{\circ}52'13''$. No. 2 is 0.27 meter (0.9 foot) west of fence line separating yard from the lot in which the station is located, 2.72 meters (8.9 feet) south of property-line fence, 13.05 meters (42.8 feet) south of center line of dirt road, and 39.75 meters (130.4 feet) from station in azimuth $95^{\circ}25'$. Azimuth from station to *Welsh municipal tank* is $120^{\circ}19'35''$.

Lake Arthur west base (Jefferson Davis Parish, F. L. Gallen, 1931).—In the western outskirts of the village of Thornwell, which is about 7 miles west of Lake Arthur, on the right-of-way of the Southern Pacific. To reach from Lake Arthur go by gravel road which leads west 0.4 mile north of where Route 98 turns west, just north of *Lake Arthur east base*, follow west about 7 miles to Thornwell and go west on dirt road, north of railroad station 0.2 mile to station, which is on the north side of tracks, on west side of a level grassy plot (1,500 feet by 150 feet), 1,200 feet west of railroad station, 98 feet southeast of a fence corner, 61 feet southeast of center line of curve in dirt road where it turns west after a short S jog, and 45.72 feet north of center of north rail of railroad track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 3 inches, is in fence line near southwest corner of cultivated field, about 1,250 feet north of west of railroad station, 199.96 feet north of north rail of railroad, 33 feet north of center line of dirt road where it makes a short jog from west to south, 69.5 feet east of fence corner, 0.8 foot north of wire fence line, and 154.24 feet from station in azimuth $178^{\circ}54'$. No. 2 projects 6 inches, is on the west side of timber platform of frame railway station "Thornwell", 40.40 feet north of north rail of main track, 21.6 feet south of center line of a siding track, 135 feet west of center line of a gravel road which crosses tracks, and 1,198 feet from station in azimuth $276^{\circ}15'07''$. Azimuth from station of silo at farmhouse, distant about $2\frac{1}{2}$ miles, is $158^{\circ}35'15''$.

Jennings (Jefferson Davis Parish, F. L. Gallen, 1931).—In the town of Jennings, in the southwest corner of the fair grounds which are 3 blocks south and 1 block west from crossing of railroad tracks. Station is in southwest fence corner, 8.34 meters (27.4 feet) north of south fence line, 5.13 meters (16.8 feet) east of west fence line which is the property line on Route 25. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 3.2 meters (10 feet) west of the center line of gravel road at gate leading into fair grounds, 1.9 meters (6 feet) south of entrance gate, 7.00 meters (23.0 feet) northeast of barn corner, and one fourth mile from station in azimuth $208^{\circ}31'55''$. No. 2 is in fence line, 34.07 meters (111.8 feet) from station in azimuth $283^{\circ}15'$. Azimuth from the station to *Jennings municipal tank* is $204^{\circ}43'37''$.

Lake Arthur east base (Jefferson Davis Parish, F. L. Gallen, 1931).—In the western outskirts of the town of Lake Arthur, 0.8 mile north and 0.5 mile west of water tank at power plant, in fence line between right-of-way of the Southern Pacific and property of R. B. Johnson who lives about 225 feet northeast. To reach from the center of the business district go north on the main street 1 mile, then west one fourth mile to cross roads, take dirt road west 200 yards to cattle guard, and 250 feet southeast along the right-of-way of the railroad to station. The station is about 340 feet west of gravel highway (Route 98), 550 feet south of east of section foreman's house, 145 feet south of dirt road leading to his house, 45.95 feet north of north rail of single track railroad, 1.0 foot south of fence line at a point 240 feet east of a fence corner which is just south of the cattle guard. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 5 inches, and is 46 feet north-

west of center of crossing of Route 98 and railroad tracks, about 700 feet west of section foreman's house, 21.70 feet north of north rail, 24.7 feet south of right-of-way fence line, 1.74 feet east of a cattle guard and about 1,300 feet from station in azimuth $96^{\circ}46'05''$. No. 2 projects 4 inches, is about 325 feet west of a right angle bend in Route 98, 150 feet west of front of Mr. Johnson's house, 200 feet north of railroad, 28 feet south of center line of dirt road to the section foreman's house, 5.5 feet west of northwest corner of a shed, 1.0 foot north of a wire fence, and 144.08 feet from station in azimuth $183^{\circ}14'$. Azimuth from the station of *Lake Arthur power plant tank*, distant approximately 1 mile is $302^{\circ}58'56''$.

Wild (Acadia Parish, F. L. Gallen, 1931).—About 8 miles north of Gueydan, 2 miles north of Morse, and $1\frac{1}{2}$ miles south of Midland (a small village on U.S. Route 90), on land owned and occupied by E. E. Wild. To reach from Midland go 1.7 miles on Route 128 to a dirt road on section line leading west 0.2 mile to Wild's house, which is the first on north side of road. Station is in southeast corner of pasture west of house, 4.62 meters (15.2 feet) west of east fence line, 4.75 meters (15.6 feet) north of south fence line, and 100 feet north of center line of the road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 7.45 meters (24.4 feet) west of center line of Highway 128, 82 paces south of road intersection, in the west fence line, and 0.3 mile from station in azimuth $288^{\circ}37'36''$. No. 2 is 7.15 meters (23.5 feet) south of center line of section line road 0.49 meters (1.6 feet) south of a fence, and 150 feet from station in azimuth $28^{\circ}03'$. Azimuth of the Midland railroad station tank is $184^{\circ}45'52''$.

Gueydan (Vermilion Parish, F. L. Gallen, 1931).—In the town of Gueydan, in the southwest corner of cultivated field owned by A. Kaplan of Kaplan, about 800 feet north of city water tank, 101 feet east of center line of gravel highway to Morse (Route 128), 200 feet northeast of Saal's rice warehouse, 236 feet east of east rail of New Iberia-Midland branch of the Southern Pacific, 39 feet north of center line of little-used street, 75 feet east of siding track, 14.80 feet north of wire fence, and 36.5 feet east of gate into field. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 10 inches below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 8 inches, and is on north side of Saal's warehouse, between the branch line tracks and highway, 92 feet west of center line of highway, 37 feet north of northwest corner of a galvanized iron warehouse, 42.2 feet east of east rail of main tracks, and 3 feet north of a power line pole, and 195.2 feet from station in azimuth $59^{\circ}30'$. No. 2 projects 4 inches, is about 0.6 mile north of city water tank, 32 feet east of center line of road, 29 feet south of center of irrigation ditch, 3.5 feet east of fence line, and 0.5 mile from station in azimuth $177^{\circ}26'02''$. The following distances and azimuths are from the station: *Gueydan, municipal tank*, 800 feet, $348^{\circ}55'56''$; *farmhouse tank*, about 1 mile, $223^{\circ}33'47''$.

Boulet (Acadia Parish, F. L. Gallen, 1931).—About 5 miles south of Crowley, on the west side of highway (Route 26), on property owned and occupied by Earl Broulet. The station is about 60 yards northwest of house, 20 yards north-northwest of pump, 14.42 meters (47.3 feet) north of fence line, 13.39 meters (43.9 feet) east of west fence line, and 18.83 meters (61.8 feet) northeast of gate in corner leading into pasture in which reference mark no. 2 is located. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 11.40 meters (37.4 feet) north of center of east-and-west section-line road, 0.33 meter (1.1 feet) north of fence line, 8.60 meters (28.2 feet) west of flood canal fence line, and 0.3 mile from station in azimuth $277^{\circ}39'08''$. No. 2 is in pasture, 0.31 meter (1.0 foot) north of fence, 7.51 meters (24.6 feet) north of center line of section-line road, 21.74 meters (71.3 feet) west of fence line, and 177 feet from station in azimuth $32^{\circ}16'$. The following azimuths are from the station: *Crowley, Mutual Rice Co. tank*, distant 5 miles, $168^{\circ}47'36''$; *Crowley, Louisiana Rice Co. tank*, distant 5 miles, $172^{\circ}08'30''$.

Vincent (Vermilion Parish, F. L. Gallen, 1931).—About $2\frac{3}{4}$ miles west of the town of Kaplan in south side of pasture owned by Vincent Bros. Reached from Kaplan by gravel road (Route 25). The station is 53 feet north of center line of gravel road, about 750 feet south of Vincent Bros.' house, 132.3 feet north of north rail of Southern Pacific Co.'s single track, 150 feet east of small store, 16 feet north of wire fence marking north side of right-of-way of road, 109.8 feet east of property line fence, and 35 feet west of center line of lane to Vincent Bros.' house. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference marks are standard ref-

erence disks in concrete, note 11a. No. 1 projects 8 inches, and is near a T-intersection in the roads about one fourth mile east of store and lane to Vincent Bros.' house, near fence corner in extreme southeast corner of cultivated field, 116.8 feet north of north rail of railroad track, 39.5 feet north of center line of Route 25, 26.5 feet west of side road, 3.5 feet north of west of fence corner, and approximately 0.2 mile from station in azimuth $269^{\circ}25'18''$. No. 2 projects 12 inches, and is in the right-of-way of the Southern Pacific, 1 foot south of a wire fence line between railroad and Route 25, about 800 feet south of Vincent Bros.' house, 100 feet east of store, 46.7 feet north of north rail of railroad track, 31 feet south of center line of road and 93.96 feet from station, in azimuth $23^{\circ}08'$. The following azimuths are from the station: *Kaplan municipal tank*, $278^{\circ}17'23''$; *Kaplan, Kaplan Rice Co. tank*, $285^{\circ}28'52''$.

Indian (Vermilion Parish, F. L. Gallen, 1931).—About 9 miles north of Kaplan, in the Indian Bayou consolidated school grounds at Indian Bayou. Reached from Kaplan or Rayne by Route 177. The station is in southeast corner of school yard, 4.05 meters (13.3 feet) north of fence line, and 5.52 meters (18.1 feet) east of property line. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at junction of highway and a side road, 9.38 meters (30.8 feet) west of center line of highway (Route 177) and 11.13 meters (36.5 feet) north of center line of side road, 2.11 meters (6.9 feet) north of a fence, 1.5 meters (5 feet) west of a fence line, and 0.2 mile from station in azimuth $18^{\circ}44'10''$. No. 2 is in school grounds, 0.7 meter (2 feet) east of a fence line, 10.90 meters (35.7 feet) east of center line of the highway (Route 177) and 360 feet from station in azimuth $95^{\circ}46'10''$.

Kaplan (Vermilion Parish, F. L. Gallen, 1931).—In the town of Kaplan, which is about 9 miles west of Abbeville on Route 25, 0.3 mile north of center of town, one half block west of the main street, and about one fourth mile northeast of the Catholic Church, in center of north side of the grounds of new consolidated school, 429.7 feet north of northwest corner of main school building, 260 feet east of first street west of school, and 59.5 feet south of center line of first street north of school (in 1931 this street has not been run through to this point). Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 6 inches, and is 112.26 feet north of northwest corner of main school building, 259 feet east of first street west of school, and 317.45 feet from station in azimuth $25^{\circ}26'$. No. 2 projects 8 inches, and is 1,225 feet west and 500 feet north of school, 40 feet southwest of a dwelling, 125 feet west of first street west of the Catholic church, 27 feet north of the center line of first street north of church, 0.7 foot south of a fence line and 1,230 feet from station in azimuth $113^{\circ}04'00''$. The following distances and azimuths are from the station: *Kaplan, Kaplan Rice Co., tank*, 1 mile, $41^{\circ}41'19''$; *Kaplan municipal tank*, approximately one-fourth mile, $352^{\circ}31'13''$.

Maurice (Vermilion Parish, F. L. Gallen, 1931).—In the village of Mauriceville, which is about 10 miles southwest of Lafayette and 9 miles north of Abbeville, in the grounds of the Mauriceville centralized school. Station is in southeast corner of school yard, 15.5 feet north of south fence line, 20.2 feet west of east fence line, and 80 paces east of a house on the south side of the grounds. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in a lot corner, 2.5 feet east of fence line, 36 feet east of center line of road (Route 43), 33 feet north of center line of a side road, and 0.3 mile from station in azimuth $30^{\circ}55'20''$. No. 2 is 27 feet north of center line of road running west from school house, 8 feet south of a fence line, and 555 feet from station in azimuth $107^{\circ}30'35''$. Azimuth from the station of *Maurice Catholic Church spire*, distant one-fourth mile, is $114^{\circ}04'10''$.

Abbeville (Vermilion Parish, F. L. Gallen, 1931).—In the northeast outskirts of the town of Abbeville, in southeast corner of new high school grounds, 375 feet south of east of southeast corner of main brick school building, 71 feet north of center line of State gravel road (Route 144), 33.5 feet north of north edge of concrete sidewalk on north side of road, and 75 feet west of center of a ditch which is the east boundary of school grounds. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with the surface. Reference mark no. 1 is a standard reference disk in concrete, note 11a, projecting 3 inches above the surface. It is on the south side of road (Route 144), in a wire fence line which marks the right-of-way of highway on the south, 96 feet

west of center of a large drainage ditch, 26 feet south of center line of road, and 99.59 feet from station in azimuth $23^{\circ}22'$. No. 2 is a standard reference disk set flush in concrete in the top of seat rail on south side of steps to east entrance of main school building, 7 feet east of wall of building, 5.3 feet south of center of entrance, and 383.0 feet from station in azimuth $126^{\circ}38'53''$. The following azimuths are from the station: *Abbeville, Madaline Catholic Church steeple*, $90^{\circ}44'02''$; *Abbeville, power plant tank*, $92^{\circ}55'26''$.

Young (Lafayette Parish, F. L. Gallen, 1931).—About 12 miles northwest of New Iberia, 10 miles south of Lafayette, and 1 mile south of village of Youngsville, on property of Dr. R. O. Young of Youngsville. To reach from Youngsville go by gravel road just west of a large frame church 1.3 miles to station, which is 225 yards south of railroad crossing at Marcie station, 24.30 feet northeast of double gate leading into pasture, 19.45 feet east of property line fence, 41.01 feet east of center line of road, and 40 yards southwest of small pond. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in a fence line, 22.60 feet east of center line of road, and 0.3 mile from station in azimuth $0^{\circ}43'46''$. No. 2 is 59.50 feet west of road, and 100.51 feet from station in azimuth $90^{\circ}04'$. Azimuth from the station to *Youngsville municipal water tank* is $174^{\circ}44'20''$.

Erath (Vermilion Parish, F. L. Gallen, 1931).—In the village of Erath, on the west side of the main street, about one third mile south of railroad tracks one half mile northeast of Erath sugar mill, in northeast corner of athletic field belonging to the school, about 400 feet southwest of the Catholic church, 222.5 feet southeast of southeast corner of large brick high-school building, and 40.5 feet west of center line of gravel main street. The ground around station is soft. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference mark no. 1 is standard reference disk set flush in concrete sidewalk on east side of main street, in middle of first block south of Southern Pacific tracks, 22.5 feet east of center line of street, 6.5 feet west of center of footing of southwest leg of city water tank, 1.13 feet east of west edge of sidewalk, and 0.3 mile from station in azimuth $191^{\circ}08'31''$. No. 2, a standard reference disk in concrete, note 11a, projects 3 inches, and is on east side of Main Street, about 350 feet south of Catholic church, 250 feet southeast of southeast corner of high school, 35.5 feet east of center line of street, and 76.13 feet from station in azimuth $282^{\circ}38'$. The following azimuths are from the station: *Delcambre, Catholic church steeple*, distant 3.0 miles, $274^{\circ}14'43''$; *Erath, municipal water tank*, distant 0.3 mile, $191^{\circ}45'02''$.

Iberia (Iberia Parish, F. L. Gallen, 1931).—In the town of New Iberia, in the high-school grounds. To reach from center of town follow Main Street (U.S. Route 90) to junction with Route 25 (Center Street) leading southwest, thence along this street three blocks to school yard just south of Missouri Pacific Railroad tracks. Station is in easterly part of grounds in angle formed by fences of the athletic field and lot on the east, 17.6 feet north of a high board fence around athletic field, and 17.8 feet west of property line fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 141.55 feet southeast of a hydrant on sidewalk just south of the railroad tracks, 25.6 feet south of center line of railroad tracks, 2.2 feet south of center line of cement sidewalk and 253.66 feet from station in azimuth $222^{\circ}51'$. No. 2 is in cement sidewalk on the east side of Center Street near junction with a walk leading into school yard, and 493 feet from station in azimuth $135^{\circ}02'19''$. Azimuth from station of *New Iberia, St. Peter's Catholic Church, spire* is $174^{\circ}49'45''$.

Avery (Iberia Parish, F. L. Gallen, 1931).—About 9 miles southwest of New Iberia, on a dome-shaped summit known as Prospect Hill, the highest point of Avery Island, on land owned by the McIlhenny estate. To reach from New Iberia take gravel road (State Route 25) southwest 2.3 miles to a shell road leading left on southeast side of the Southern Pacific tracks, continue on left main fork (near a church) 3.7 miles from junction of Route 25, to a packing plant which is 2.9 miles from fork, keep to left around buildings 0.3 mile, take right fork 0.1 mile to gate, 0.4 mile to another gate, and 0.6 mile to top of Prospect Hill. Station is at an elevation of 165 feet and is 34.05 feet east of the east wall of a concrete reservoir (36 by 36 by 10 feet in size) which occupies the highest point, and rests directly on a built-up foundation. The station is in the center of a small saddle between the tank and a thicket of hawthorne bushes. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper

For notes in regard to marking of stations see p. 71.

mark projects 5 inches. Reference marks are standard reference disks set in concrete, note 11a. No 1 projects 5 inches and is near a fence line on west side of a growth of trees, on a knoll, 80.50 feet south of fence corner, 1.21 feet west of wire fence line, and one fourth mile from station in azimuth $3^{\circ}20'15''$. No. 2 projects 3 inches, and is 25.03 feet north of north wall at a point 9 feet west of east wall of concrete storage tank, and 62.27 feet from station in azimuth $117^{\circ}05'$. The following azimuths are from the station: Myles Salt Co., black steel tank with a small ball on the peak of conical cover, $320^{\circ}20'37''$; Weeks Island azimuth mark (probably a standard reference disk set in concrete, see description of Weeks 2) $320^{\circ}19'56''$.

Jeanerette (Iberia Parish, F. L. Gallen, 1931).—About $2\frac{1}{2}$ miles northwest of Jeanerette, on land owned by Joe C. Glaubrecht and occupied by his son. To reach from Jeanerette go by U.S. Route 90 northwest 1.1 miles to shell road leading southwest, 1.4 miles to gravel road leading northwest, and 1.3 miles to Mr. Glaubrecht's house which has two red brick outside chimneys. Station is in north corner of farm yard, 26 feet southwest of fence on southwest side of road, 18 feet southeast of fence which makes right angle with road and runs to north corner of barn, 146 feet northeast of barn, 80 yards north of house, and 8 yards northwest of a dipping corral. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at north corner of barn, 172 feet southwest of road fence and 1 foot southeast of fence which is at right angle to road, about 50 yards northwest of house, and 145.70 feet from station in azimuth $44^{\circ}49'$. No. 2 is in north corner of a cultivated field, about one fourth mile northwest of house, 10 paces southwest of center of the gravel road, 10 paces southeast of center of dirt road leading southwest, 1 foot southeast of a narrow ditch, at end of row of scrubs between dirt road and field, and one fourth mile from station in azimuth $134^{\circ}07'40''$. The following azimuths are from the station: *Jeanerette, St. Peter's Catholic Church, spire*, $284^{\circ}09'50''$; *Jeanerette municipal water tank*, $286^{\circ}34'50''$.

Weeks 2 (Iberia Parish, F. L. Gallen, 1931; 1933).—About 10 miles southwest of Jeanerette on Weeks Island, on land owned by the Myles Salt Co. To reach from Route 90 at Baldwin go by Route 59 south and west 19.5 miles to the Cypremort sugar plantation, turning north across tracks at mill, and thence northwest 3.2 miles to Weeks Island. Station can also be reached by the Intracoastal Canal. It is on wooded knoll 250 yards northeast of water tank and about 1 mile southwest of highest point on island, 116 feet east of center line of main road going up hill in a cut, 60.6 feet north of house of Jim LeBlanc, 28 feet east of lane to his house, and 14 feet west of an overgrown ditch. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 6 inches, and is 78 feet east of center line of main road in the cut, 82.3 feet west of Mr. LeBlanc's house, 6 feet east of a ditch, 35.5 feet north of a $2\frac{1}{2}$ -foot live oak tree, and 101.22 feet from station in azimuth $50^{\circ}13'$. No. 2 projects 8 inches and is 175 feet northwest of Mr. LeBlanc's house, 15 feet west of lane to his house, 25 feet east of road in cut, 40 feet south of 3-foot live oak tree, and 115.01 feet from station in azimuth $150^{\circ}32'$. The azimuth mark for station Avery, probably a standard disk set in concrete flush with surface, is on same knoll as water tank, about one fourth mile northwest of salt works, 56.6 feet northwest of center of stem of steel tank, 37.3 feet southwest of stem of wooden tank, 21.2 feet northeast of frame house, and approximately 750 feet from station in azimuth $70^{\circ}06'09''$. The water tank of the Myles Salt Co. is on crest of knoll overlooking the bay, about one fourth mile northwest of the salt works. It is a 90-foot black steel cylindrical tank with a small ball on peak of conical cover. A smaller wooden tank stands about 50 feet to north. The steel tank is about 750 feet from station in azimuth $66^{\circ}02'18''$.

Baldwin northwest base (St. Mary Parish, F. L. Gallen, 1931).—About 4 miles northwest of Baldwin and 4 miles west of Charenton, on the Adeline plantation owned by the Adeline Sugar Factory Co., Ltd. To reach from Baldwin go by U.S. Route 90 4 miles north by west to station, which is on northeast side of road, about 125 feet northeast of the concrete, in a pasture lot, about 100 yards southeast of a road junction where gravel road leads off from pavement to follow bayou. The gravel road parallels pavement at point where station is located. Station is 16 paces in azimuth 157° (magnetic) from center of a 5-foot oak standing in old road outside of fence, 10 paces north-northeast of wire fence on northeast side of gravel road, $6\frac{1}{2}$ paces normal to fence on southeast, and 7 paces normal to

small ditch to northwest which is crossed by first culvert in gravel road southeast of junction. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about 3 feet south of south side of small wooden bridge which is about 3 feet south of railroad crossing over U.S. Route 90, on the west edge of a ditch, about 35 feet from edge of pavement, and one half mile from station in azimuth $316^{\circ}14'00''$. No. 2 is on edge of a ditch on south side of plantation road which leads west from pavement about 100 yards southeast of the above junction of pavement and bayou road. This plantation road crosses the railroad at a switch point about 200 yards southeast, while another railroad crossing of a spur from this switch is about 200 yards southeast on the pavement. This side track leads in to a mill where a lone concrete stack stands. Mark is 305.8 feet from station in azimuth $39^{\circ}19'$.

Cote Blanche 3 (St. Mary Parish, J. H. Peters, 1913 ; 1933).—About 12 miles west of Franklin, 11 miles south of Jeanerette, on crest of Oak Hill on Cote Blanche Island. To reach from Route 90 in Baldwin go 15.5 miles west and south on graveled road (Route 59) to dirt road leading south at sign "good roads to Cote Blanche." Follow this road across the railway tracks 1.6 miles to drawbridge. Continue south 1 mile on lightly-shelled road to top of grade and poorly marked road going west on top of ridge. Follow this road about 200 yards to fork leading south, then south on this fork one fourth mile through dense brush down grade then up the ridge where station is located 105 feet east of the road. The road from Baldwin crosses the Intracoastal Canal at an untended ferry. The station is about $1\frac{1}{4}$ miles south of drawbridge and one half mile northwest of old plantation quarters. In 1933 only one family was on the island. Station is in northwest side of grassy clearing about 130 feet west of the highest point of east-and-west ridge, and 105 feet east of center of a woods road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 2 inches, and is on highest point of hill, on north side of clearing, 242 feet east of woods road, 5.5 feet west of most westerly of clump of three 6-inch gnarled oaks, and 136.64 feet from station in azimuth $267^{\circ}42'06''$. No. 2, projects 2 inches, and is on southwest edge of clearing, 115 feet east of woods road, 4.2 feet east of double 3-inch maple, and 78.61 feet from station in azimuth $357^{\circ}21'12''$. Witness marks recorded in 1913 are as follows: No. 1 is nail in blazed triangle on west side of large tree on west side of clump of trees on eastern break of hill, 84.74 meters (278.0 feet) from station in azimuth $265^{\circ}56'$. No. 2, two nails in blazed triangle on north side of tree at northeast corner of woods, is 37.64 meters (123.5 feet) from station in azimuth $359^{\circ}36'$. No. 3, three nails in blazed triangle on northeast side of tree at northwest corner of woods, is 51.22 meters (168.0 feet) from the station in azimuth $36^{\circ}31'$. No. 4, four nails in blazed triangle on south side of tree at western edge of woods is 49.80 meters (163.4 feet) from station in azimuth $172^{\circ}12'$. Station *Cote Blanche* 1890, has been destroyed. Its position reestablished in 1913, within a radius of 4 inches, is 83.0 meters (272 feet) from station in azimuth $266^{\circ}40'$.

Franklin (St. Mary Parish, F. L. Gallen, 1931).—About 1 mile southwest of Franklin, on land owned by W. P. Foster of Franklin. Reached from Franklin post office by street leading southwest past railroad station. Station is $1\frac{1}{4}$ miles from post office, in a pasture lot on southeast side of road, 15 paces northeast of gateway entering lot, 100 yards northeast of bridge where road turns across canal, 14 paces southwest of a 30-inch pecan tree which is the last in a row, 47.5 feet southeast of centerline of road, and 60 yards southeast of a cane hoist. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on north side of a plantation road which leads southeast from main road, about 175 yards northeast of bridge over canal, about one fourth mile southeast of main road, 10 feet east of centerline of plantation road, 16 feet north of point where plantation road curves sharply south, and 450 paces from station in azimuth $355^{\circ}00'41''$. No. 2 is on the southeast side of main road at a fence corner, about 15 feet southeast of centerline of road, about 40 yards northeast of bridge over canal, and 192.90 feet from station in azimuth $79^{\circ}59'$.

Charenton (St. Mary Parish, F. L. Gallen, 1931 ; 1932).—About 8 miles north of Franklin and 4 miles northeast of Baldwin, across Bayou Teche from the village of Charenton, on land owned by the Baldwin Bank. To reach from Baldwin go by gravel road 3.5 miles to Charenton, cross the bayou by bridge in front of

For notes in regard to marking of stations see p. 71.

Catholic Church, and go 0.2 mile northeast to station, which is 300 feet northeast of northeast end of bridge over bayou, 50 feet north of shoulder of bayou bank, 39 feet southwest of center line of gravel road at a point 100 feet southeast of a T-road intersection, between two sheds, 38.6 feet northwest from one shed and 35.8 feet southeast from the other, and 18.1 feet southwest of wire fence line. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 10 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 4 inches, and is approximately 0.05 mile northwest and 0.1 mile northeast of the T-intersection mentioned above, in a telephone line, 2.3 feet east of a pole, 11 feet northwest of centerline of shell road, and approximately 750 feet from station in azimuth $197^{\circ}58'15''$. No. 2 projects 12 inches, and is 95 feet northeast of northeast end of bridge over the bayou, 32.5 feet southeast of the centerline of road, 1 foot southeast of wire fence line, and 212.80 feet from station in azimuth $78^{\circ}42'$.

Baldwin southeast base (St. Mary Parish, F. L. Gallen, 1931).—In the village of Baldwin, on the rear of a lot owned by W. P. Foster of Franklin, 315 feet northwest of junction of concrete highway (U.S. Route 90) and gravel road to Charenton, 67.2 feet southwest of center line of concrete highway, 36.6 feet southeast and 30.4 feet northeast from old fence lines, and 37 feet east of a triple tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 10 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 5 inches, and is 167 feet northwest of road junction mentioned above, 29.2 feet northeast of centerline of concrete highway, 9.5 feet northwest of a willow tree, 16.3 feet northwest of a picket fence corner, 0.9 feet southwest of line fence, and 177.45 feet from station in azimuth $282^{\circ}51'$. No. 2 is flush with surface, and 0.35 mile northwest of road junction mentioned above, on a headland on southwest side of U.S. Route 90, 41 feet southwest from center line of concrete road, 10 feet west of a concrete culvert under a proposed side road, and 0.3 mile from station in azimuth $136^{\circ}41'29''$. The following azimuths are from station: *Baldwin, Catholic Church, east dome*, $54^{\circ}14'38''$; *Baldwin, Catholic Church, west dome*, $54^{\circ}28'23''$.

Oaklawn (St. Mary Parish, F. L. Gallen, 1931).—About 4 miles northeast of Franklin, on south bank of Bayou Teche, on Oaklawn plantation owned by the South Coast Co. To reach from Franklin go by U.S. Route 90, west about one-half mile to point where pavement turns left at Franklin tourist cottages and a shell road leads right. A sign "Sterling and Oaklawn Manor" is at this point. Follow the shell road 4.9 miles to station, which is about 100 yards northwest of a crossing of Missouri Pacific Railroad, in south corner of yard of first tenant house northwest of railroad, 40 feet north of center of the road, 18.5 feet north of a fence, 30 yards south of house, 40 yards northwest of a 4-foot oak tree, 11 paces northwest of gate entering yard, and 0.35 mile southeast of a crossroad at which is located the office of the South Coast Co. Surface and underground marks are standard station disks in concrete, note 1a and 7a. Upper mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about 0.35 mile southeast of crossroad mentioned above, about 90 yards northwest of railroad crossing, near base of third pole from railroad crossing of telephone line, 6 feet south of a road ditch, and 92.90 feet from station in azimuth $17^{\circ}53'$. No. 2 is near eighth telephone pole from railroad crossing, south of a road, 100 yards east of crossroad mentioned above, and 458 paces from station in azimuth $147^{\circ}46'00''$. The following azimuths are from station: *Oaklawn Manor, water tank*, $146^{\circ}54'29''$; *church spire* about one-half mile distant, $151^{\circ}22'44''$.

Germania (St. Mary Parish, F. L. Gallen, 1931).—About one-half mile east of Centerville, on north side of Bayou Teche, on the Germania plantation, owned by W. P. Foster of Franklin. To reach from Centerville follow U.S. Route 90 east 0.5 mile to dirt road leading north across bridge over bayou. The station is 490 feet north of north end of bridge, in northeast corner of yard of plantation house, 150 feet northeast of house, 62 feet southwest of intersection of center lines of main road and lane going west to a barn, and 30.5 feet southwest of corner of wooden fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 2 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 8 inches, and is about 0.05 mile east and 0.5 mile north of bridge over bayou, 13 feet west of center line of main farm road, 7.5 feet north of a headland road, 11 feet southeast of intersection of two large drainage ditches, and 0.4 mile from station in azimuth $199^{\circ}49'39''$. No. 2 projects 2 inches, and is 400 feet north of bayou bridge, 200 feet east of plantation house, 22 feet east of center line of road, 223 feet south of

shelled farm road, 46.8 feet east of wooden fence, and 117.89 feet from station in azimuth $330^{\circ}18'$. Azimuth from station of *Franklin, Sterling Sugar Mill, water tank* about 5 miles distant, is $122^{\circ}52'12''$.

Foster (St. Mary Parish, F. L. Gallen, 1931).—About 7 miles southeast of Franklin and 6 miles southwest of Centerville, on the Johnson plantation owned by W. P. Foster, of Franklin. To reach from Centerville follow the Bayou Sale Road (Route 60) 5.7 miles south to station site about one-fourth mile north of point where road meets railroad and turns west paralleling the tracks. Station is on west side of road opposite a low water tank and windmill, about 100 yards south of old store building with a gas pump on west side of the road, about 175 yards west of a sugar-mill ruin, about 40 yards northeast of plantation house which is in the northeast corner of yard, 15 feet west of road fence, 15 feet south of an east-and-west fence, and 21 paces northeast of a 6-foot live-oak tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches. Reference mark no. 1, a standard reference disk in concrete, note 11a, is on east side of road in fence line in front of Negro shack, 100 feet north of windmill and tank, about 550 paces north of railroad tracks, near a low water tank, and 106.86 feet from station in azimuth $206^{\circ}43'32''$. B.M.F.-5 (1818) is 5 paces south of railroad tracks on extension of tangent of road running south, 70 paces south of curve where road turns west, 3 feet east of railroad-crossing sign, 100 yards west of small railroad bridge no. 3G, and 507 paces from station in azimuth $343^{\circ}55'30''$. Azimuth from station of brick stack at old North Bend sugar mill is $37^{\circ}54'58''$.

Verdun (St. Mary Parish, F. L. Gallen, 1931).—About 2 miles east of Centerville and 1.2 miles northwest of Shadyside sugar mill, in a settlement known as Verdunville, on property owned and occupied by John Geoffroy. Reached from either Centerville or Shadyside by U.S. Route 90. Station is 100 yards northwest of second curve in highway northwest of Shadyside, in southeast corner of large front yard, 60 yards southeast of house, 20 feet northwest of gate at the southeast corner of yard, 19.5 feet north of picket fence along north edge of highway, and 10 paces south of 4-foot oak tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 6 inches below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about three-fourths mile northwest of Shadyside, 300 yards southeast of irrigation or drainage ditch located at the second curve in U.S. Route 90 mentioned above, 5.5 feet north of road ditch on north side of road, 6 feet west of another irrigation or drainage ditch, and 475 paces from station in azimuth $335^{\circ}05'49''$. No. 2 is opposite Mr. Geoffroy's house, about one-half mile east of shell road crossing U.S. Route 90 near Verdunville, 3 feet south of a road ditch on south side of road, and 115.65 feet from station in azimuth $100^{\circ}38'$. The following azimuths are from station: *Shadyside plantation water tank*, $336^{\circ}16'02''$; church spire, distant about one-half mile, $84^{\circ}57'00''$.

Mound (St. Mary Parish, F. L. Gallen, 1931).—About 4 miles west of Patterson, on the Little Mound plantation owned by Sterling Sugars Co., of Franklin. To reach from Patterson, go 6.4 miles on U.S. Route 90 to station site opposite a sharp bend of Bayou Teche, 2.7 miles southeast of Shadyside sugar mill. Highway at this point follows closely along bank of bayou for about one-half mile. A railroad is 100 yards south. Station is 64 feet south of center line of road, 100 yards west of plantation road leading south to cane hoist, 40 yards northeast of house standing on high brick pillars, and 30 yards east of a 4-foot oak tree which partly obstructs north edge of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about 15 feet south of bayou, 15 feet north of center line of road, 25 yards east of oak tree mentioned above, 50 yards northeast of house mentioned above, and 113.65 feet from station in azimuth $154^{\circ}04'$. No. 2 is just east of curve where road turns away from bayou, 200 yards northwest of section foreman's house at the Calumet railroad station, 25 feet south of center of U.S. Route 90, about 450 yards east of above-mentioned house, and 4-foot oak tree, and 414 paces from station in azimuth $277^{\circ}41'33''$. Azimuth from station of Patterson, H. Williams Lumber Co. water tank is $261^{\circ}18'07''$.

Teche (St. Mary Parish, F. L. Gallen, 1931).—About 2 miles north of Patterson, on south side of Bayou Teche, about one-half mile above its confluence with the Atchafalaya River, on land owned and occupied by D. C. Guidroz. To reach from Patterson follow U.S. Route 90 north 2.3 miles to Guidroz's store on right side of road just after it turns west. Station is in small pasture lot entered by

gate at the store, 40 yards west of store, 15 feet north of road fence on north side of road, and 10 paces south of 8-foot live-oak tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 50 paces east of first curve east of store, about one-fourth mile east of store, 21 paces west of small culvert under road, 131 paces east of another similar culvert, north of road, 2 feet south of fence, 3 feet north of road ditch, and 0.3 mile from station in azimuth $290^{\circ}55'01''$. No. 2 is 50 yards west of store, 15 feet east of small corrugated-iron culvert with concrete at ends, on the south side of road, 3 feet south of road ditch, and 111.08 feet from station in azimuth $68^{\circ}08'$. Azimuth from station of *Patterson, municipal water tank* is $342^{\circ}54'38''$.

Idlewild (St. Mary Parish, F. L. Gallen, 1931).—About 5 miles southwest of Morgan City and 2 miles south of Patterson, on cleared but uncultivated land of the Idlewild dairy farm, managed by W. B. Smith. To reach from Morgan City go through Berwick by U.S. Route 90 to a point 7.4 miles west of Berwick, and at the house and dairy barns on south side of highway, turn south on the farm lane 1.1 miles to the station. Station is 23 feet west of center line of lane, 200 feet east of edge of clearing, 37 feet west of a drainage ditch, 12 feet south of center line of a headland road which crosses ditch by a boiler iron culvert and extends east from main lane about 700 feet. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 8 inches and is three-fourths mile south of Route 90, 18 feet east of center line of main lane that leads south from barns, 4 feet east of drainage ditch, 1 foot west of wire-fence line, and approximately one-fourth mile from station in azimuth $190^{\circ}06'20''$. No. 2 is flush with surface, 1.1 miles south of highway, 682 feet east of main lane, 4 feet east of a ditch at which ends headland road which leads east from main lane, and 705 feet from station in azimuth $279^{\circ}15'08''$. Azimuth from the station of William's sawmill, water tank, distant about 3 miles, is $174^{\circ}32'08''$.

Morgan (St. Mary Parish, F. L. Gallen, 1931).—About 2 miles north of Morgan City, on east bank of the Atchafalaya River, on the property line between land owned by G. D. Dupont on the north and J. W. Rosson on the south. To reach from post office in Morgan City follow street leading north 0.5 mile, then west 0.2 mile to a sawmill, then north 0.7 mile, then east 0.1 mile, then north 0.05 mile, then west 0.05 mile to a church, then northeast 0.6 mile to Rosson's moss gin in the rear of which is station. Station is 202 feet east of bank of river, 168 feet east of center line of a shell road, 52 feet south of a wooden-fence line, 55.5 feet northeast of northeast corner of Mr. Rosson's house, and 61 feet southeast of large live-oak tree in rear of moss gin. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 10 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 5 inches and is about 1,000 feet south of moss gin, 350 feet east of shell road which follows east bank of river, in a thicket which follows an east-and-west drainage ditch which is 170 feet south of a fence line, 15 feet north of ditch, and approximately 950 feet from the station in azimuth $43^{\circ}07'25''$. No. 2 projects 6 inches and is 44.3 feet west of northwest corner of Rosson's house, 55 feet east of river bank, 21 feet east of center line of road, 1.4 feet east of a section of curbing on east side of an old concrete sidewalk, and 146.71 feet from station in azimuth $127^{\circ}04'$. Azimuth from the station of *Morgan City, water works, metal stack*, distant approximately 1 mile, is $17^{\circ}05'48''$.

Wax (St. Mary Parish, F. L. Gallen, 1931; 1933).—About $2\frac{1}{2}$ miles southwest of Berwick which is across the Atchafalaya River from Morgan City, at the junction of the river, Little Wax Bayou, and the Louisiana-Texas Intercoastal Canal, on an island cut off by the canal, on land owned by the Louisiana School Board. Formerly reached by a shell road south from Berwick but now reached only by boat down river to island at the junction referred to above. Station is at end of shell road from which a path leads through a gate to a house fronting on Little Wax Bayou, about 18 paces south of gate, 4 paces west of a parapet of old Fort Berwick, about 25 feet from bank of river, on a slight mound of old earthworks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches. Reference mark no. 1, a standard reference disk set in concrete, note 11a, is on the east side of shell road, between road and river, about 180 paces from end of road, about 100 paces south of Louisiana-Texas Intercoastal Canal station 67+18 and 217 paces from station in azimuth $209^{\circ}10'11''$. The Louisiana-Texas Intercoastal Canal station 67+18 is an irregular mass of concrete with name inscribed on top,

For notes in regard to marking of stations see p. 71.

close to river bank about 200 yards north of end of shell road, and 225 yards from station in azimuth $207^{\circ}33'55''$. *Atchafalaya River south base*, is 148.50 feet from station in azimuth $62^{\circ}31'$. The following elevations were determined by the United States Engineers: *Atchafalaya River south base* (1889) 6.83 feet; *Wax* 4.07 feet; *Wax* (R.M. 1) 3.13 feet.

Palourde (Assumption Parish, F. L. Gallen, 1931).—About $7\frac{1}{2}$ miles west of Donner, 8 miles north of east of Morgan City, and $2\frac{1}{4}$ miles north of Boeuf rail road station, on east side of Bayou L'Ourse Road, on unused land overgrown with briars. To reach from Gibson, go west 8 miles on U.S. Route 90 to crossroads at east end of Bayou Boeuf Bridge, then north on shell road $3\frac{1}{4}$ miles to station, which is about $\frac{1}{2}$ mile east of Lake Palourde, 30.5 feet east of center line of shell road, 29.5 feet northeast of a 36-inch galvanized iron culvert under road where it makes a slight angle, 44.2 feet east of a wire fence, and 16.5 feet north of a drainage ditch. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 6 inches, is 130 feet north of galvanized-iron culvert referred to above, 17.5 feet west of center line of the road, 1 foot west of a wire fence line, and 112.60 feet from station in azimuth $193^{\circ}52'$. No. 2 projects 4 inches, is about 1,800 feet south of galvanized-iron culvert, in front yard fence line of house of Mr. Giroir, 18 feet west of center line of road, 100 feet east of front of house, 0.4 foot east of a wire fence, and 1,800 feet from station in azimuth $30^{\circ}52'34''$.

Avoca (St. Mary Parish, F. L. Gallen, 1931).—About 7 miles southeast of Morgan City, on Avoca Island, south of Bayou Boeuf, on land owned by E. A. Pharr, who lives just south of the Avoca Bridge, 2 miles from Morgan City. To reach from the east by U.S. Route 90, go to crossroad just east of Bayou Boeuf Bridge, turn south along this crossroad along the east side of bayou, and go 2.3 miles to station site, which is 0.7 mile southwest of bridge over Bayou Chene. Station is in east corner of lot, about 30 feet north of road, 15 feet north of east-and-west fence line, and 15 feet west of a north-and-south fence line. The north-and-south fence parallels a small ditch and plantation road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 6 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at a fence corner about 100 yards north of road, in above mentioned north-and-south fence line, about 150 yards south of Bayou Black, and 283.61 feet from station in azimuth $182^{\circ}45'$. No. 2 is 20 feet north of road, at fence corner 0.3 mile southwest of Bayou Chene Bridge, and 0.4 mile from station in azimuth $253^{\circ}55'12''$.

Gibson (Terrebonne Parish, F. L. Gallen, 1931).—About 12 miles southwest of Thibodaux, 2.2 miles west of the village of Donner, and 1.4 miles north of Gibson. Reached from Thibodaux by Route 28 which is the main gravel road to Morgan City, passing through Chacahoula and Donner. Station is on south side of road, 59.0 feet northwest of northwest corner of Rose Hill Colored Baptist Church, 35 feet south of center line of highway, and in north side center of churchyard, 14.4 feet south of a wire fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 4 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 7 inches, and is on inside of a bend in highway one-eighth mile east of church, 25 feet south of center line of road, 200 feet east of a wooden shed and approximately 1,000 feet from station in azimuth $265^{\circ}52'28''$. No. 2, a flush mark, is 144 feet south (in line with the station) from center line of highway, 20.7 feet southwest of southwest corner of church, 25.2 feet north of south fence line of churchyard, and 109.07 feet from station in azimuth $348^{\circ}05'$.

Arsenaux (Terrebonne Parish, F. L. Gallen, 1931).—About 4.7 miles southeast of the village of Gibson, 4.0 miles south along U.S. Route 90 from bridge over Bayou Black which is one-half mile west of village of Gibson, on land owned and occupied by Herbert Arsenaux, whose place is about 100 yards west of the west edge of the Southdown Plantation, 30 paces east of Mr. Arsenaux's house, and 56.5 feet south of center line of the concrete highway (U.S. Route 90). Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 4 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on north side of bayou opposite the Arsenaux house, about one-fourth mile southeast of one cane hoist, and one-third mile northwest of another cane hoist, 24 feet north of center line of pavement, just below shoulder of road, and 130.47 feet from station in azimuth $162^{\circ}36'$. No. 2 is on land of the Southdown Plantation about 550 yards southeast of Mr. Arsenaux's

house, 250 yards northwest of a cane hoist, in a fence line on south side of the road, about 40 feet from center of pavement and 510 paces from station in azimuth $300^{\circ}49'21''$.

Chacahoula (Terrebonne Parish, F. L. Gallen, 1931).—About 8 miles southwest of Thibodaux in the village of Chacahoula, at junction of Highways 28 and 79, on a vacant lot owned by L. S. Boudreaux of New Orleans, 230 feet east of center line of Route 28, 125 feet south of center line of the Southern Pacific tracks, 107 feet north of a large live oak tree, 167.5 feet east of post office, 290 feet northwest of school, 148 feet east of a gate and 18.5 feet south of a wire fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 6 inches, and is on same lot as station, 43.4 feet northwest of northwest corner of school, 27 feet south of a fence corner, 0.8 foot west of school yard fence, and 246.64 feet from station in azimuth $332^{\circ}05'$. No. 2 projects 3 inches, and is 75 feet southeast of road intersection referred to above, near northeast corner of store porch, 34 feet south of center line of Route 79, 2 feet west of a fence corner and 329.26 feet from station in azimuth $51^{\circ}12'23''$. Azimuth from station of Chacahoula Catholic Church cross, distant approximately one-fourth mile, is $326^{\circ}13'17''$.

Cocke (Terrebonne Parish, F. L. Gallen, 1931).—About $4\frac{1}{2}$ miles southeast of Chacahoula and 5 miles west of Ellendale. Reached from Thibodaux by way of Chacahoula, thence 7 miles southeast on Route 79 to the Bull Run Plantation sugar mill. The station is 80 feet east of center line of Route 79, in the southwest corner of mill grounds, about 30 yards south of mill, about 15 feet south of ruins of old wagon scales, and 41 feet north of a narrow-gage railway. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 4 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in fence line on the west side of Route 79, about 100 yards south of sugar mill, about 100 yards north of small wooden bridge, about 30 yards southeast of narrow gage railway crossing Route 79, and 177.53 feet from station in azimuth $29^{\circ}36'$. No. 2 is in fence line on the west side of Route 79, about 350 yards northwest of sugar mill, about 200 yards north of a pair of large storage tanks which are on west side of road on first curve north of the one at the mill, and 441 paces from station in azimuth $148^{\circ}02'35''$.

Schriever north base (Terrebonne Parish, F. L. Gallen, 1931).—In the village of Schriever, which is about 3 miles south of Thibodaux on Route 69, about 100 yards west of railroad station, on land owned by the Southern Pacific Co., at present unused and overgrown with weeds. Station is 187 feet west of section foreman's yard-house, about 600 feet northeast of large green house, 70 feet northeast of end of a storage track, 40 feet south of embankment of main-line tracks, 57.6 feet south of south rail of main-line track, and 18 feet west of a ditch. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 10 inches, and is 6.5 feet northwest of northwest corner of the section foreman's yard-house, 31.8 feet south of south rail of main-line tracks, 9.7 feet south of a fence corner, 1.8 feet west of front yard fence, and 185.0 feet from station in azimuth $236^{\circ}03'$. No. 2 projects 6 inches, and is in a hedge corner, 82.5 feet northeast of northeast corner of large green plantation house, east of an old sugar mill, 200 feet west of Houma branch line tracks, 22 feet south of center line of dirt road, 12 feet west of center line of storage track, and 572.3 feet from station in azimuth $357^{\circ}25'39''$.

Brule Guillot (Lafourch Parish, F. L. Gallen, 1931).—About 6 miles southwest of Thibodaux, on west side of main highway between Thibodaux and Morgan City, on spoil bank on north side of the Brule Guillot Canal, on unused land owned by the Louisiana State Highway Department. To reach from Thibodaux, go by Route 29 west about 3 miles to junction with Route 28, then southwest on Route 28, 4.6 miles to station, which is 39 feet west of center line of highway, 22 feet north of north side of the canal, and 35.1 feet northwest of northwest corner of timber bridge over canal (marked 28.-1). Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 4 inches, and is 2,125 feet northeast of bridge over canal, 300 feet northeast of bend in the highway, 200 feet southeast of Negro house, 22 feet east of gate and fence corner, 18 feet west of center line of highway, and 2,100.6 feet from station in azimuth $221^{\circ}54'59''$. No. 2 is flush with surface, between the highway and small canal paralleling road on the east,

between the highway bridge and a bridge crossing small canal, 70 feet north of canal bridge, 61.0 feet southeast of southeast corner of highway bridge, 11.3 feet west of west edge of small canal, 20.5 feet east of the center line of main road, and 150.97 feet from station in azimuth $3^{\circ}31'$.

Schriever south base (Terrebonne Parish, F. L. Gallen, 1931).—About 4 miles south of Schriever and just south of railroad station Rebecca, on east side of the Houma branch line tracks of the Southern Pacific, on right-of-way land. To reach from Schriever follow Route 69 south 1.8 miles to Route 82, then go west 1.1 miles and south 1.7 miles to dirt road leading east to dairy station at Rebecca, then about 175 yards to the railroad. The station is about 100 feet southeast of center line of tracks at crossing, 580 feet east of Route 82, one-fourth mile south of dairy station, 75 feet south of center line of lane leading east from Route 82 and crossing tracks to a cow corral, 100 feet southwest of a gatepost of outside gate of corral, 42.52 feet west of right-of-way fence line, and 27.08 feet east of east rail of tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 3 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 6 inches, and is in fence line of the corral, 46.3 feet east of corral gate and right-of-way fence line, 118.2 feet east of east rail of tracks, and 147.93 feet from station in azimuth $209^{\circ}21'$. No. 2 projects 6 inches, and is north of a lane leading west from highway where lane to station leads east, 780 feet west of Route 82, 300 feet west of a black storage tank, 25 feet north of main lane, 6 feet west of a side lane, and approximately 1,350 feet from station in azimuth $70^{\circ}05'37''$. The following azimuths are from station: East metal stack of sugar mill, distant about 2 miles, $160^{\circ}28'58''$; metal stack of old sugar mill near *Schriever north base*, $174^{\circ}19'02''$.

Laurel (La Fourche Parish, F. L. Gallen, 1931).—About 4 miles northwest of Thibodaux, on a vacant plot on the Laurel Grove Plantation owned by Laurel Sugars, Inc. To reach from Thibodaux, go 4.2 miles northwest on Route 77 to shell road leading northeast into the Laurel Grove Plantation, and follow 0.8 mile northeast along this road to station. This road is 0.1 mile northwest of road leading to mill. Station is about 300 yards north of mill, 35 feet east of center line of shell road, in line with front of a row of dormitories, 53 feet east of center line of narrow-gage track, and 69.5 feet west of southwest corner of west dormitory. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 3 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 5 inches, and is between shell road and narrow-gage track, 1.1 miles northeast of Route 77, 100 feet south of a cane headland, 14.5 feet west of center line of road, 5.4 feet east of center line of track, and 0.3 mile from station in azimuth $207^{\circ}05'30''$. No. 2 projects 12 inches, is south of row of dormitories, 300 feet west of center line of shell road, 101 feet west of center line of standard gage track going north from center of mill, 63.9 feet southwest of southwest corner of east dormitory 2.5 feet north of edge of ditch, and 313.45 feet from the station in azimuth $303^{\circ}38'34''$. Azimuth from the station of *Labadieville, Catholic Church, white spire*, distant approximately 6 miles, is $98^{\circ}41'34''$.

Thibodaux (Lafourche Parish, F. L. Gallen, 1931; 1932).—In the town of Thibodaux, on north side of Bayou Lafourche, on land owned by the town. To reach from Thibodaux cross bayou at bridge, then go right (east) 0.15 mile to city pump house. Station is on top of levee, about 340 feet east of city pump house, 120 feet south of center of road, and about 120 feet north of bayou. Surface and underground marks are standard station disks in concrete. Reference mark no. 1, a standard reference disk in concrete, note 11a, is in a fence line on north side of road, about 330 feet east of pump house, and 135.39 feet from station in azimuth $168^{\circ}35'$. Reference mark no. 2 is a standard reference disk set in the northeast corner of concrete abutment about 2 feet high surrounding the lawn on bayou side of pump house. It is 11.1 feet east of southeast corner of pump house, and 326.26 feet from station in azimuth $71^{\circ}55'44''$. The following azimuths are from station: *Lavalle Plantation, sugar mill, tank*, $202^{\circ}23'48''$; *La Plene Plantation, sugar mill, tank*, $250^{\circ}19'28''$.

Himalaya (Assumption Parish, F. L. Gallen, 1931; 1932).—About 7 miles south of Napoleonville and 3 miles west of Labadieville, on the Himalaya Plantation owned by E. Sundbery. To reach from Napoleonville, go 6.7 miles south on Route 29 to gravel road leading into the Himalaya Plantation at Tallieu's store. This road passes a refinery and 2.2 miles from Route 29 turns north across railroad tracks and a bridge over a small canal about 300 feet west of a house.

Station is about $1\frac{1}{2}$ miles west of refinery, 450 feet northwest of bridge, in northeast corner of yard of farmhouse, 100 feet northeast of northeast corner of house, 41 feet north of a large live oak tree in side yard, and 26.4 feet southwest of a wooden fence corner. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects 3 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 3 inches, and is 42 feet northwest of a small wooden bridge, 12 feet north of center of canal, 35 feet north of railroad tracks, 25 feet west of gravel road, and 395.24 feet from station in azimuth $266^{\circ}50'14''$. No. 2 projects 3 inches, is 160 feet north of fence corner northeast of house, 17 feet southeast of a small barn, 15 feet west of center line of gravel road, and 144.01 feet from station in azimuth $148^{\circ}13'$. Azimuth from the station of *Himalaya sugar mill, tank*, is $237^{\circ}58'38''$.

Robichaux (Assumption Parish, F. L. Gallen, 1931).—About 6 miles southeast of Napoleonville and $2\frac{1}{2}$ miles northeast of Labadieville, on the Cedar Grove Plantation owned by the Robichaux Sugars Co. To reach from Napoleonville follow Route 77 south 7.4 miles from east end of bridge to Cedar Grove store, turn east on shell road just south of store, and go 0.5 mile to sugar mill, turn left 0.2 mile along dirt road, then right (northeast) 1.8 miles across bridge to left bank of canal, follow canal northeast 0.1 mile and turn left 0.15 mile to a schoolhouse on left side of road. Station is about 15 yards southwest of the southwest corner of the schoolhouse, 13 paces east of a headgate on a ditch, and 9 paces north of center line of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is between road and a ditch, on the north bank of the ditch, nearly south of southwest corner of schoolhouse, and 42.97 feet from station in azimuth 313° . No. 2 is in the southwest corner of farmyard, about 250 feet east of schoolhouse, about 6 feet north of a fence corner, and 269.88 feet from station in azimuth $235^{\circ}39'$. Azimuth from station of *Labadieville, Catholic Church, white spire*, is $24^{\circ}24'09''$.

Bergeron (Assumption Parish, F. L. Gallen, 1931).—About 3 miles southwest of Napoleonville, on the Wildwood Plantation, owned by Bergeron and Walton. To reach from Napoleonville follow gravel road leading southwest from southern part of town along the old Attakapa Canal, for a distance of 2.8 miles from power house on Route 29, to the Wildwood Plantation on north side of road. Station is in lawn about 30 feet north of center line of road, about 130 feet east of driveway to house, and about 20 feet north of a row of rose bushes along road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with the surface. Reference marks are standard reference disks in concrete, note 11a, flush with surface. No. 1 is in northeast corner of yard at east end of rose bush hedge along road, about 25 feet north of center line of road, and 211.31 feet from station in azimuth $225^{\circ}15'$. No. 2 is about 50 feet south of front of house, 15 feet from east side of circular driveway, and 213.13 feet from station in azimuth $92^{\circ}27'$. Azimuth from the station of *Napoleonville, municipal water tank* is $227^{\circ}43'38''$.

Rose (Assumption Parish, F. L. Gallen, 1931).—About 3 miles southeast of Napoleonville, on the Rosedale Plantation, owned by E. Sundbery of Napoleonville. To reach from Napoleonville, cross bridge over Bayou Lafourche to Route 77, then south 2.6 miles to open road leading east to Rosedale Plantation. There is a small store on south side of plantation road at its junction with Route 77. Follow plantation road east 1.95 miles, past the quarters, to extreme end of cultivated land. The road ends in a swamp trail after crossing a 10-foot drainage ditch, which leads under the road through an iron culvert. Station is in northeast corner of the field, 60 yards north of culvert on west side of ditch. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with ground. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 30 yards north of culvert, on east bank of drainage ditch in a row of briars, and 99.43 feet from station in azimuth $344^{\circ}54'$. No. 2 is on main plantation road, about 15 feet south of center line of road, about 270 yards west of an iron culvert, about 30 yards east of another plantation cross road, and 285 paces from station in azimuth $66^{\circ}07'50''$.

Landry (Assumption Parish, F. L. Gallen, 1931).—In the village of Brusle St. Vincent, which is about 4 miles northwest of Napoleonville and $2\frac{1}{2}$ miles southwest of Paincourtville, on uncultivated land owned by Gustave Landry. To reach from Route 29 at Paincourtville follow gravel road at northern edge of village, 1.8 miles southwest to Brusle St. Vincent, turn left across bridge and follow dirt road west 0.1 mile to station, which is about 160 feet south of F. U. Landry's

store, on a mound in a bow of canal, 115 feet northeast of a live oak tree, 120 feet northwest of R. P. Landry's house, 29 feet northwest of center line of road, 26 feet southeast of canal bank, and 80 feet southeast of road on north side of canal. Surface and underground marks are standard station disks in concrete, note 1a and 7a. Upper mark is flush with ground. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 2 inches, is 65 feet south of front of house of D. P. Simoneaux, 1 foot north of front yard fence, 2 feet east of gate post, 20 feet north of center line of road on north side of canal, about 200 feet west of Landry's store, and 119.46 feet from station in azimuth $109^{\circ}16'$. No. 2 projects 2 inches and is on southwest side of Landry's store, 81 feet northwest of bank of canal, 1 foot west of store side porch, 1 foot south of a fence, and 162.60 feet from station in azimuth $204^{\circ}36'$. The following azimuths are from the station: *Napoleonville, Catholic Church, cross on dome*, $300^{\circ}04'58''$; *Napoleonville, municipal water tank*, $298^{\circ}47'09''$.

Delia (Assumption Parish, F. L. Gallen, 1931).—About 6 miles south of Donaldsonville, on the old Delia plantation, at present in the hands of the Federal Land Bank of New Orleans. To reach from Donaldsonville follow gravel road (Route 77) on east side of Bayou Lafourche 7 miles to dirt road leading east which is known as the "Cosa Road," and which branches from Route 77 directly opposite bayou from a large black storage tank of the Star plantation, 1.6 miles south of Bellerose Bridge across bayou, and 0.3 mile south across bayou from Kessler's store. Follow this road east 2.9 miles, then south 0.2 mile, then east 0.7 mile to station, which is 100 feet south of this road and 30 feet east of a road leading south from main road. A crane hoist is at the road intersection and a group of Negro houses is east and south of station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 6 inches, and is in a fence line on the south side of east-and-west road, 230 feet east of road intersection, and 228.92 feet from station in azimuth $247^{\circ}16'$. No. 2 is 3 feet east of cane hoist at road intersection, and 116.50 feet from station in azimuth $169^{\circ}40'$. The azimuth from the station of Star plantation, metal tank, distant 3 miles, is $97^{\circ}29'15''$.

Kessler (Assumption Parish, F. L. Gallen, 1931).—About 7 miles southwest of Donaldsonville, $1\frac{1}{2}$ miles southwest of Bellerose, on west side of Bayou Lafourche, on the Star plantation owned by Kessler and Steinfel. To reach from Donaldsonville follow Route 29 south 8 miles to Kessler and Steinfel's store which is 1.3 miles south of Bellerose, turn west on the gravel road just south of store 1.2 miles to station which is in corner of headlands of a canefield, 0.7 mile west of railroad station Kessler, 0.2 mile east of bend in road, 1 mile west of south of the Luder refinery, 40 feet west of south of center line of 24-foot gravel road, 14.7 feet west of south of an old fence line, and 25.3 feet southwest of 14-inch locust tree with triangular blaze. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 12 inches below surface. Reference marks are standard reference disks set in concrete, note 11a. No. 1 projects 3 inches, and is in west end of a cane headland just north of a farm road on the headland, 20 feet east of center line of gravel road, in an old fence line, about 600 feet south of east bend in gravel road, and approximately 1,000 feet from station in azimuth $63^{\circ}55'41''$. No. 2 projects 3 inches, is 26 feet west of south of center line of road, 1.5 feet south of old fence line, and 82.95 feet from station in azimuth $110^{\circ}57'$. Azimuth from the station to cross on white church near Paincourtville, distant approximately 2 miles, is $315^{\circ}02'55''$.

Calcasieu (Calcasieu Parish, F. L. Gallen, 1931; 1933).—About 13 miles south of Sulphur, on west side of Lake Calcasieu, on land owned by the Yount-Lee Oil Co., of Beaumont, Tex. To reach from Sulphur follow Route 104 south to free ferry over Calcasieu Canal and ferry over Lake Charles Deep Water Canal. Continue 1.7 miles from Calcasieu Canal ferry or 1.3 miles from Lake Charles Deep Water Canal ferry, to a group of small trees east of road, reached just before passing under a high-tension line. These trees are the last ones before reaching the Hackberry oil field. Station is on the south edge of trees, 300 yards east of road, 350 yards southeast of sign board advertising "The Hub", about three-fourths mile west of lake shore, and 66 feet southeast of small live oak tree with its trunk in a horizontal position toward southeast. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on south side of shallow ditch, 9.5 feet south of an 8-inch pecan tree on north side of ditch, and 174.2 feet from station in azimuth $87^{\circ}10'$. No. 2 is 40 feet west of center line of road, 100 yards

north of curve in road and small wooden culvert under road near a sign advertising "The Hub", and 390 yards from station in azimuth $138^{\circ}15'19''$.

Grand Lake (Calcasieu Parish, F. L. Gallen, 1931; 1933).—About 14 miles south of Lake Charles, in the village of Grand Lake, on east shore of Calcasieu Lake, 53.0 feet east of center line of shell road (Route 211) leading into the village, 71 feet north of center line of the T crossroad, and in fence line of vacant lot. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark projects about 5 inches. Reference marks are standard reference disks in concrete, note 11a. No. 1 projects 6 inches, and is 52.0 feet west of center line of shell road (Route 211), 47.0 feet north of center line of T crossroad, 21.38 feet northeast of southeast corner of J. Cormier's cash store, 3.30 feet southeast of northeast corner of same store, and 107.48 feet from station in azimuth $80^{\circ}51'$. No. 2 projects 6 inches, and is in the northeast corner of a field, 55.0 feet west of the center line of shell road, 107 feet south of termination of canal, and 0.4 mile from station in azimuth $189^{\circ}26'09''$.

Supplementary points

P.B.M. 56 (M.R.C.) (St. Mary Parish, F. L. Gallen, 1931).—In Berwick, in T. 15 S., R. 12 E., of Louisiana meridian, on right bank of Berwick Bay, on property of the Southern Pacific Co., about 125 meters (410 feet) east of Berwick railroad station, 160.2 feet north of center of Southern Pacific tracks at a point 15 meters (50 feet) west of west abutment of small road underpass near west end of railroad bridge, 25 feet west of west side of Front Street, 18 feet south of south side of Railroad Avenue, 74 feet north of west support of oil tank, 72 feet west of river bank, on line with east face of house owned by estate of Simon Leopold and occupied by Mrs. Faret, and 59 feet from southeast corner of house. P.B.M. 56 is a bolt in a concrete block and iron pipe, projecting 10 inches. Elevations, cap on pipe, 7,542 feet above Gulf level and bolt in concrete block 3,556 feet above Gulf level. Reference mark no. 1 is a United States Coast and Geodetic Survey standard reference disk set in concrete on west abutment of railroad bridge, on north side of road underpass mentioned above, 3 feet north and 1 foot lower than north rail of railroad, 160.53 feet from the station, $78^{\circ}12'40''$ to the right of line to *Morgan City, municipal tank*.

Atchafalaya River south base (St. Mary Parish, C. H. Boyd, 1889; 1931).—About 2½ miles southwest of Berwick, at junction of Atchafalaya River, Little Wax Bayou, and Louisiana-Texas Intercoastal Canal, on island cut off by canal, and 7 paces south of house fronting on Little Wax Bayou. Marked by shell concrete monument, about 2 feet high, with copper bolt in top. Station *Wax* (see description thereof) is 45.263 meters (148.50 feet) from station in azimuth $242^{\circ}31'$.

NINETY-FOURTH MERIDIAN ARC

Principal points

Pinkard (Cass County, Tex., P. A. Smith, 1930; 1933).—About 9 miles, airline, south by east of Atlanta, 4½ miles southeast by east of Bivins, and 1 mile south of Huffines School, on the northern end of a high bare knoll about one-eighth mile northwest of Pinkard's house. Land is now owned by S. C. Pinkard, with probable change of ownership to R. S. Allday's Supply Co. Station is 8.5 meters (28 feet) south of edge of cultivated ground, and 13.5 meters (44 feet) east of cultivated ground to west. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in a north-and-south fence line, about one-fourth mile from station in azimuth $177^{\circ}22'38''$. No. 2 is 15 meters (49 feet) west of road, west of a large tree which is west of road, and is 475.1 feet from station in azimuth $268^{\circ}50'06''$.

Ravana (Miller County, Ark., P. A. Smith, 1930).—About one-half mile east of Ravana railroad station, on south end of bare knoll, on land owned by G. S. Beck, about 75 meters (246 feet) south of his house, 16.7 meters (55 feet) southeast of southeast corner of barn, 7.4 meters (24 feet) west of fence west of road, and 28.0 meters (92 feet) north of fence north of road. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Upper mark is 4 inches below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1.5 meters (5 feet) west of fence line, and 29.66 meters (97.3 feet) from station in azimuth $208^{\circ}09'$. No. 2 is in southwest corner of field, 10 meters (33 feet) north of road, and three-eighths mile from station in azimuth $84^{\circ}53'14''$.

For notes in regard to marking of stations see p. 71.

Posey (Cass County, Tex., P. A. Smith, 1930).—About 6 miles, airline, northwest of Vivian, La., 4 miles southwest of Rodessa, La., and 0.6 mile west of the Texas-Louisiana boundary, on the highest point of a small wooded ridge. To reach from Vivian go north along Highway No. 47 for 4.9 miles to county road running west at filling station, thence west on this road 3.6 miles to point 130 meters (427 feet) beyond a fork, to station site. Station is 12.5 meters (41 feet) north of road. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Upper mark is flush with surface of ground. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in fence line 5 meters (16 feet) south of road at fork, and 130 meters (427 feet) from station in azimuth $278^{\circ}12'41''$. No. 2 is 5 meters (16 feet) south of road, and 32.13 meters (105 feet) from station in azimuth $45^{\circ}58'$.

Spearman (Caddo Parish, P. A. Smith, 1931).—About 10 miles northeast of Vivian, $3\frac{1}{2}$ miles airline northeast of Rodessa, $3\frac{1}{2}$ miles west of Ida, and one-half mile south of the Louisiana-Arkansas boundary, in the middle of the south side of sec. 6, T. 23 N., R. 15 W., on land belonging to N. S. Spearman, 17.0 meters (56 feet) northeast of northwest corner of house, and 13.6 meters (45 feet) southeast of well. From Rodessa go northeast 2.3 miles on the Ida Road, thence north and east on county road 1.8 miles to house on Spearman farm, situated about 150 yards north of road on a grassy knoll. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at east side of small field, at edge of timber, and 100 meters (328 feet) from station in azimuth $228^{\circ}51'48''$. No. 2 is 20 meters (66 feet) west of well, and 34.48 meters (113.1 feet) from station in azimuth $111^{\circ}08'$.

Myra (Caddo Parish, P. A. Smith, 1930).—About 7 miles, airline, northeast of Vivian, and $1\frac{1}{2}$ miles southwest of Mira, on a high wooded ridge near the west boundary of land belonging to Dr. Collins, apparently near the middle of the west side of sec. 2, T. 22 N., R. 15 W., about 150 yards east of a cultivated field, near east end of ridge, and 6 meters (20 feet) north of a small pit. To reach from Mira go west on Myrtis Road 0.9 mile from railroad, thence left at cross roads 0.5 mile to a steep woods road to left and opposite small house and barn, follow woods road along west and south sides of cultivated field, thence southeast across another cultivated field to top of ridge, three-fourths mile in all. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 3 meters (10 feet) northeast of faint woods road, and about 60 meters (197 feet) from station in azimuth $157^{\circ}48'$. No. 2 is at east end of ridge, and 30.88 meters (101.3 feet) from station in azimuth $256^{\circ}32'$.

Vivian (Caddo Parish, P. A. Smith, 1930).—Two miles north of Vivian, one-fourth mile west of Highway No. 8, at northwest corner of small clearing and on northeast end of the highest knoll in the vicinity, about 50 meters (164 feet) west of fork in woods road, 11.6 meters (38 feet) south of road leading west, 37 meters (121 feet) west of road leading south and 20.3 meters (67 feet) west by south of a $2\frac{1}{2}$ -foot pin oak tree. Approximate location from map is in sec. 6, T. 22 N., R. 16 W. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 meter (3 feet) south of wire fence, at northwest corner of land owned by Mr. Bussa, and 37.29 meters (122.3 feet) from station in azimuth $206^{\circ}29'$. No. 2 is alongside east edge of clearing, 3 meters (10 feet) east of old road, about 30 meters (98 feet) from south end of clearing, and 90 meters (295 feet) from station in azimuth $332^{\circ}51'57''$.

Tyson (Caddo Parish, P. A. Smith, 1930).—About 7 miles, airline, southeast of Vivian, $2\frac{1}{2}$ miles west-southwest of Gilliam, one-fourth mile south of the Gilliam-Vivian Road, on the high ground of the Tyson lease of the Gulf Refining Co., approximately in the center of sec. 14, T. 21 N., R. 15 W., 23.2 meters (76 feet) southeast of Tyson well no. 12, about 50 meters (164 feet) south of highest point on ridge, and about 100 meters (328 feet) south of Dixie Oil Co.'s power station. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 12 meters (39 feet) southwest of pump house at well no. 12, and 36.92 meters (121.1 feet) from station in azimuth $56^{\circ}33'$. No. 2 is near a mail box, 5 meters (16 feet) southeast of a pump line running northwest from power station, 4 meters (13 feet) northwest of road, and one-eighth mile from station in azimuth $173^{\circ}28'00''$.

Lewis (Caddo Parish, P. A. Smith, 1930).—About 4 miles south of the town of Vivian, 1 mile northwest of Lewis railroad station, about 1 mile west of junction of State Routes Nos. 8 and 202, 11.8 meters (39 feet) north of center line of pavement of Route No. 202, and 17.87 meters (58.6 feet) east of no. 30 Caddo Parish right-of-way stake, a 2½-inch pipe. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on south side of highway, 35.06 meters (115.0 feet) from station, in azimuth 308°36'. No. 2 is 25.7 meters (84 feet) southeast of no. 49 Caddo Parish right-of-way stake, 10.0 meters (33 feet) south of center line of highway, and about 250 meters (820 feet) from station in azimuth 86°30'13''.

Oil (Caddo Parish, P. A. Smith, 1930).—Station is 0.7 mile west of Oil City, on the Ferry Lake Road, about 40 meters (131 feet) southwest of the 84-foot wooden oil derrick of the Gulf Refining Co. which stands on the north side of the road, approximately on line between secs. 11 and 12, T. 20 W., R. 16 W., 19.3 meters (63 feet) south of center line of pavement, and 33.9 meters (111 feet) northeast of tree at west end of gate on road leading through fence to south. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at a fence corner, 125 meters (410 feet) west of D. E. Chandler's house, 7 meters (23 feet) north of pavement, south of a galvanized-iron barn, and one-fourth mile from station in azimuth 103°59'30''. No. 2 is 19.2 meters (63 feet) north of paved road, one-half meter (2 feet) east of wire fence, and 36.55 meters (119.9 feet) from station in azimuth 181°43'.

Belcher (Caddo Parish, P. A. Smith, 1930).—One-half mile south of Belcher, on Highway No. 71, 0.1 mile south of railroad crossing at point where private road leads to southwest along southeast edge of a cultivated field, 16.9 meters (55 feet) west of center of pavement, and 13.4 meters (44 feet) north by west of private road, on land belonging to Dr. Tooke. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a, the surface mark projecting 1 foot above ground. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 9 meters (30 feet) west of center of pavement, and 39.06 meters (128.1 feet) from station in azimuth 191°57'. No. 2 is 3 meters (10 feet) northeast of brick chimney of negro cottage with tree growing in front, and about one third mile from station in azimuth 47°49'15''.

Moor (Caddo Parish, P. A. Smith, 1930).—About 3.8 miles south-southeast of Mooringsport, on Greenwood Road, about 130 meters (427 feet) northwest of road intersection where a wagon road forks to left and a graded road leads west, on State-owned land which has been cleared of standing timber, on east side of sec. 15, T. 19 N., R. 16 W., 42.7 meters (140 feet) west of Greenwood Road, and 118.8 meters (390 feet) north of graded road leading west. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 11.4 meters (37 feet) west of road, and 31.33 meters (102.8 feet) from station in azimuth 280°52'. No. 2 is 8 meters (26 feet) west of road, and about 450 meters (1,476 feet) from station in azimuth 357°45'.

Roy (Caddo Parish, P. A. Smith, 1930).—About 8 miles, airline, northwest of Shreveport, 2 miles east of Blanchard, on a high, sandy, flat-topped ridge, heavily wooded, on land owned by R. O. Roy, approximately in the south side of sec. 36, T. 19 N., R. 15 W. To reach from junction of Routes Nos. 8 and 71, 3 miles north of Shreveport, go north on Route No. 8 about 6.5 miles to a fence corner about one-fourth mile north of gravel road leading to left and 150 meters south of a filling station on Route No. 8; south of fence turn west and go about 200 meters to gate, through gate and south up gradual slope to woods, and along dim road through woods to east and south until top of ridge is reached, thence west several hundred meters to line where gas line which ran in a northeasterly and southwesterly direction has been removed. Station is about 50 meters (164 feet) northeast of highest point on knoll, 10.8 meters (35 feet) north of blazed pine tree 1 foot in diameter, and in clearing left by gas line. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 20.78 meters (68.2 feet) from station in azimuth 53°02'. No. 2 is in clearing left by gas line, and is 31.63 meters (103.8 feet) from station in azimuth 133°15'.

Bryson (Caddo Parish, P. A. Smith, 1930).—Six miles west-southwest of Blanchard, 0.1 mile north of the intersection of the Greenwood-Mooringsport Road and the Blanchard-Furrr Road, in the lot in front of Mr. Bryson's house,

the first house on the east side of the road north of the road north of the intersection, on south side of sec. 11, T. 18 N., R. 16 W., 45.0 meters (148 feet) east of road, 33.1 meters (109 feet) west by north of northwest corner of house, and 16.5 meters (54 feet) south of wire fence. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at highway intersection, 12 meters (39 feet) east of Greenwood Road, 35 meters (115 feet) southeast of a 2½-foot red oak tree, and 0.1 mile from station in azimuth 7°24'14". No. 2 is about 15 meters (49 feet) east of road, 10 meters (33 feet) north by east of large red oak tree, and 32.92 meters (108.0 feet) from station in azimuth 118°54'.

Greenwood (Caddo Parish, P. A. Smith, 1930).—Station is 1.4 miles east of Greenwood, 0.2 mile south of gateway with stone posts on south side of Highway No. 80, on land owned by Mark Meyers, on north brow of ridge, about 2 meters (7 feet) east of west road fence line prolonged, 20.5 meters (67 feet) north by east of the northeast corner of a long chicken house, and 35.5 meters (116 feet) west by north of northwest corner of chicken house south of orchard. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in east fence line of private road, 1.1 meters (4 feet) south of easterly stone gate post, about 20 meters (66 feet) south of highway, and 0.2 mile from station in azimuth 183°53'03". No. 2 is at northwest corner of chicken house south of orchard, and 35.46 meters (116.3 feet) from station in azimuth 282°40'.

Reid (Caddo Parish, P. A. Smith, 1930).—On Highway No. 80, 2 miles west of its junction with Highway No. 171 in southwest part of Shreveport, 0.6 mile west of entrance to State fair grounds, on top of a knoll, on highest land in vicinity and about 150 meters (492 feet) south of Highway No. 80, on land owned by G. D. Reid, whose place may be recognized by the wooden gate at head of small cut on driveway. Station is about 60 meters (197 feet) south by east of house, 9.7 meters (32 feet) west of cedar tree, the middle one of three in a row, 7.9 meters (26 feet) north of wire fence along north side of small cultivated field, and about 20 meters (66 feet) west of an old well. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 10 meters (33 feet) south of highway, one half meter (2 feet) south of fence, 27 meters (89 feet) east of driveway, and 150 meters (492 feet) from station in azimuth 181°38'01". No. 2 is in northeast corner of small field, and 34.00 meters (111.5 feet) from station in azimuth 279°56'.

Spring (Caddo Parish, P. A. Smith, 1930).—Near the east edge of sec. 2, T. 15 N., R. 6 W., about 1.5 miles west-northwest of the town of Springridge, about 200 meters west of an old road, which probably marks the line between secs. 1 and 2, but about which line no definite information was obtained. Station is about 50 meters (164 feet) west of a small pine grove, 13.65 meters (44.8 feet) northwest of the center of a 10-inch oil well casing (capped), and 38.5 meters (126 feet) northwest of a pit about 25 feet square which lies south of the oil well. To reach station from Springridge store, go west 1.3 miles to a road leading off to right (north) to 2 tenant houses about one-fourth mile north of main road; turn east between the 2 houses, and follow the winding woods road about one-half mile to old oil well and station. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on high ground east of station, in west fence line of a north-and-south road, 14.5 meters (48 feet) north of a 14-inch dead walnut tree and about 250 meters (820 feet) from station in azimuth 227°30'17". No. 2 is on the south edge of field, 0.1 meter (0.3 foot) north of east-and-west fence, and about 100 meters (328 feet) from station in azimuth 355°51'32".

Shreveport north base (Caddo Parish, P. A. Smith, 1930).—About 7½ miles, airline, south by west of the courthouse in Shreveport, in southeast corner of pasture on land belonging to T. B. Howell, 20.8 meters (68 feet) west of west rail of the Texas & Pacific Railway, 6.6 meters (22 feet) northwest of the southeast corner post of pasture, and about 50 meters (164 feet) north of switch for a railroad siding. To reach from Shreveport go to intersection of Highways Nos. 80 and 171, thence south 6.1 miles on Highway No. 171 to 2 white houses on east side of road; turning in at Mr. Howell's house which is the southern one of the two, pass south of the house through a gate, follow wagon tracks about east by north across pasture about one-fourth mile to station. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference

marks are standard reference disks in concrete, note 11a. No. 1 is in the northeast corner of pasture, 15.2 meters (50 feet) south of a 30-inch oak, 14.45 meters (47.4 feet) west of west rail of railroad, 29.0 meters (95 feet) northeast of a 20-inch pin oak, and 165.7 meters (544 feet) from station in azimuth $208^{\circ}34'56''$. No. 2 is about 1 foot north of the south fence line of pasture, and 27.85 meters (91.4 feet) from station in azimuth $80^{\circ}12'$.

Shreveport south base (Caddo Parish, P. A. Smith, 1930).—About 16 miles by road south of Shreveport and 1 mile south by west of Keithville, on land belonging to A. B. Clingman, 39.0 meters (128 feet) southeast of the southeast corner of house on Clingman's land, 29.3 meters (96 feet) west by north of Southern Pacific Co.'s tracks at beginning of curve a few feet south of sign "1 mile to Keithville", 10.8 meters (35 feet) west by north of road, and 11.4 meters (37 feet) west by south of pine tree alongside of road. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 foot east of garden fence, about 20 meters (66 feet) south of house, and 37.60 meters (123.4 feet) from station in azimuth $128^{\circ}47'$. No. 2 is 9 meters (30 feet) west of road, 30 meters (98 feet) north of railroad crossing, and about 0.2 mile from station in azimuth $27^{\circ}47'53''$.

Stonewall (De Soto Parish, P. A. Smith, 1930; 1933).—About 14 miles, air line, south of Shreveport, $2\frac{1}{2}$ miles northeast of Stonewall, and $3\frac{1}{2}$ miles southeast of Keithville, on the west end of a sandy, cultivated hill, on land belonging to C. O. McMullin, 80 meters (262 feet) east of road at top of hill. Station best reached from Stonewall by going east on gravel road 1.6 miles to fork, thence north one-half mile, east one-eighth mile, north one-half mile, and east one-fourth mile to gate to McMullin's house on north side of road; from gate go north past house and farm buildings and follow farm road north to top of hill and along west side of cultivated field about one-third mile. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Upper mark is 1 foot below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is alongside west edge of field, 4 meters (13 feet) southeast of wagon road where it descends to northeast through a small cut, and 252.2 feet from station in azimuth $122^{\circ}16'$. No. 2 is alongside north edge of field, about 6 meters (20 feet) southeast of three small pines in center of clump of brush, and approximately $287\frac{1}{2}$ feet from station in azimuth $195^{\circ}35'$.

Forks (Caddo Parish, P. A. Smith, 1930).—About 6 miles, air line, southwest of Springridge, 6 miles, air line, west-northwest of Keachie, 0.2 mile north of Four Forks, and 50 meters west of center line of highway, in east edge of pecan grove belonging to Mrs. Stephen A. Brown. To reach from Keachie follow the Marshall Road west and north 6 miles to Four Forks, thence north on gravel road 0.2 mile to station. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Upper mark is 10 inches below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 10 meters (33 feet) east of highway, 1 foot south of fence corner, about 100 meters (328 feet) west of Negro house, and about 250 meters (820 feet) from station in azimuth $182^{\circ}41'27''$. No. 2 is in fence line 10 meters (33 feet) east of highway, and 36.1 meters (118 feet) from station in azimuth $313^{\circ}52'$.

Kickapoo (De Soto Parish, P. A. Smith, 1930).—About 1 mile west of Gloster, 7 miles north of Grand Cane, $3\frac{1}{2}$ miles east of Keachie, and about 250 meters (820 feet) north of the intersection of Highways Nos. 38 and 171, in small piece of grass land between highway and first house on west, 15.6 meters (51 feet) west of Highway No. 171, 33.0 meters (108 feet) south of northerly private road leading to farm house, and 13.2 meters (43 feet) north of private road along south side of grass plot. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at fence corner, 4 meters (13 feet) north of private road, 9 meters (30 feet) west of highway, and 37.82 meters (124.1 feet) from station in azimuth $189^{\circ}45'$. No. 2 is in fence line, 8 meters (26 feet) north of Highway No. 38, about 150 meters (492 feet) west of intersection of highways, and one-eighth mile from station in azimuth $34^{\circ}27'05''$.

Pace (De Soto Parish, P. A. Smith, 1930).—About $3\frac{1}{4}$ miles, air line, southwest by west of Longstreet, about 7 miles, air line, north of Logansport, in the $SE\frac{1}{4}SE\frac{1}{4}$ sec. 28, T. 13 N., R. 16 W., in pasture, on land owned by J. O. Pace, about 45 meters (148 feet) southeast of corner of wire fence between cotton field and pasture, and about 125 meters (410 feet) west of road. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference

marks are standard reference disks in concrete, note 11a. No. 1 is 7 meters (23 feet) west of center line of road, 10 meters (33 feet) south of south side of gate, 2 meters (7 feet) northwest of a 4-foot stump, 40 meters (131 feet) south of a Negro house, and 150 meters (492 feet) from station in azimuth $303^{\circ}12'15''$. No. 2 is on center line of wire fence between cotton field and pasture, about 36 meters (118 feet) northeast of corner of same wire fence, and 66.80 meters (219.2 feet) from station in azimuth $162^{\circ}55'$.

Ford (De Soto Parish, P. A. Smith, 1930).—About $1\frac{1}{4}$ miles, air line, west-southwest of Grand Cane, on land owned by Mr. Ford, on a slight knoll, 26.2 meters (86 feet) northeast of a 30-inch pine tree, and 53.4 meters (175 feet) south of southeast corner of Negro house. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 foot east of northeast corner of a 4-room Negro house, 5 meters (16 feet) east of east side of brick chimney on north side of house, and 150 meters (492 feet) from station in azimuth $63^{\circ}45'28''$. No. 2 is 5 meters (16 feet) south of small chicken house, 17.8 meters (58 feet) southeast of southeast corner of Negro house, and 37.20 meters (122.0 feet) from station in azimuth $171^{\circ}55'$.

Neuville (Shelby County, Tex., C. L. Garner, 1919; 1931).—About 8 miles by road south of Shelbyville, $1\frac{1}{4}$ miles west of the Shelbyville-San Augustine Road, in an old abandoned field, on top of a flat hill known locally as Big Hill. To reach station follow Highway No. 8 (Center to San Augustine) and proceed to a point 7.1 miles south of Shelbyville, half way up a long hill. A triangle was blazed on a pine tree to right (or north) of highway. A small white house is near the foot of the hill and on the left (or south) of highway. From this point an old road runs north through the woods; follow this road 0.4 mile, to point where roads run in all directions; follow the road to north along top of ridge for about 1 mile to a clearing. Station is in this clearing, about 25 feet south of road, 30 feet west of pine tree with 4 blazes in it standing about 8 feet south of road. Rotten lumber of old signal is east of station. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference mark (1919) is standard reference disk in concrete, note 11a, 36.94 meters (121.19 feet) from station in azimuth $348^{\circ}32'$. Azimuth from station to steel water tank at Center is $145^{\circ}51'08''$. Elevation of surface mark in 1919 was 171.27 meters (561.9 feet). In 1930 the station and reference marks were recovered; the disk of the surface mark had been broken off, but stem remained. The disk of the reference mark had been battered. A new reference mark was set in 1931, similar to the old reference mark, and 35.46 meters (116.34 feet) from station in azimuth $71^{\circ}47''$.

Brittain (Shelby County, Tex., P. A. Smith, 1931).—One half mile south of Camp Brittain, a logging camp of the Pickering Lumber Co., about one fourth mile northeast of the Brittain consolidated schoolhouse, about 4 miles northwest of East Hamilton, on land belonging to the Pickering Lumber Co. The road forks just beyond the schoolhouse; take left hand fork and go 0.1 mile to abandoned church, and there turn right and go about 130 meters (427 feet) to station on highest ground. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in oak brush, 31.39 meters (103.0 feet) from station, in azimuth $152^{\circ}37'$. No. 2 is at northeast corner of old abandoned church, about 8 meters (26 feet) west of road, and about 140 meters (459 feet) from station in azimuth $79^{\circ}16'$.

Lula (De Soto Parish, C. L. Garner, 1919; 1930).—About 24 miles southeast of Logansport, 3 miles southwest of Lula post office, 2 miles west of the road leading south from Lula post office, on a prominent hill, the highest in the vicinity, known locally as Big Hill, and owned by the Frost Johnson Lumber Co. Station is about 350 meters (1,148 feet) west of A. Smith's house, and 130 meters (427 feet) west of fence line between his farm and the lumber company's property. To reach station from Mansfield follow the Logansport-Mansfield Highway 6 miles to a filling station at forks; thence along left fork 8.9 miles to dirt road leading to right. This dirt road passes between old unpainted church on left and Negro school on right. Follow this road 3.0 miles to house of A. W. Lewis on right of road; one fourth mile beyond his house is a dim woods road which goes south one fourth mile to top of hill and station. Road is marked with triangle blazed on pine tree. At top of hill is a triangle blazed on pine tree which is just north of very large oak tree. Station is about 30 meters west of this tree. Surface and underground marks are standard disk station marks in

For notes in regard to marking of stations see p. 71.

concrete, notes 1a and 7a. Reference mark (1919) is standard reference disk in concrete, note 11a, 70.02 meters (229.7 feet) from station in azimuth $295^{\circ}40'$. In 1930 an additional reference mark was set, and called no. 1. It is a standard reference disk in concrete, note 11a, 35.20 meters (115.4 feet) from station in azimuth $216^{\circ}37'$.

Hunter (De Soto Parish, C. L. Garner, 1919; 1930).—About 15 miles southwest of Logansport, $4\frac{1}{2}$ miles south of the Mansfield-Logansport Road, 250 meters (820 feet) west of the Mansfield-Hunter Road, on top of the highest hill in the vicinity. Hill is wooded and belongs to W. E. Sims who lives on the Mansfield-Hunter Road about 300 meters (984 feet) south of point opposite station. To reach station from Mansfield go west on the Logansport Highway 10.5 miles to point where there is a large white house on the north and a road to south is cut through bank. Follow this road 0.9 mile to forks; turn right and go 1 mile; take left fork and go 2.5 miles to house on west side of road; from house go through gate on south side of shed and bear west into cultivated field, then southwest along west edge of woods to gap in trees in a draw. Pass through gap and go to southeast corner of big trees, then bear right along south edge of trees to station on high ground in north edge of cotton field on south edge of woods. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. In 1930 surface mark was found loose and concrete broken off horizontally 3 inches from top; it was reset. Reference mark (1919) is a standard reference disk in concrete, note 11a, 46.06 meters (151.1 feet) from station in azimuth $277^{\circ}57'$. In 1930 an additional reference mark was set, and called no. 1. It is a standard reference disk in concrete, note 11a, 25.06 meters (82.2 feet) from station in azimuth $199^{\circ}39'$.

Doggett (Shelby County, Tex., C. L. Garner, 1919; 1931).—About 5 miles by road west of Logansport, La., 1 mile south of Joaquin, on top of a hill, in the edge of a cultivated field belonging to F. A. Doggett, about 300 meters (984 feet) west of his house, and 3 meters (10 feet) south of center line of rail fence to the north of which are woods. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference mark (1919) is a standard reference disk in concrete, note 11a, set in a corner of the fence on side of field to west of station, 29.68 meters (97.38 feet) from station in azimuth $89^{\circ}41'$. In 1931 the station was recovered in good condition, and a new reference mark, similar to the one placed in 1919, was established, 90.76 meters (297.77 feet) from station in azimuth $342^{\circ}42'$. The azimuth of a steel water tank at Haslam is $243^{\circ}37'19''$.

Supplementary points

Loutexark (Texas-Arkansas-Louisiana boundary, P. A. Smith, 1930).—About 9 miles southeast of Atlanta, 11 miles north of Vivian, and 50 feet north of Route 47, at a small settlement known locally as Three States. Station marked by a standard disk in top of boundary post of stone, about 10 inches square, and projecting 18 inches above ground. An azimuth mark, described as standard tablet in stone boundary post, was observed on from *Loutexark Ecc.* and recorded as being directly on line to station *Ravana*. Data for reducing its azimuth to *Loutexark* (center) are not available.

Oak (Texas-Louisiana boundary, P. A. Smith, 1930).—On the Texas-Louisiana boundary, $9\frac{1}{2}$ miles, air line, west by south of Blanchard, 9 miles north-northwest of Greenwood, and 4.8 miles by road west of Bryson's store. Best reached from Bryson's store, which is 5.9 miles west of Blanchard on the Furrh Road. From store continue west 4.3 miles to fork at Negro schoolhouse; take left fork and go one half mile to State boundary, and there turn south and go 100 yards, or 50 yards beyond road leading west into Texas with a 4-foot oak tree opposite road in fence line. Station is in fence line, east of the north-and-south road, and on top of a knoll about 50 yards south of the 4-foot tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a.

SHREVEPORT-VICKSBURG ARC

Principal points

Benton (Bossier Parish, P. A. Smith, 1930; 1931).—On land owned by Priscilla Miles, 1.9 miles north of Benton, on State Highway 10, at point where telephone and gas lines cross highway, 22.2 meters (73 feet) west of road, 11.7 meters (38 feet) southwest of first telephone pole west of road, and 12 meters (40 feet) south

of road leading to Miles' house. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 13.6 meters (45 feet) east of road, and 35.81 meters (117.5 feet) from station in azimuth $271^{\circ}14'$. No. 2 is 1 foot west of fence line, 10 meters (33 feet) east of road, 10 meters (33 feet) north of fence leading to east, and about 175 meters (574 feet) from station in azimuth $5^{\circ}02'31''$.

Vance (Bossier Parish, P. A. Smith, 1930; 1931).—Six miles, air line, north of Shreveport, 0.3 mile south of the village of Vanceville, on land belonging to Mr. Whittington, about 200 feet north of cattle gate, 20.4 meters (67 feet) east of State Highway 10, about 40 meters (131 feet) east of railroad tracks, 5.4 meters (18 feet) from north wire fence, 9.0 meters (30 feet) from west wire fence, and 36.7 meters (120 feet) from south wire fence. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Upper mark is 2 feet below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 11.4 meters (37 feet) east of center line of State highway, in line of wire fence, and 8.98 meters (29.5 feet) from station in azimuth 84° . No. 2 is 11.2 meters (37 feet) east of center line of State highway, in line of wire fence, and one-eighth mile from station in azimuth $154^{\circ}44'05''$.

Deserted (Bossier Parish, P. A. Smith, 1931).—About 6 miles north of east of the village of Benton, and one fourth mile northwest of Bundy Gin, on land owned by Mr. Belcher of Benton. Reached from Shreveport by going east 1.3 miles from bridge on Route 80 to junction with Route 10, then north 13 miles on Route 10 to Benton, then 6.3 miles east on a gravel road (Route 81) to a lane leading north just before reaching the top of a hill. Follow this lane north 100 yards and take right fork 250 yards to a deserted house. Station is in an old field growing up in small pine trees, on the highest ground in the immediate vicinity, 300 yards north of Route 81, about 80 yards northeast of the deserted house, and about 30 yards east of road leading north from house. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in a southeast-and-northwest fence line, 8 meters (26 feet) northeast of center line of highway at top of hill mentioned above, and about one eighth mile from station in azimuth $14^{\circ}26'03''$. No. 2 is 32.02 meters (105.08 feet) from station in azimuth $126^{\circ}29'38''$.

Harper (Bossier Parish, P. A. Smith, 1931).—About 7 miles air line, north-of-east of Shreveport, on land owned by Dr. G. A. Harper, Medical Arts Building, Shreveport. To reach from Shreveport, go 8 miles east on U.S. Route 80. Station is 36 meters (118 feet) south of center line of U.S. Route 80, 7 meters (23 feet) north of an old highway, and 54.5 meters (179 feet) west of Pikes Peak filling station. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 12 meters (39 feet) north of center line of U.S. Route 80, 1 foot north of east-and-west fence line, 33 meters (108 feet) northwest of Pikes Peak filling station, and 57.76 meters (189.5 feet) from station in azimuth $200^{\circ}04'$. No. 2 is in the northwest corner of small field, 6 meters (20 feet) north of gate, 44 meters (144 feet) southeast of southeast corner of Pikes Peak filling station, and 100 meters (328 feet) from station in azimuth $267^{\circ}16'08''$.

Bellevue (Bossier Parish, P. A. Smith, 1931).—About 16 miles northeast of Shreveport, 12 miles east of Benton, 8 miles north of Fillmore on Route 181, 0.5 mile northwest of Bellevue filling station, 75 meters (246 feet) west of northwest corner of white frame church, and about 40 meters (131 feet) north of center line of Route 181. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 meter (3 feet) north of the northeast corner of white frame church, and 90 meters (295 feet) from station in azimuth $279^{\circ}34'$. No. 2 is 9 meters (30 feet) north of center line of Route 181, and 30.09 meters (98.7 feet) from station in azimuth $7^{\circ}29'$.

Reed (Bossier Parish, P. A. Smith, 1931).—About 14 miles east of Shreveport and three fourths mile southwest of Fillmore, on the south end of a very high prominent hill, on land owned by E. S. Reed, one half mile south of a church on the south side of Route 80, at the south end of a cultivated field about 200 meters (656 feet) southwest of a farm house, 16.1 meters (53 feet) east of peach tree on west brow of the hill, and 14.0 meters (46 feet) west of peach tree which is 7 meters (23 feet) west of east brow of hill. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard

For notes in regard to marking of stations see p. 71.

reference disks in concrete, note 11a. No. 1 is in an east-and-west fence line, about 30 meters (98 feet) southeast of house, and one eighth mile from the station in azimuth $225^{\circ}05'52''$. No. 2 is at the corner of field, at the east end of brush, and 27.62 meters (90.6 feet) from the station in azimuth $11^{\circ}10'$.

Grimm (Webster Parish, P. A. Smith, 1931).—About 8 miles northwest of Minden and 1.8 miles south of Hortman railroad station, on land owned by R. E. Crowover, about 300 meters (984 feet) east of Route 90, 8.3 meters (27 feet) south of center line of old road, 54 meters (177 feet) west of center line of most westerly of 2 lines of the Louisiana and Arkansas Railroad Co.'s tracks at Grimm siding, and 17.1 meters (56 feet) south of board gate in wire fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 6 meters (20 feet) north of center line of old road, 6 meters (20 feet) south of corner of wire fence, 10 meters (33 feet) west of most westerly of 2 lines of the Louisiana & Arkansas Railroad tracks, and 43.64 meters (143.2 feet) from station in azimuth $264^{\circ}00'$. No. 2 is 1 foot south of wire fence, 3 meters (10 feet) north of center line of old road and 30.54 meters (100.2 feet) from station in azimuth $123^{\circ}35'$.

Church (Webster Parish, P. A. Smith, 1931).—About 7.5 miles west of Minden and 6 miles east of Fillmore, at a colored church and school 300 meters (984 feet) north of U.S. Route 80, 20.7 meters (68 feet) north by west of northwest corner of church, 26.9 meters (88 feet) west of a 3-foot water-oak tree, and 49.4 meters (162 feet) southwest of southwest corner of school. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 4 inches below surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 10 meters (33 feet) south of Route 80, 27 meters (89 feet) north of northwest corner of church south of highway, and one fourth mile from station in azimuth $305^{\circ}40'21''$. No. 2 is at southwest corner of church, 28.66 meters (94.0 feet) from station in azimuth $3^{\circ}23'$.

Crighton (Webster Parish, P. A. Smith, 1931).—About 7 miles north-northeast of Minden, on a high wooded ridge owned by Tom Crighton, about 80 meters (262 feet) southeast of Dutchtown Road, opposite 5 mail boxes on a buggy wheel, and 20 meters (66 feet) west of a 24-inch live oak tree, the largest in vicinity. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in woods, 24.72 meters (81.1 feet) from station in azimuth $341^{\circ}23'$. No. 2 is 8 meters (26 feet) northwest of centerline of Dutchtown Road, and approximately 150 meters (492 feet) from station in azimuth $73^{\circ}56'$.

Burns (Webster Parish, P. A. Smith, 1931).—About 4 miles southeast of Minden, on land owned by Wren and Turner of Minden and occupied by J. F. Burns, one half mile south of Route 80, one half mile east of road to Dubberly, one half mile northeast of house occupied by Mr. Burns, in a small cultivated field on summit of a high gravelly hill, 36.9 meters (121 feet) north by west of northwest corner of Negro cabin occupied by Kelly Bishop, and 13.2 meters (43 feet) north by east of northeast corner of small crib. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at north edge of the field, 34.16 meters (112.1 feet) from station, in azimuth $189^{\circ}55'$. No. 2 is 4 meters (13 feet) north of a wagon road, and 185 meters (607 feet) from station in azimuth $295^{\circ}24'30''$.

Athens (Claiborne Parish, P. A. Smith, 1931).—About 12 miles north of east of Minden, 10 miles south of Homer and 2 miles west of Athens, on a high sand hill in a plowed field owned by Reese Van Hooser, about 140 meters (459 feet) south of north edge of field, about 240 meters (787 feet) north of south edge of field, and about 75 meters (246 feet) east of old log crib in field. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on edge of field about 50 meters (164 feet) east of southwest corner of field, 7 meters (23 feet) north of east-and-west fence line, and 250 meters (820 feet) from station in azimuth $31^{\circ}38'56''$. No. 2 is on north edge of field, on the west edge of a tall pine grove, and 150 meters (492 feet) from station in azimuth $144^{\circ}21'16''$.

Jackson (Bienville Parish, P. A. Smith, 1931; 1933).—About $1\frac{1}{2}$ miles southwest of the town of Gibsland, on a high cultivated ridge, on land owned by the heirs of Ames Jackson. To reach from Gibsland go 0.5 mile south on Route 89 to junction with Route 80, then 1.0 mile west and southwest to lane leading south, follow lane south and east about 0.4 mile, then turn right (south) about 100 meters (328 feet) to a Negro cabin. Station is on ridge about 250 meters (820

feet) east of cabin, and 60 meters (197 feet) southeast of old well. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is south of saddle in ridge, in an east-and-west rail fence, and 115 meters (377 feet) from station in azimuth $35^{\circ}22'01''$. No. 2 is near the west end of ridge, 4 meters (13 feet) east of old well, and 68.72 meters (225.5 feet) from station in azimuth $139^{\circ}47'$.

Cobb (Bienville Parish, P. A. Smith, 1931).—About 5 miles east of Gibsland and $2\frac{1}{2}$ miles southwest of Arcadia, on land said to belong to Sally Cobb. To reach from Arcadia go 0.8 mile west on U.S. Route 80, left (south) on a dirt road 2.3 miles to the top of a long grade and a small peach orchard on the left (south) side of the road, turn left across this orchard and follow winding woods road 0.3 mile to highest point in the vicinity. Station is about 20 yards northeast of a fork in the road, in the southwest corner of a cotton field, and 24.05 meters (78.9 feet) northeast of a 24-inch oak tree which is at northwest corner of fenced lot. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on west side of woods road mentioned above, and 66.84 meters (219.3 feet) from station in azimuth $313^{\circ}00'$. No. 2 is on south side of a dim lane, 7.5 meters (25 feet) east of an 18-inch oak tree, 8.55 meters (28.1 feet) south of a 12-inch pine tree, and 32.47 meters (106.5 feet) from station in azimuth $39^{\circ}46'$.

Owens (Claiborne Parish, P. A. Smith, 1931).—About 7 miles north by east of Arcadia, on a high timbered ridge, on land owned by George Owens. To reach from Arcadia go west on Route 80 to junction with Route 12, then one fourth mile to junction with Route 488, turn right on Route 488 and follow to a point 3.3 miles from Route 80, turn right on sandy road keeping left fork 0.8 mile, and left fork 1.6 miles to crossroads at burned store, then on 2.5 miles to station site, which is on the left of road just before descending a steep grade. Station is 15.0 meters (49 feet) northwest of center line of road, 4.5 meters (15 feet) north of 18-inch blazed oak tree, and 5.15 meters (16.9 feet) west of 10-inch pine tree with several ax marks about waist high. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is across the road, 14.205 meters (46.60 feet) from station in azimuth $317^{\circ}26'$. No. 2 is 8 meters (26 feet) southeast of center line of road, 12.3 meters (40 feet) east of 20-inch oak stump with mail box nailed to it, and 135 paces from station, in azimuth $42^{\circ}22'59''$.

Arcadia (Bienville Parish, P. A. Smith, 1931).—About $1\frac{1}{4}$ miles southwest of Arcadia and one fourth mile south of Negro schoolhouse, on a small knoll owned by George Taylor, about 125 meters (410 feet) east of Mr. Taylor's house which is a white house on east side of road, and 4.4 meters (14 feet) north of fence between old orchard and small cultivated field to south. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about 25 meters (82 feet) east of an old shed, in an east-and-west fence line and 58.50 meters (191.9 feet) from the station in azimuth $145^{\circ}46'$. No. 2 is 10 meters (33 feet) north of road, 9 meters (30 feet) south of southeast corner of Negro schoolhouse and about one fourth mile from station in azimuth $206^{\circ}18'07''$.

Fogg (Lincoln Parish, P. A. Smith, 1931).—About 14 miles northeast of Arcadia and 11 miles northeast of Ruston, on a timbered ridge, on land owned by T. B. Fogg. To reach from Vienna, go 9.5 miles northwest on Route 115 to a settlement road, and follow this road one fourth mile to the station, which is about 60 meters (197 feet) south of road, and about 30 meters (98 feet) south of a plowed field. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 6 meters (20 feet) east of center line of Route 115, about 100 meters (328 feet) northwest of Mr. Fogg's house, and 300 meters (984 feet) from station in azimuth $175^{\circ}51'19''$. No. 2 is on the edge of plowed field and pine trees, and 36.90 meters (124.3 feet) from station in azimuth $240^{\circ}50'$.

Simsboro (Lincoln Parish, P. A. Smith, 1931).—About 10 miles west of Ruston and $1\frac{1}{2}$ miles southeast of Simsboro, on land owned by M. J. Ledbetter. To reach from Simsboro go 0.8 mile east on Route 80, then 0.5 mile south on a county road to a white house on the west side of the road occupied by B. S. Russell. Station is about 60 meters (197 feet) west of this house, in a small lane, 7.3 meters (24 feet) west of a well, and 13.1 meters (43 feet) north by west of northeast corner of barn. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in con-

crete, note 11a. No. 1 is in fence line north of orchard, 29 meters (95 feet) west of road, and 59.22 meters (194.3 feet) from station in azimuth $231^{\circ}26'$. No. 2 is in northwest corner of field, south of the lane, and about 200 meters (656 feet) from station, in azimuth $90^{\circ}50'49''$.

Ball (Lincoln Parish, P. A. Smith, 1931).—About 5.8 miles northeast of Ruston on Route 44, on a high knoll in a pasture owned by E. C. Ball, about 150 meters (492 feet) northwest of the Ball schoolhouse, about 150 meters (492 feet) west-northwest of Route 44, in $SE\frac{1}{4}SW\frac{1}{4}$ sec. 29, T. 19 N., R. 2 W. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 6 inches below the surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 10 meters (33 feet) west of center line of Route 44, 1 foot west of fence line, in northeast corner of small field, and 250 meters (820 feet) from station in azimuth $244^{\circ}09'22''$. No. 2 is in pasture 1 foot east of wire fence, and 46.80 meters (153.5 feet) from station in azimuth $43^{\circ}44'$.

Cargill (Lincoln Parish, P. A. Smith, 1931).—About 4 miles southwest of Ruston, on land owned by John Cargill. To reach from Ruston go west on Route 80, 2.9 miles from post office, then south 0.7 mile on country road to narrow road leading west, and along this road 1.2 miles to a crossroad. Station is in row of trees between two cultivated fields, 200 meters (656 feet) south of Negro cabin which is 0.1 mile from crossroad referred to above, 100 meters (328 feet) east of road leading south from crossroad, and 12.4 meters (41 feet) east of the westerly of 4 trees. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 4 meters (13 feet) east of north-and-south road, 50 meters (164 feet) south of intersection, and 108.90 meters (357.3 feet) from the station in azimuth $105^{\circ}20'$. No. 2 is 3 meters (10 feet) south of the road, 80 meters (262 feet) southeast of Negro cabin, and 189.45 meters (621.6 feet) from station in azimuth $199^{\circ}05'11''$.

Sibley (Lincoln Parish, P. A. Smith, 1931).—About 10 miles northeast of Ruston, $4\frac{1}{2}$ miles northeast of Choudrant, and 0.6 mile west of Sibley crossroads, on land owned by E. M. Davis, in pasture on south edge of pine grove, about 100 meters (328 feet) north of the Ruston-Sibley gravel road, 4 meters (13 feet) north of wire fence and garden, 7.7 meters (25 feet) east of 20-inch gum tree (only one in vicinity) and 18.7 meters (61 feet) east-northeast of northeast corner of old shed. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 foot southwest of southwest corner of garden fence, and 35.54 meters (116.6 feet) from station in azimuth $355^{\circ}39'$. No. 2 is near the northeast corner of garden fence, 30 meters (98 feet) north of barn, 50 meters (164 feet) northeast of farm house, and 150 meters (492 feet) from station in azimuth $91^{\circ}17'44''$.

Choudrant (Jackson Parish, P. A. Smith, 1931).—About 7 miles southeast of Ruston, on a timbered ridge lying just south of head of Choudrant Creek, on land probably owned by G. A. Adams of Ruston. To reach from Ruston, go 8.9 miles southeast from post office on Route 17, to crossroads 0.1 mile beyond unpainted Negro church on the left; turn west and follow dirt road past Negro church, school, and cemetery on left 1 mile to open field and cabin; then turn northeast 0.4 mile to station which is on southeast end of a ridge, the highest point in vicinity, and 4.8 meters (16 feet) north of a 14-inch blazed pine tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 4 meters (13 feet) west of road, and 21.27 meters (69.8 feet) from station in azimuth $296^{\circ}30'$. No. 2 is 3 meters (10 feet) northwest of woods road, and 61.92 meters (203.1 feet) from station in azimuth $19^{\circ}20'$.

Simpson (Ouachita Parish, P. A. Smith, 1931).—About 12 miles west-northwest of Monroe and 5 miles northeast of Calhoun, on land owned by the Simpson Estate of Monroe. To reach from Monroe go 6.9 miles west on Route 80 to junction with Route 15, then 6.5 miles northwest on Route 15 to L. J. Neal's filling station on the right, then southwest 1.2 miles on dirt road to station, which is in a pasture on a high ridge, 6 meters (20 feet) east of center line of road, about 30 meters (98 feet) northeast of a 24-inch gum tree on west side of road, and about 100 meters (328 feet) northeast of a farm house on west side of road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in pine grove, 32.59 meters (106.9 feet) from station in azimuth $242^{\circ}27'$. No. 2 is 5 meters (16 feet) east of center line of road, 2 feet east of wire fence, about 50 meters (164 feet) northeast of farm house, and 60 meters (197 feet) from station in azimuth $4^{\circ}30'$.

Village (Jackson Parish, P. A. Smith, 1931).—About 16 miles southeast of Ruston, 5 miles southwest of Calhoun, and 4 miles north of Eros, on the north end of a high timbered ridge, on land owned by the Tremont Lumber Co. To reach from Calhoun go 5.2 miles south on the Indian Village road to forks, then left 1.1 miles on road to Eros to woods road turning left into heavy timber; follow this woods road 0.2 mile taking left forks, then turn left and climb 70 meters (230 feet) to top of ridge and station, which is about 450 meters (1,476 feet) west of the Louisiana Meridian, 60 meters (197 feet) south of the north brow and about 30 meters (98 feet) west of the east brow of ridge. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on the brow of the ridge, 32.77 meters (107.5 feet) from station in azimuth $247^{\circ}40'$. No. 2 is about 25 meters (82 feet) north of a small draw, and 50.12 meters (164.3 feet) from station in azimuth $0^{\circ}57'$.

Hendricks (Ouachita Parish, P. A. Smith, 1931).—About 7 miles west-northwest of Monroe, on land owned by Joe Hendricks. To reach from Monroe go by U.S. Route 80 to crossroads at yellow filling station and cafe, 2.0 miles west of traffic light in West Monroe, thence north 0.6 mile to a graveled road which is a continuation of Trenton Street, of West Monroe, thence west, 3.8 miles to the station site. Station is in brush about 40 meters (131 feet) south of main traveled road, about 90 meters (295 feet) north of Mr. Hendrick's house, and about 75 meters (246 feet) southwest of T-intersection of main road and a settlement road leading south. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 5 meters (16 feet) northwest of old path leading to house, about 50 meters (164 feet) north of house, about 15 meters (49 feet) east of wire fence and plowed field, and 38.90 meters (127.3 feet) from station in azimuth $351^{\circ}29'$. No. 2 is 10 meters (33 feet) north of center line of highway, 4 meters (13 feet) west of telephone pole no. G.S.C. 30, and 100 meters (328 feet) from the station in azimuth $258^{\circ}47'55''$.

Marx (Ouachita Parish, P. A. Smith, 1931).—About 9 miles southwest of Monroe, near south end of high wooded ridge owned by Leon Marx and used as a Negro burying ground. To reach from West Monroe go by gravel road south past paper mill 3.8 miles to Bawcom's store, then west and south on country road 5.0 miles to small unpainted house on left, owned by R. V. Armstrong. Station is one-eighth mile northwest of this house, 15 meters (49 feet) northeast of highest point of ridge, 4.8 meters (16 feet) south of fence along south side of cotton field, and 14 meters (46 feet) north by west of a group of graves. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 0.4 meters (1.3 feet) south of fence, and 23.97 meters (78.6 feet) from station in azimuth $277^{\circ}25'$. No. 2 is on top of ridge, 22.1 meters (73 feet) south of fence, and 19.12 meters (62.7 feet) from station in azimuth $43^{\circ}32'$. The following azimuths are from the station: *West Monroe, B.P.M. Co., northeast stack*, $228^{\circ}00'10''$; *West Monroe, B.P.M. Co., southwest stack*, $227^{\circ}58'30''$.

Cole (Ouachita Parish, P. A. Smith, 1931).—About 4 miles north of downtown Monroe, on left bank of Ouachita River near where Bayou De Saird flows into the river, about 100 feet south of top bank of bayou, and about 50 meters (164 feet) east of river, on property of the Cole estate, on summit of a large (30 feet high) Indian mound, about 0.3 mile north of the Cole plantation house, and 25 meters (82 feet) west of old road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 foot east of a wire fence line on edge of plowed field, 5 meters (16 feet) east of center line of old road, and 33.52 meters (110.0 feet) from station in azimuth $308^{\circ}14'$. No. 2 is 1 foot north of a wire fence, 6 meters (20 feet) west of an iron gate and road, about 15 meters (49 feet) east of river, and 33.52 meters (108.98 feet) from station in azimuth $25^{\circ}17'$. Station *Rudy (U.S.E.)* (see description thereof) is 0.73 meter (2.41 feet) from the station in azimuth $324^{\circ}20'$.

Brooks (Ouachita Parish, P. A. Smith, 1931).—About 6 miles south of downtown Monroe, on the Brooks' plantation, on the left bank of the Ouachita River, 0.2 mile west of U.S. Route 165, 125 meters (410 feet) east of plantation house, 50 meters (164 feet) north of dirt road running east and west along north side of river, 42.3 meters (139 feet) northwest of northwest corner of southeast tenant house, and 36.9 meters (121 feet) southwest of southwest corner of north tenant house, in a grove of tall pecan trees. Surface and underground marks are standard

station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 0.3 meter (1 foot) north of fence which is 8 meters (26 feet) north of the road, opposite an old barn to south, and 150 meters (492 feet) from station in azimuth $261^{\circ}07'$. No. 2 is 0.5 meter (1.6 feet) north of the fence, 8 meters (26 feet) north of the road, about 30 meters (98 feet) west of tenant house, and 44.53 meters (146.1 feet) from the station in azimuth $358^{\circ}24'$.

Monroe west base (Ouachita Parish, P. A. Smith, 1931).—About $1\frac{1}{2}$ miles east of downtown Monroe, near east end of the Monroe yards of the Illinois Central Railroad, on right-of-way of the Yazoo and Mississippi Valley division, 16.79 meters (55.1 feet) north of the gage line of north rail of main track, 5 meters (16 feet) south of right-of-way fence, about 45 meters (148 feet) northwest of white post marked "Sec. 13", 70 yards northeast of switchpost on north side of track, and 12.5 meters 41 feet north of center line of private road crossing tracks and leading into woods. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 2 meters (7 feet) north of north rail of main track, about 100 meters (328 feet) west of switchpost, and 200 meters (656 feet) from station in azimuth $277^{\circ}53'22''$. No. 2 is 1 foot south and east of corner of wire fence, 8 meters (26 feet) south of center line of Millhaven road, about 28 meters (92 feet) north of northeast corner of yellow house with green trim and roof, and 58.17 meters (190.8 feet) from station in azimuth $354^{\circ}46'$.

Sicard (Ouachita Parish, P. A. Smith, 1931; 1933).—About 7 miles northeast of Monroe and 1.2 miles east of the junction of Routes 80 and 165, 21.1 meters (69 feet) north of the center line of Route 80, about 100 meters (328 feet) northwest of a small whitewashed log cabin on the south side of the road just west of a small red house, about 10 meters (33 feet) northeast of a board gate, and on land belonging to L. L. Lieber. The station is marked by a standard bronze disk as described in notes 1a and 7a. Reference mark no. 1, a standard bronze disk, note 11a, is in the fence line south of the highway, 11.7 meters (38 feet) south of the center line of the highway, and 33.11 meters (108.6 feet) from the station in azimuth $113^{\circ}44'$. Reference mark no. 2, a standard bronze disk, note 11a, is 0.35 meter (1.1 feet) north of the fence along the north side of the highway, 12.2 meters (40.0 feet) north of the center line of the highway, 50 paces eastward of the front yard gate of a 3-gable white house on the south side of the highway, 82 paces eastward from the gate entering the driveway to the house, 4 paces east of a Jitney Jungle signboard, and 280 meters (919 feet) from the station in azimuth $27^{\circ}27'21''$.

Swamp (Ouachita Parish, P. A. Smith, 1931).—About 8 miles southeast of Monroe, about 75 meters (246 feet) southwest of State Route 15, just south of an old log loader, about 3 meters (10 feet) east of dim logging road leading south into swamp about 50 meters (164 feet) west of a "Crystal Gasoline" sign on the south side of highway, and 7 meters (23 feet) west of 12-inch blazed tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in woods about 50 meters (164 feet) southwest of road, and 39.88 meters (130.8 feet) from station in azimuth $164^{\circ}50'$. No. 2 is in woods about 7 meters (23 feet) west of dim logging road, and 120 paces from station in azimuth $39^{\circ}15'54''$.

Monroe east base (Ouachita Parish, P. A. Smith, 1931).—About 8 miles east of Monroe, on the right-of-way of the Illinois Central Railroad Co., 200 meters (656 feet) northwest of Millhaven railroad station, 16.77 meters (55.0 feet) north of gage line of the north rail, 17.0 meters (56 feet) west of gravel road going north, and 10.0 meters (33 feet) south and 6.7 meters (22 feet) west of right-of-way fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 0.25 meter (0.8 foot) west of fence, 11 meters (36 feet) west of gravel road, and 72.30 meters (237.2 feet) from station in azimuth $185^{\circ}06'$. No. 2 is 27 meters (89 feet) west of switch point, 1.75 meters (5.7 feet) north of north rail, and 350 meters (1,148 feet) from station in azimuth $92^{\circ}19'22''$. *B.M. I-23-5* (U.S.E.), marked by a $3\frac{1}{2}$ -inch iron pipe with a brass cap stamped "Vicksburg Engineer Dist.", is 172 feet north of center line of railroad, and 3 feet south of eastern continuation of south wall of tenant house on property of Matt Burman, occupied by George Emerson, and in azimuth $182^{\circ}56'32''$ from station. *Millhaven B.M. I-23* (U.S.E.), marked by pipe with cap gone, is 100 feet south of center line of railroad, 20 feet northeast of northeast corner of barn and in azimuth $286^{\circ}51'36''$ from station. *B.M. I-23-4* (U.S.E.) (see description thereof) is 110.913 meters (363.89 feet) from station in azimuth $182^{\circ}56'31''$.

For notes in regard to marking of stations see p. 71.

Crew (Richland Parish, P. A. Smith, 1931; 1933).—About 15 miles east of Monroe and 8 miles west of Rayville, on U.S. Route 80, at the Crew Lake railroad station, about 175 meters (574 feet) north of the railroad station, 69.6 meters (228 feet) north of the center line of Route 80, 42.6 meters (140 feet) north of the northwest corner of the north yellow railroad section house, 39.0 meters (128 feet) north of the northeast corner of the section house, about 80 meters (263 feet) northeast of a new highway bridge, 31.0 meters (102 feet) west of a 3-foot oak tree, 16 meters (53 feet) south of the river bank, in a small pasture belonging to H. U. Millsaps. The station is marked by a standard bronze disk as described in notes 1a and 7a. Reference mark no. 1, a standard bronze disk, note 11a, is 41.4 meters (136 feet) north of the center line of Route 80, 44.2 meters (145 feet) east of the northeast corner of the section house, and 46.84 meters (153.7 feet) from the station in azimuth $312^{\circ}11'$. Reference mark no. 2, a standard bronze disk, note 11a, is 17 meters (56 feet) east of the railroad crossing west of the railroad station, 28 meters (92 feet) north of the north rail of the railroad tracks, and 150 meters (492 feet) from the station in azimuth $25^{\circ}48'48''$. *Crew Lake B.M. I-23 (U.S.E.)*, marked by a pipe, is on the edge of the highway cut about 0.3 mile west of the Crew Lake railroad station, 23.4 meters (77 feet) north of the north rail of the tracks, 31.9 meters (105 feet) northeast of a switch point for siding to the west, 8.9 meters (29 feet) south of Route 80, and 10 meters (33 feet) east of a spur track crossing, in azimuth $76^{\circ}46'28''$ from the station.

Rhymes (Richland Parish, P. A. Smith, 1931).—About 16 miles southeast of Monroe, 8 miles south of Stuart and 3 miles northwest of Alto on north side of graveled Highway 15, on land owned by R. R. Rhymes, in triangular plot of land formed by junction of two gravel roads and narrow dirt road connecting them, about 15 meters (49 feet) west of dirt road, about 70 meters (230 feet) north of Route 15, about 40 meters (131 feet) southeast of the other graveled road, and about 110 meters (361 feet) north of an old Negro house surrounded by board fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is about 30 meters (98 feet) north of old Negro house, about 12 meters (39 feet) south of the center line of Route 15, 1 meter (3 feet) east and 2 meters (7 feet) south of the corner of a wire fence, and 71.10 meters (233.3 feet) from station in azimuth $10^{\circ}02'$. No. 2 is about 50 meters (164 feet) east of old house, 12 meters (39 feet) north of center line of Route 15, 1 foot east of and 2 meters (7 feet) north of the corner of a wire fence on the edge of a plowed field, 7 meters (23 feet) north of a mail box marked "Marriah Summers Box 18", and one fourth mile from station in azimuth $102^{\circ}19'33''$.

Rayville (Richland Parish, P. A. Smith, 1931).—In the southwest corner of the courthouse square at Rayville, 33.7 meters (111 feet) south one half west of southwest corner of courthouse, 13.3 meters (44 feet) north of north curb of Madaline Street, 47.2 meters (155 feet) west of west curb of Julia Street, and 8.02 meters (26.3 feet) south of a small brick astronomical pier. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 26.1 meters (86 feet) north of northwest corner of courthouse, 9.9 meters (32 feet) west of a driveway, and 77.0 meters (253 feet) from station in azimuth $186^{\circ}01'$. No. 2 is set in the sidewalk in southeast corner of square, 2.1 meters (7 feet) north and 2.3 meters (8 feet) west of curb line, and 46.28 meters (151.8 feet) from station in azimuth $280^{\circ}17'$. The astronomical pier referred to above is 8.02 meters (26.3 feet) from the station in azimuth $176^{\circ}32'$.

Deere (Richland Parish, P. A. Smith, 1931).—About 7 miles south of Rayville and 1.6 miles north of Archibald, on land owned and occupied by W. T. Deere, in a barn lot about 50 meters (164 feet) west of Route 15, 8 meters (26 feet) south of southwest corner of small orchard, about 50 meters (164 feet) east of north of Deere's house, 8 meters (26 feet) east of barn and 1 foot west of fence line between barn lot and orchard. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 foot west and 8 feet south of wire fence corner, 12 meters (39 feet) west of center line of Route 15, about 150 meters (492 feet) east of Negro house in field, and 280 paces from station in azimuth $198^{\circ}59'41''$. No. 2 is 1 foot north and 1 foot east of wire fence corner, 1 foot north of chicken house, about 8 meters (26 feet) northwest of house, and 38.46 meters (126.2 feet) from station in azimuth $24^{\circ}26'$.

Holly (Richland Parish, P. A. Smith, 1931).—About $7\frac{1}{2}$ miles west of Delhi, at Holly Ridge, on property of Chess and Wyman Co. Reached from Delhi

For notes in regard to marking of stations see p. 71.

by U.S. Route 80. Station is about 120 meters (394 feet) north of Route 80, 120 meters (394 feet) west of Cochran and Franklin lumber mill, in a small grass plot south of the storage yard, 58.3 meters (191 feet) north by east of northeast corner of Cochran's house, 36.4 meters (119 feet) east of northeast corner of north tenant house, 20.0 meters (66 feet) west of woven-wire fence, and 5.6 meters (18 feet) south of another woven-wire fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with ground. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 28 meters (92 feet) east of fence, 6 meters (20 feet) south of plank road to stock pile, and 47.61 meters (156.2 feet) from station in azimuth $275^{\circ}28'$. No. 2 is about 11 meters (36 feet) northwest of northwest corner of Cochran and Franklin store, in north-and-south fence line, and 110 meters (361 feet) from station in azimuth $5^{\circ}52'18''$. *B.M. J-23-0 (U.S.E.)*, marked by $3\frac{1}{2}$ -inch pipe with a brass cap stamped "U. S. Engineer Dept", is in the yard of the Yazoo & Mississippi Valley Railroad section foreman's house, 200 feet southwest of southeast corner of railroad station, 54 feet southeast of "R.R." crossing sign south of track, 20.5 feet northwest of corner of section house, in azimuth $28^{\circ}57'48''$ from station.

Mixon (Franklin Parish, P. A. Smith, 1931).—About 10 miles southeast of Rayville, 9 miles southwest of Delhi, and 11 miles northeast of Baskin, on property of the Wyatt Lumber Co. of Ruston. To reach from railroad crossing in Delhi, go 4.7 miles south on Route 16 to intersection with dirt road, turn right and follow this dirt road west 7.5 miles to the Mixon School. Station is 40 meters (131 feet) west of the northwest corner of schoolhouse, 25 meters (82 feet) south of center line of road, and 10 meters (33 feet) north-northwest of a 12-inch blazed pine tree. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 foot southeast of wire fence, in a pasture, 15 meters (49 feet) northeast of gate and road leading into the pasture, about 12 meters (39 feet) southeast of center line of traveled road, and 300 paces from station, in azimuth $228^{\circ}31'24''$. No. 2 is 1 foot north of woven wire fence, about 10 meters (33 feet) north of center line of traveled road, 15 meters (49 feet) east of where road turns northwest, and 60.48 meters (198.4 feet) from station in azimuth $122^{\circ}51'$.

Delhi (Richland Parish, P. A. Smith, 1931).—In the southwest corner of school grounds of Delhi, about 50 meters (164 feet) east of Route 16, 54.9 meters (180 feet) south by west of southwest corner of schoolhouse, 25.1 meters (82 feet) east of northeast corner of small brick library, 1 meter (3 feet) south of continuation to eastward of north side of library and 23.4 meters (77 feet) northwest of 3-foot oak in center of gravel driveway. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is flush with surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 5 meters (16 feet) north of road, 26.4 meters (87 feet) east by north of 3-foot oak tree, and 43.22 meters (141.8 feet) from station in azimuth $284^{\circ}30'$. No. 2 is in the northwest corner of the school grounds, about 15 meters (49 feet) east of Route 16, and 170 meters (558 feet) from station in azimuth $169^{\circ}45'32''$.

Dupree (Franklin Parish, P. A. Smith, 1931).—About $6\frac{1}{2}$ miles south of Delhi, in the property line between land of J. D. Dupree on the east and B. W. Marston on the west, in a pig lot about 22 meters (72 feet) east of the center line of Highway 16, about 60 meters (197 feet) northwest of house occupied by Mr. Dupree's son-in-law, about 20 meters (66 feet) north of northwest corner of fence around garden north of the house, and about 12 meters (39 feet) west of wire fence between cotton field and pig lot. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 10 meters (33 feet) west of center line of the highway, 50 meters (164 feet) north of concrete culvert on highway, and 100 meters (328 feet) from station in azimuth $174^{\circ}58'43''$. No. 2 is 10 meters (33 feet) west of center line of Route 16, 1 foot east of wire fence line, and 29.00 meters (95.1 feet) from station in azimuth $109^{\circ}24'$. *B.M. J-23-6 (U.S.E.)* (see description) is 761.726 meters (2,499.10 feet) from station in azimuth $18^{\circ}32'50''$.

Waverly (Madison Parish, P. A. Smith, 1931).—About 5 miles east of Delhi, at the small village of Waverly, about 200 meters (656 feet) west of the Waverly gin, in the north right-of-way fence line of U.S. Route 80, about 25 meters (82 feet) north of center line of concrete highway, on the west bank of Joes Bayou, about 65 meters (213 feet) northwest of west end of bridge over bayou. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is

about midway between Illinois Central Railroad tracks and Route 80, 2 meters (7 feet) west of a "Louisiana stop" sign, about 50 meters (164 feet) west-northwest of Waverly railroad station, and 290 paces from station in azimuth $304^{\circ}01'50''$. No. 2 is on edge of plowed field, about 10 meters (33 feet) north of wooden gate, about 35 meters (115 feet) north of center line of Route 80, and 85.33 meters (280.0 feet) from station in azimuth $118^{\circ}51'$.

Quebec (Madison Parish, P. A. Smith, 1931).—About 7 miles west of Tallulah and 1 mile northeast of Quebec, at the west end of a heavy fill through swamps along Bayou Despair, in a small grove of trees on land owned by S. C. Ward and tended by W. H. Siström, about 150 meters (492 feet) north by west of Route 80, on a plantation road that leads north at the west end of a heavy fill through swamp 9.9 meters (32 feet) west of this road, 10.2 meters (33 feet) southwest of a 14-inch blazed oak tree west of road, 84.7 meters (278 feet) west the west parapet of highway culvert, about 150 meters (492 feet) south of Negro cabin, and 45 meters (148 feet) south of cultivated field. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is in east edge of field where the ground drops to the east, about 50 meters (164 feet) north of Negro cabin, 3 meters (10 feet) south of field drainage ditch, and 200 meters (656 feet) from station in azimuth $187^{\circ}35'14''$. No. 2 is 8 meters (26 feet) northwest of wagon road through brush, and 39.50 meters (129.6 feet) from station in azimuth $109^{\circ}12'$.

Tensas (Madison Parish, R. L. Pfau, 1931).—About 11 miles southeast of Delhi and $4\frac{1}{2}$ miles south of two filling stations and the railroad station at Quebec, about 800 feet east of center of sec. 16, T. 16 N., R. 11 E., on the Dunlap plantation owned by the Poinsett Lumber & Manufacturing Co. of Memphis (a subsidiary of the Singer Manufacturing Co.) and in charge of V. W. F. Jefferson. Station is in a barnyard, about 150 meters (492 feet) west of west bank of the Tensas River, 50 meters (164 feet) south of a barn, about 300 meters (984 feet) south of Mr. Jefferson's house, 9 meters (30 feet) north of wire fence and plowed field and about 15 meters (49 feet) east of wooden gate and wire fence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper mark is 6 inches below the surface. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 25 meters (82 feet) east of wire fence, about 50 meters (164 feet) west of west bank of Tensas River, and 59.63 meters (195.6 feet) from station in azimuth $339^{\circ}46'$. No. 2 is 1 foot north of wire fence line, in a rye field, and 150 meters (492 feet) from station in azimuth $87^{\circ}58'$.

Scott (Madison Parish, R. L. Pfau, 1931).—About 1.4 miles north of Tallulah on U.S. Route 65, in swampy woods owned by Walter Scott, 87 meters (285 feet) south-by-east of the Illinois Central Railroad crossing over U.S. Route 65, 17.5 meters (57 feet) east of Route 65, 41.2 meters (135 feet) east of east rail of tracks, 41 meters (135 feet) south by east of east headwall of highway culvert, and just north of the remains of old corduroy road. Surface and underground marks are standard station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 10 meters (33 feet) west of Route 65, 4 meters (13 feet) northeast of a transmission line pole, and 325 meters (1,066 feet) from station in azimuth $32^{\circ}44'22''$. No. 2 is in south end of east headwall of highway culvert and 41.19 meters (135.1 feet) from the station in azimuth $192^{\circ}32'$.

Joan (Madison Parish, R. L. Pfau, 1931).—About 5 miles south of Tallulah, on the Joan plantation owned by G. W. Patterson. To reach from Tallulah, go south 5.1 miles from Illinois Central Railroad tracks on Route 65 to junction with a graveled road where U.S. Route 65 turns west, and take left fork leading down Roundaway Bayou 0.4 mile to station, which is in a pasture about 18 meters (59 feet) southwest of graveled highway, 12 meters (39 feet) west of a 24-inch pecan tree in a wire fence line, about 50 meters (164 feet) northwest of northeast corner of large cattle barn with a galvanized-iron roof, and about 13 meters (43 feet) east of center of circular watering trough. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 foot southwest of wire fence line, 10 meters (33 feet) southwest of center line of graveled road, 35 meters (115 feet) east of southeast corner of large barn, and 69.64 meters (228.5 feet) from station in azimuth $319^{\circ}07'$. No. 2 is 1 foot east of north-and-south fence line, 5 meters (16 feet) south of south end of board gate and 100 meters (328 feet) from station in azimuth $33^{\circ}21'44''$.

Park (Warren County, Miss., R. L. Pfau, 1931; 1932).—About 3 miles north-east of Vicksburg, on grounds of national military park, about 1.2 miles northwest

of Illinois Memorial Dome, near loop on Graveyard Road, near highest point (which is occupied by the Parrot Rifle) of knoll west of gravel road, 16.6 meters (54 feet) west of tablet for Iowa Second Battery Light Artillery, 33.4 meters (110 feet) northwest of northwest corner of small granite monument for Iowa Second Battery, and 18.5 meters (61 feet) east of 2½-foot oak tree. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 meter (3 feet) west of fence along front yards of three houses on edge of park, about in line with right side of center house, and 146.94 meters (482.1 feet) from station in azimuth $287^{\circ}37'28''$. No. 2 is 14.4 meters (47 feet) east of northeast corner and 16.0 meters (52 feet) northeast of southeast corner of Louisiana monument, and about 1 mile from station in azimuth $17^{\circ}53'43''$.

Powers (Warren County, Miss., R. L. Pfau, 1931).—About 6 miles south of Vicksburg, on high knoll in pasture owned by Walter Powers, about 100 meters (328 feet) south of Shell filling station, 12 meters (39 feet) southwest of center line of gravel road, and 4 meters (13 feet) southwest of woven wire fence. To reach from Vicksburg follow Fisher Ferry Road direct to station site which is at end of pavement, at Shell filling station, and near site of old Grange Hall. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on top of small ridge, 10 meters (33 feet) west of center line of gravel road, 1 foot west of fence line, and approximately 150 meters (492 feet) from station in azimuth $344^{\circ}32'26''$. No. 2 is 13 meters (43 feet) southwest of center line of road, 30 meters (98 feet) east of Shell filling station, 2 feet west of wire fence, and 55.75 meters (182.9 feet) (slope) from station in azimuth $152^{\circ}13'$.

Hawkins (Warren County, Miss., R. L. Pfau, 1931).—About 8 miles southeast of Vicksburg, on summit of knoll owned by Mercer Hawkins, 8 meters (26 feet) south of cistern, 20 meters (66 feet) southwest of corner of wire fence and southwest corner of plowed field, about 200 meters (656 feet) north of pond, 15 meters (49 feet) northeast of 4-foot oak tree, and 45 meters (148 feet) northeast of 4-foot pine tree with broken top. To reach from Vicksburg follow Fisher Ferry Road to T-intersection with gravel road at end of pavement, turn left (southeast) onto gravel road, proceed 1.8 miles to another gravel road opposite Antioch Church, turn left (north) and proceed 2.6 miles to T road, turn right (south) and continue 0.4 mile to lane leading left (northeast), turn into lane, and follow northeast about 225 meters (738 feet) to station site on summit of knoll. Surface and underground marks are standard disk station marks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 1 foot west of wire fence and plowed field, 3 meters (10 feet) northwest of 14-inch black walnut tree, and 53.45 meters (175.4 feet) (slope) from station in azimuth $293^{\circ}50'$. No. 2 is 15 meters (49 feet) northeast of center line of road, across road from farmhouse, 25 meters (82 feet) southeast of lane leading to station, and 150 meters (492 feet) from station in azimuth $61^{\circ}21'26''$.

Supplementary Points

Rudy (U.S.E.) (Ouachita Parish, P. A. Smith, 1931).—A station established by the United States Engineers, and determined by the United States Coast and Geodetic Survey in 1931. It is marked by a 3½-inch iron pipe with brass cap, and is 0.734 meter (2.41 feet) from station *Cole* in azimuth $324^{\circ}20'$. (See description of *Cole*.)

B.M. I-23-4 (U.S.E.) (Ouachita Parish, P. A. Smith, 1931).—A station established by the United States Engineers and determined by the United States Coast and Geodetic Survey in 1931. It is on west side of highway from Millhaven to United States Highway 80, 500 feet northwest of Millhaven station, 425 feet north of center line of Illinois Central Railroad track, 56 feet southeast of tenant house, on property of Matt Burman, 130 feet northwest of locust tree, and 34 feet west of center line of highway. Marked by a 3½-inch iron pipe with brass cap stamped "Vicksburg Eng'r Dist.", set on a concrete subsurface marker. Top of cap is 7 inches above ground. *Monroe east base* is distant 110.913 meters (363.89 feet) in azimuth $2^{\circ}56'31''$.

Rayville, B.M. 16 (U.S.E.) (Richland Parish, P. A. Smith, 1931).—A station established by the United States Engineers and determined by the United States Coast and Geodetic Survey in 1931. It is in Rayville, in the Richland Parish courthouse yard, 3 feet north of north wall of courthouse, and 20 feet east of its northwest corner. Marked by a 4-inch iron pipe with iron cap. Connected to

station *Rayville* by traverse. (See description of *Rayville*, and also geographic positions.)

B.M. J-23-4 (U.S.E.) (Richland Parish, P. A. Smith, 1931).—In Holly Ridge, north of U.S. Route 80 and the Illinois Central Railroad tracks, on property of Mr. Cochran, 272 feet north of center line of Route 80, 144.6 feet northeast of fire plug, 10 feet east of front steps of the Cochran residence, 8 feet west of southeast corner of house and $3\frac{1}{2}$ feet south of porch. Marked by a $3\frac{1}{2}$ -inch iron pipe with brass cap stamped "U. S. Engineer Dept.". The top of the cap is 3 inches above ground.

B.M. K-23-7 (U.S.E.) (Richland Parish, P. A. Smith, 1931).—In Delhi, on property of the Electric Gin Co., 1,000 feet south of Illinois Central Railroad tracks, 50 feet northwest of intersection of center lines of Chicago and Louisiana Avenues, 35 feet west of center line of Chicago Avenue, 438 feet south of the Electric Gin Co.'s office, 68.5 feet northwest of fire plug, 11.2 feet west of property corner, 91.2 feet east of cistern, and 2 feet west of a single strand fence. Marked by a $3\frac{1}{2}$ -inch iron pipe with cap projecting 7 inches above ground stamped "Vicksburg Eng'r Dis't."

B.M. J-23-6 (U.S.E.) (Franklin Parish, P. A. Smith, 1931).—About 7.1 miles south of Delhi, on property of D.C. Dupree, 43 feet west of center line of Route 16, 185 feet south of dirt road running west to Central School, 13 feet southwest of northeast corner of pasture strand wire fence, and 92 feet southeast of the southeast corner of Mr. Dupree's residence. The station is marked by a $3\frac{1}{2}$ -inch pipe with brass cap stamped "U.S. Engineer Dept." Station *Dupree* is distant 761.726 meters (2,499.10 feet) in azimuth $198^{\circ}32'45''$.

MANSFIELD-NEW ROADS TRAVERSE

Principal points

Field (De Soto Parish, C. L. Garner, 1919).—About $2\frac{1}{2}$ miles south of Mansfield, one fourth mile west of Mansfield-Benson Road, on hill in north edge of cultivated field owned by Messrs. J. A. Williams and Wallom of Mansfield, about 10 meters (33 feet) south of wire fence and edge of woods, on high part of ridge at this place. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, about 1 meter (3 feet) south of wire fence, 48.11 meters (157.8 feet) from station in azimuth $258^{\circ}34'$. In 1931, upper mark was found removed from concrete.

Man (De Soto Parish, C. L. Garner, 1919).—About 1 mile southwest of center of town of Mansfield, under south side of water tank, and on line between southeast and southwest foundations supporting legs of tank. Surface and underground marks are standard station disks set in concrete, notes 1a and 7a. Reference mark is standard reference disk in masonry of southeast foundation, 5.11 meters (16.8 feet) from station in azimuth $272^{\circ}53'$.

Oil (De Soto Parish, C. L. Garner, 1919).—About one-half mile south of South Mansfield railroad station, 19.63 meters (64.40 feet) west of center of Kansas City Southern Railway, at intersection of west rail from north and west rail from south at first curve south of South Mansfield, in enclosure of Producer's Oil Co. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 33.145 meters (108.74 feet) from station in azimuth $357^{\circ}23'$.

Abo (De Soto Parish, C. L. Garner, 1919).—About 1 mile south of Mansfield, one-half mile southeast of South Mansfield railway station, one-fourth mile east of point where Mansfield-Benson Road crosses Texas & Pacific Railway, and 7.7 meters (25 feet) north of center of tracks, opposite east end of trestle 286.4. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 20.290 meters (66.57 feet) from station in azimuth $282^{\circ}07'$.

South (De Soto Parish, C. L. Garner, 1919).—South 17.9 meters (59 feet) of southwest corner of South Mansfield station, 9.5 meters (31 feet) south of center of Texas & Pacific Railway tracks, and 11.6 meters (38 feet) east of center of Kansas City Southern Railway tracks. Mark is standard disk station mark in concrete, note 1a. Reference mark is standard reference disk in concrete, note 11a, 17.90 meters (58.7 feet) from station in azimuth $187^{\circ}50'$.

Adams (De Soto Parish, C. L. Garner, 1919).—About $1\frac{1}{2}$ miles south of South Mansfield, 12.5 meters (41 feet) east of center of Kansas City Southern Railway, 130 meters (427 feet) north of road crossing, and 153 meters (502 feet) south of

milepost 595. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 27.90 meters (91.5 feet) from station in azimuth 346°09'.

Gordon (De Soto Parish, C. L. Garner, 1919).—About 1½ miles east of South Mansfield, 180 meters (591 feet) west of milepost 285, and 45 meters (148 feet) north of Texas & Pacific Railway, at intersection of tangents to south rail at first curve east of South Mansfield. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 25.63 meters (84.1 feet) from station in azimuth 53°27'.

Mason (De Soto Parish, C. L. Garner, 1919).—About 2½ miles southeast of Mansfield, 920 meters (3,018 feet) east of milepost 284, at intersection of tangents to south rail from west and north rail from east, of second curve from Mansfield. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 31.445 meters (103.17 feet) from station in azimuth 18°37'.

Gleason (De Soto Parish, C. L. Garner, 1919).—About 4 miles southeast of Mansfield, 3.58 meters (11.8 feet) west of Texas & Pacific Railway tracks, and about 205 meters (673 feet) east of milepost 282. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 15.394 meters (50.51 feet) from station in azimuth 243°19'.

Oxford (De Soto Parish, C. L. Garner, 1919).—About 200 meters (656 feet) southeast of Oxford station of Texas & Pacific Railway, and 9.62 meters (31.56 feet) southwest of center of the tracks, at point of intersection of tangents to south rail from west and north rail to east. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 33.133 meters (108.70 feet) from station in azimuth 65°50'.

Pelican (De Soto Parish, C. L. Garner, 1919).—In Pelican, 16.13 meters (52.9 feet) southeast of southeast corner of Texas & Pacific Railway station, 3.5 meters (11 feet) south of approximate center of railway tracks, on curve at intersection of north rail from west and south rail from east. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 14.542 meters (47.71 feet) from station in azimuth 244°54'.

Soto (De Soto Parish, C. L. Garner, 1919; 1920).—About 2 miles east of Pelican, between mileposts 272 and 273 of Texas & Pacific Railway, 64 meters (210 feet) west of dim road crossing, and 7.38 meters (24.2 feet) north of approximate center of railroad tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Upper disk is stamped "Soto". Reference mark is standard reference disk in concrete, note 11a, 62.295 meters (204.33 feet) from station in azimuth 329°19'.

Sodus (Sabine Parish, C. L. Garner, 1919; 1920).—About one-half mile west of Texas & Pacific Railway station Sodus, (Pleasant Hill post office), at crossing of main highway and railroad at foot of cut of highway, on west side of highway, 8 meters (26 feet) north of approximate center of railroad tracks, at intersection of tangents to south rail from west and north rail from east. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 37.385 meters (122.65 feet) from station in azimuth 63°23'.

Miles (Sabine Parish, C. L. Garner, 1919; 1920).—About 1¾ miles east of Sodus or Pleasant Hill, 640 meters (2,100 feet) east of Texas & Pacific Railway milepost 267, 25 meters (82 feet) west of Dobs crossing, 3 miles from Sodus by highway and wagon road, and 9.28 meters (30.5 feet) south of approximate center of railroad tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 22.694 meters (74.46 feet) from station in azimuth 244°05'.

Road (Sabine Parish, C. L. Garner, 1919; 1920).—About 3 miles southeast of Sodus or Pleasant Hill, on south side of a wagon road, 110 meters (361 feet) east of milepost 265 of Texas & Pacific Railway, and 24.1 meters (79 feet) southwest of center of tracks, at intersection of tangents to north rail from west and south rail from east. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 32.345 meters (106.12 feet) from station in azimuth 148°51'.

Hope (Sabine Parish, C. L. Garner, 1919; 1920).—About 4½ miles southeast of Sodus or Pleasant Hill, 150 meters (492 feet) west of milepost 264 of Texas &

Pacific Railway, 130 meters (426 feet) west of dim road crossing, at second curve east of Sodus, and 8.05 meters (26.41 feet) north of center of tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 33.590 meters (110.20 feet) from station in azimuth $65^{\circ}22'$.

Palm (Sabine Parish, C. L. Garner, 1919; 1920).—About $5\frac{1}{4}$ miles east of Sodus, or Pleasant Hill, 80 meters (262 feet) east of trestle 263.6 of Texas & Pacific Railway, 8.28 meters (27.2 feet) south of center of tracks, on prolongation of north rail from west, approximately 10 feet below level of tracks, near creek, one-half mile east of church and school. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c. Reference mark is standard reference disk in concrete, note 11a, 25.131 meters (82.45 feet) from station in azimuth $42^{\circ}47'$.

Tan (Sabine Parish, C. L. Garner, 1919; 1920).—About $5\frac{1}{2}$ miles east of Sodus, or Pleasant Hill, 1 mile west of town of Boleyn, 120 meters (394 feet) west of milepost 263, 124 meters (407 feet) west of road crossing, and 8.1 meters (27 feet) south of center of Texas & Pacific Railway tracks. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c.

Boleyn (Natchitoches-Sabine Parishes, C. L. Garner, 1919; 1920).—Near Texas & Pacific Railway flag station Boleyn, 103 meters (338 feet) east of trestle 362.3, and 7 meters (23 feet) north of approximate center of tracks, on prolongation of south rail from west. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c. Reference mark is a standard reference disk in concrete, note 11a, 18.507 meters (60.72 feet) from station in azimuth $207^{\circ}48'$.

Lambert (Natchitoches-Sabine Parishes, C. L. Garner, 1919; 1920).—About one-eighth mile southeast of Boleyn, 90 meters (295 feet) east of milepost 262, and 9.4 meters (31 feet) north of center of Texas & Pacific Railway tracks. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c. Reference mark is standard reference disk in concrete, note 11a, 25.680 meters (84.25 feet) from station in azimuth $83^{\circ}05'$.

Tank (Natchitoches Parish, C. L. Garner, 1919; 1920).—About three-fourths mile east of Boleyn, one-eighth mile east of Texas & Pacific Railway water tank, and 195 meters (640 feet) east of road crossing of old Marthaville-Sodus Road, on south side of Texas & Pacific Railway, on top of embankment along deep cut. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c. Reference mark is standard reference disk in concrete, note 11a, 23.094 meters (75.77 feet) from station in azimuth $139^{\circ}27'$.

Hickory (Natchitoches Parish, C. L. Garner, 1919; 1920).—About $1\frac{1}{4}$ miles west of Marthaville, and 140 meters (459 feet) west of trestle 261.1, in woods on top of embankment, 29.9 meters (98 feet) south of center of Texas & Pacific Railway tracks. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c. Reference mark is standard reference disk in concrete, note 11a, 29.000 meters (95.14 feet) from station in azimuth $109^{\circ}34'$.

Peanut (Natchitoches Parish, C. L. Garner, 1919; 1920).—About $1\frac{1}{2}$ miles west of Marthaville, and 280 meters (919 feet) east of trestle 259.9, in edge of cultivated field south of railroad tracks, on extension of north rail from east. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c. Reference mark is standard reference disk in concrete, note 11a, 34.375 meters (112.78 feet) from station in azimuth $95^{\circ}33'$.

Marthaville (Natchitoches Parish, C. L. Garner, 1919; 1920).—About one-half mile west of Marthaville, on first curve west of town, about 5 meters (16 feet) north of center of Jefferson Highway, at point of intersection of north rail from west and south rail of Marthaville siding to east. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c. Reference mark is standard reference disk in concrete, note 11a, 19.798 meters (64.95 feet) from station in azimuth $52^{\circ}09'$.

Bat (Natchitoches Parish, C. L. Garner, 1919).—About one-half mile east of Marthaville, at first curve east of Marthaville, on extension of north rail from west, and 13.1 meters (43 feet) north of center of Texas & Pacific Railway tracks. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c. Reference mark is standard reference disk in concrete, note 11a, 15.462 meters (50.73 feet) from station in azimuth $134^{\circ}54'$.

Pine (Natchitoches Parish, C. L. Garner, 1919).—About 1 mile east of Marthaville, 7 telephone poles west of Texas & Pacific Railway trestle 257.7, and 12.4

meters (41 feet) north of center of tracks. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c.

Cabin (Natchitoches Parish, C. L. Garner, 1919).—About $1\frac{1}{4}$ miles east of Marthaville, about 200 meters (656 feet) west of Texas & Pacific Railway trestle 257.6, and 10.4 meters (34 feet) north of center of tracks, on extension of south rail from east. Surface mark is standard station disk in concrete, note 1a. Underground mark is nail in concrete, note 7c. Reference mark is standard reference disk in concrete, note 11a, 30.835 meters (101.16 feet) from station in azimuth $348^{\circ}44'$.

Robeline (Natchitoches Parish, C. L. Garner, 1919).—About three-fourths mile east of Texas & Pacific Railway depot at Robeline, on south side of tracks, and about 25 meters (82 feet) east of milepost 252, near point of intersection of south rail tangent from west and north rail tangent from east. Surface and underground marks are probably standard station disks in concrete, notes 1a and 7a. Reference mark is probably standard reference disk in concrete, note 11a, 17.294 meters (56.74 feet) from station in azimuth $300^{\circ}28'$.

White (Natchitoches Parish, C. L. Garner, 1919).—About $2\frac{1}{4}$ miles west of Victoria, on second curve of Texas & Pacific Railway east of Robeline, $10\frac{1}{2}$ telephone poles east of milepost 251, and 8.15 meters (26.7 feet) north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete note 11a, 15.729 meters (51.60 feet) from station in azimuth $150^{\circ}40'$.

Patch (Natchitoches Parish, C. L. Garner, 1919).—About 2 miles west of Victoria, on top of waste dump from Texas & Pacific Railway cut, and about 12 telegraph poles west of mile post 250. Marked by nail in 2- by 4-inch stake driven in ground.

Flat (Natchitoches Parish, C. L. Garner, 1919).—About $1\frac{1}{2}$ miles west of Victoria, on Texas & Pacific Railway right-of-way, 4 telegraph poles west of milepost 250, about 70 meters (230 feet) east of road crossing, and about 10 meters (33 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 70.831 meters (232.38 feet) from station in azimuth $128^{\circ}19'$.

Sign (Natchitoches Parish, C. L. Garner, 1919).—About 1 mile west of Victoria, on extension of tangent of south rail from east, 46 meters (151 feet) east of railway trestle 249.6, and 12.55 meters (41.2 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a.

Rainer (Natchitoches Parish, C. L. Garner, 1919).—About three-fourths mile west of Victoria, about 1 meter (3 feet) north of Texas & Pacific Railway right-of-way fence, on extension of tangent of south rail from west, 7 telegraph poles west of milepost 249. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.285 meters (37.02 feet) from station in azimuth $167^{\circ}46'$.

Victoria (Natchitoches Parish, C. L. Garner, 1919).—About three-eighths mile west of Victoria, on extension of tangent of north rail from east, about 7 poles east of milepost 249, and 28.56 meters (93.7 feet) north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 13.865 meters (45.49 feet) from station in azimuth $23^{\circ}56'$.

Provencal (Natchitoches Parish, C. L. Garner, 1919).—About three-fourths mile east of Provencal, about 8 telegraph poles west of milepost 245, at point of intersection of tangent to curve of north rails from east and west, and 12.85 meters (42.2 feet) north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 43.370 meters (142.29 feet) from station in azimuth $119^{\circ}57'$.

Bay (Natchitoches Parish, C. L. Garner, 1919).—About $2\frac{1}{4}$ miles east of Texas & Pacific Railway station Provencal, on prolongation of north rail tangent from west, about 10 telegraph poles east of railroad water tank, and about 9 telegraph poles east of milepost 244. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 38.765 meters (127.18 feet) from station in azimuth $65^{\circ}32'$.

Rum (Natchitoches Parish, C. L. Garner, 1919).—About $3\frac{1}{4}$ miles west of Weaver lumber mill at Flora, on prolongation of north rail tangent from east, about $2\frac{1}{4}$ telegraph poles east of road crossing, and about $8\frac{1}{2}$ telegraph poles east

of milepost 243, at edge of pasture on south side of Texas & Pacific Railway tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 109.00 meters (357.61 feet) from station in azimuth $128^{\circ}17'$.

Flora (Natchitoches Parish, C. L. Garner, 1919).—On Texas & Pacific Railway right-of-way, three-fourths mile west of Weaver sawmill at Flora, at intersection of tangents to the curve of north rails from east and west, $22\frac{1}{2}$ telegraph poles west of milepost 240 and 10.36 meters (34.0 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 17.936 meters (58.85 feet) from station in azimuth $88^{\circ}43'$.

Cypress (Natchitoches Parish, C. L. Garner, 1919).—About one-eighth mile west of Texas & Pacific Railway depot at Cypress, at south edge of road, on prolongation of tangent of south rail from west of main track, about 100 meters (328 feet) west of Texas & Pacific Railway oil storage tank, about 75 meters (246 feet) north of main track, and 11.5 meters (38 feet) north of center line of Y-track connecting main line with Natchitoches branch. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.236 meters (36.86 feet) from station in azimuth $161^{\circ}13'$.

Weaver (Natchitoches Parish, C. L. Garner, 1919).—On Texas & Pacific Railway right-of-way, about $1\frac{1}{2}$ miles east of Weaver's sawmill at Flora, $12\frac{1}{2}$ telegraph poles west of milepost 238, and 10.60 meters (34.8 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 28.380 meters (93.11 feet) from station in azimuth $306^{\circ}16'$.

Cain (Natchitoches Parish, C. L. Garner, 1919).—About one-fourth mile east of Texas & Pacific Railway station at Cypress, in cultivated field outside of right-of-way, on prolongation of north rail tangent from the east, and 40 meters (131 feet) north of center line of main tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 24.753 meters (81.21 feet) from station in azimuth $35^{\circ}26'$.

Lake (Natchitoches Parish, C. L. Garner, 1919).—On the Texas & Pacific Railway right-of-way, about 2 miles east of railway station at Cypress, $1\frac{1}{4}$ telegraph poles east of milepost 234, and 3.4 meters (11 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.560 meters (37.93 feet) from station in azimuth $34^{\circ}09'$.

Montrose (Natchitoches Parish, C. L. Garner, 1919).—In the village of Montrose, about 15 meters (49 feet) northeast of Frost-Johnson commissary, about 10 meters (33 feet) southeast of mail-catching device, about 35 meters (115 feet) southeast of Montrose Hotel, and 3.5 meters (11 feet) south of center line of main track of railway. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 16.570 meters (54.36 feet) from station in azimuth $208^{\circ}26'$.

Clark (Natchitoches Parish, C. L. Garner, 1919).—Located on Texas & Pacific Railway right-of-way, south of main track, 1 mile west of railway station at Derry, $1\frac{1}{2}$ meters (5 feet) southeast of signboard "Derry one mile", and about $16\frac{1}{2}$ telegraph poles east of mile pole 230. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.395 meters (37.39 feet) from station in azimuth $68^{\circ}42'$.

Derry (Natchitoches Parish, C. L. Garner, 1919).—Outside of Texas & Pacific Railway right-of-way, about one-fourth mile east of railway station at Derry, between switch track to Clark & Morse Lumber Co. and main track, 8 meters (26 feet) north of center line of switch track and 33.3 meters (109 feet) south of center line of main track, and about 30 meters (98 feet) north of Clark & Morse Lumber Co.'s office. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 20.485 meters (67.21 feet) from station in azimuth $245^{\circ}14'$.

Hales (Natchitoches Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, about $1\frac{1}{4}$ miles east of Derry, about 40 meters (131 feet) west of signboard "Hales", about $10\frac{1}{2}$ telegraph poles east of milepost 227, and 4 meters (13 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard

reference disk in concrete, note 11a, 18.185 meters (59.66 feet) from station in azimuth $312^{\circ}22'$.

Chopin (Natchitoches Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, about one-fourth mile east of railway station at Chopin, 1.7 meters (6 feet) south of point of intersection of prolongation of north rail tangent from west and south rail tangent from east and 3.4 meters (11 feet) south of center line of main tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 23.670 meters (77.66 feet), from station in azimuth $282^{\circ}16'$.

Galbirth (Natchitoches Parish, L. H. Zeman, 1919).—On the Texas & Pacific Railway right-of-way, about one-half mile west of Galbraith (switch), 4.1 meters (13 feet) north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 12.855 meters (42.18 feet) from station in azimuth $14^{\circ}36'$.

Spring (Natchitoches Parish, L. H. Zeman, 1919).—Just outside Texas & Pacific Railway right-of-way at edge of pasture, about 2 miles west of Lena, on prolongation of south rail tangent from the west, 24 telegraph poles east of milepost 218, and 19.05 meters (62 feet) north of center line of track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 22 meters (72 feet) from the station in azimuth $137^{\circ}19'$.

Derrick (Natchitoches Parish, L. H. Zeman, 1919).—One mile north of depot at Lena, on Texas & Pacific Railway right-of-way, 165 meters (541 feet) north of signboard "Lena 1 mile", 6 feet west of west rail, on prolongation of southward tangent to curve of west rail. Marked by nail in 2- by 4-inch stake driven in ground.

Ditcher (Rapides Parish, L. H. Zeman, 1919).—About two-thirds mile north of depot at Lena, 8 feet west of Texas & Pacific Railway right-of-way fence, on prolongation of northward tangent to curve of west rail. Marked by nail in 2- by 4-inch stake driven in ground.

Lena (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, on north side of track, about one-half mile west of depot at Lena, on prolongation of south rail tangent from east, and 8 telegraph poles west of milepost 217. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.358 meters (37.26 feet) from station in azimuth $173^{\circ}41'$.

Quary (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, about five-eighths mile east of depot at Lena, $9\frac{1}{4}$ telegraph poles east of milepost 216, and 7.8 meters (26 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 10.135 meters (33.25 feet) from station in azimuth $97^{\circ}29'$.

Rock (Rapides Parish, L. H. Zeman, 1919).—About $3\frac{1}{2}$ miles east of depot at Lena, outside of Texas & Pacific Railway right-of-way, in edge of pasture, 5 meters (16 feet) north of prolongation of north-rail tangent from west, $14\frac{1}{2}$ telegraph poles east of mileboard 214, and 27.8 meters (91 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 15.171 meters (49.77 feet) from station in azimuth $23^{\circ}16'$.

Mob (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, about $1\frac{1}{4}$ miles west of Zimmerman, about $4\frac{3}{4}$ telegraph poles west of mileboard 213, and 12 meters (39 feet) north of center line of main track. Marked by spike in 2- by 4-inch stake driven in ground.

Dea (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, about five-eighths mile west of Zimmerman, $9\frac{1}{4}$ telegraph poles east of mileboard 213, and 5 meters (16 feet) north of center line of main track. Marked by spike in a 2- by 4-inch stake driven in ground.

Con (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, about three-eighths mile west of Zimmerman, about 50 meters (164 feet) west of trestle 212A, and 4.1 meters (13 feet) north of center line of main track. Marked by spike in 2- by 4-inch stake driven in ground.

Kate (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, about one-fourth mile west of signboard "Zimmerman", 1 telegraph pole west of mileboard 212, and 4.7 meters (15 feet) north of center line of main track. Marked by spike in 2- by 4-inch stake driven in ground.

Zimmerman (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way at Zimmerman, on prolongation of south rail tangent from east, about $4\frac{1}{2}$ telegraph poles east of signboard "Zimmerman", 4 telegraph poles west of tram crossing, and 6.4 meters (21 feet) north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 20.485 meters (67.21 feet) from station in azimuth $117^{\circ}01'$.

Wildcat (Rapides Parish, L. H. Zeman, 1919).—Outside of Texas & Pacific Railway right-of-way, about 5.8 miles east of Zimmerman, on prolongation of south-rail tangent from west, 5 telegraph poles east of mileboard 211, and 4.6 meters (15 feet) south of center line of Zimmerman-Boyce wagon road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.435 meters (37.52 feet) from station in azimuth $101^{\circ}37'$. In 1928 station mark was reported destroyed by relocation of tracks.

Dry (Rapides Parish, L. H. Zeman, 1919).—In cleared field outside of Texas & Pacific Railway right-of-way, about $1\frac{1}{4}$ miles west of railway station at Boyce, on prolongation of north-rail tangent from east, about 6 telegraph poles west of mileboard 210, and about 35 meters (115 feet) west of Zimmerman-Boyce wagon road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 27.539 meters (90.35 feet) from station in azimuth $253^{\circ}40'$. In 1928 reference mark was reported destroyed by relocation of tracks.

Boyce (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, about five-eighths mile east of railroad station at Boyce, $1\frac{1}{4}$ telegraph poles east of signboard "Yard Limit", 26 telegraph poles west of mileboard 207, and 4.1 meters (13 feet) north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.106 meters (36.44 feet) from station in azimuth $177^{\circ}25'$.

Joyner (Rapides Parish, L. H. Zeman, 1919).—About 1 meter (3 feet) south of Texas & Pacific Railway right-of-way fence, about $1\frac{1}{4}$ miles east of railroad station at Boyce, at intersection of south-rail tangent from west and north-rail tangent from east, $2\frac{1}{4}$ telegraph poles west of signboard "Joyner", and 15.05 meters (49.4 feet) south of center line of tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 14.479 meters (47.50 feet) from station in azimuth $352^{\circ}31'$.

Rapides (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, 2.95 meters (9.7 feet) south of southwest corner of Rapides Railway Station, 5.6 meters (18 feet) west of semaphore standing in front of station, and 2.85 meters (9.4 feet) north of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 21.575 meters (70.78 feet) from station in azimuth $345^{\circ}55'$.

Pecan (Rapides Parish, L. H. Zeman, 1919).—In brush north of Texas & Pacific Railway right-of-way, about 2 miles east of Rapides, at intersection of prolongations of north-rail tangent from west and south-rail tangent from east, $7\frac{1}{4}$ telegraph poles east of mileboard 202, and 17.2 meters north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 36.020 meters (118.18 feet) from station in azimuth $294^{\circ}41'$.

Flint (Rapides Parish, L. H. Zeman, 1919).—On Texas & Pacific Railway right-of-way, about $4\frac{1}{2}$ miles west of railway station at Alexandria, 22 telegraph poles west of mileboard 199, about $1\frac{1}{4}$ telegraph poles east of signboard "Flint", and 5.5 meters (18 feet) south of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 29.465 meters (96.67 feet) from station in azimuth $304^{\circ}54'$.

Alexandria (Rapides Parish, L. H. Zeman, 1919).—About $1\frac{1}{4}$ miles west of Union Station at Alexandria, on Texas & Pacific Railway right-of-way, 16 telegraph poles west of milepost 196, 10 telegraph poles west of signboard "Railroad crossing 2,000 feet", and 7 meters (23 feet) north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 15.597 meters (51.17 feet) from station in azimuth $140^{\circ}23'$.

For notes in regard to marking of stations see p. 71.

Red (Rapides Parish, L. H. Zeman, 1919).—About $2\frac{1}{4}$ miles north of Union Station in Alexandria, on Missouri Pacific Railway right-of-way, about one-fourth mile north of north end of long trestle over Red River, about 800 meters (2,625 feet) northwest of insane asylum, about 79 meters (259 feet) north of sign "R. R. Crossing 1 mile", and 10 meters (33 feet) east of east rail of tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 17,335 meters (56.87 feet) from station in azimuth 358°01'.

Red B (Rapides Parish, L. H. Zeman, 1919).—About 3.5 miles north of Union Station at Alexandria, on Missouri Pacific Railway right-of-way, about one-fourth mile south of Army base hospital, 275 meters (902 feet) north of Louisiana Railway & Navigation Co. crossing, and about 11 meters (36 feet) east of east rail of Missouri Pacific Railway track, on prolongation of southward tangent to curve of west rail. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 13,388 meters (43.92 feet) from station in azimuth 212°22'.

Varges (Rapides Parish, L. H. Zeman, 1919).—In the suburbs of Alexandria, about 1 mile north from Union Station, about 115 meters (377 feet) north from junction of Texas & Pacific and Missouri Pacific Railways, on side of fill about 3 meters (10 feet) west of west rail of Missouri Pacific Railway, and on prolongation of southward tangent to curve of east rail. Station mark is standard station disk in concrete, note 1a. Reference mark is standard reference disk in concrete, note 11a, at foot of fill, 7,842 meters (25.73 feet) from station in azimuth 67°49'.

Monroe (Rapides Parish, L. H. Zeman, 1919; 1930).—In Alexandria, 29 meters (95 feet) north of center line of Gould Street, between north-and-south drainage ditch and tracks of Texas & Pacific Railway, and 2 feet west of cross-over switch of Missouri Pacific Railway. Station mark is standard station disk in concrete, note 1a. Due to changes in location of railway tracks in 1928 mark was lowered in position, and referenced by two 4-inch angle bars driven in ground to form isosceles triangle, 31.00 feet on sides intersecting at station, and 37.458 feet on base, which parallels drainage ditch. Southern bar is 17.75 feet north of north edge of concrete sidewalk on north side of Gould Street. Reference mark of 1919 is standard reference disk in concrete, note 11a, 12,790 meters (41.96 feet) from station in azimuth 154°02'.

Lee (Rapides Parish, L. H. Zeman, 1919).—In Alexandria, about 11 meters (36 feet) north from center line of west end of Washington Street, about 110 meters (361 feet) north from center line of Lee Street crossing, about 115 meters (377 feet) north from block house at Lee Street crossing, about $4\frac{1}{2}$ meters (15 feet) east from east rail of Missouri Pacific, and Texas & Pacific union track, and about 12 meters (39 feet) west of last house on north side of Washington Street. Mark is standard station disk in concrete, note 1a. Reference mark is standard reference disk in concrete, note 11a, 11,482 meters (37.67 feet) from station in azimuth 163°39'.

Foundry (Rapides Parish, L. H. Zeman, 1919).—In Alexandria, about three-fourths mile east of union depot on Texas & Pacific Railway right-of-way, on prolongation of north rail tangent to main track of Louisiana Railway & Navigation Co., $9\frac{1}{2}$ poles east of mile board 194, and 8.6 meters (28 feet) north of center line of Texas & Pacific Railway main tracks. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 10,490 meters (34.42 feet) from station in azimuth 167°25'.

Zeman (Rapides Parish, L. H. Zeman, 1919).—About $2\frac{1}{4}$ miles east of Louisiana Railway & Navigation Co. depot at Alexandria, on right-of-way at point of intersection of north rail tangent from west and south rail tangent from east of first curve east of Chicago, Rock Island & Pacific Railroad crossing, 31 telegraph poles west of mile board 127 at edge of road crossing and 6.6 meters (22 feet) north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 18,870 meters (61.91 feet) from station in azimuth 255°56'.

Stafford (Rapides Parish, L. H. Zeman, 1919).—About 5 miles east of Louisiana Railway & Navigation Co. depot at Alexandria on right-of-way, about one-fourth telegraph pole east of mile board 128 and 3.25 meters (10.7 feet) north of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 23,835 meters (78.20 feet) from station in azimuth 133°26'.

Guthier (Rapides Parish, L. H. Zeman, 1919).—About $7\frac{1}{4}$ miles east of Alexandria, just outside of Louisiana Railway & Navigation Co. right-of-way, at point of intersection of south rail tangents from west and east, 13 telegraph poles west of milepost 131, and 8.1 meters (27 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.692 meters (38.36 feet) from station in azimuth $76^{\circ}24'$.

Lat (Rapides Parish, L. H. Zeman, 1919).—About 2 miles east of railroad station at Latanier, on Louisiana Railway & Navigation Co. right-of-way, $15\frac{1}{2}$ telegraph poles east of milepost 133, and 2.8 meters (9 feet) north of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.66 meters (38.3 feet) from station in azimuth $221^{\circ}48'$.

Richland (Rapides Parish, L. H. Zeman, 1919).—About 1 mile east of Richland and 2.8 meters (9 feet) south of center line of Louisiana Railway & Navigation Co. tracks, and $5\frac{1}{2}$ telegraph poles west of milepost 136. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 16.433 meters (53.91 feet) from station in azimuth $115^{\circ}13'$.

Bunnie (Rapides Parish, L. H. Zeman, 1919).—About 1 mile east of railroad station Magda, of Louisiana Railway & Navigation Co., 3.2 meters (10 feet) north of center line of track, $18\frac{1}{4}$ telegraph poles west of milepost 139, and about 8 meters (26 feet) east of road crossing. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 3.925 meters (12.88 feet) from station in azimuth $344^{\circ}52'$.

Mollie (Rapides Parish, L. H. Zeman, 1919).—About 2 miles east of railway station Magda, on Louisiana Railway & Navigation Co. right-of-way, 11.4 meters (37 feet) south of center line of track, and $19\frac{1}{2}$ poles east of milepost 139, at intersection of south rail tangent from west and north rail tangent from east. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 13.673 meters (44.86 feet) from station in azimuth $123^{\circ}32'$.

Bijou (Rapides Parish, L. H. Zeman, 1919).—About 1 mile east of railway station at Bijou, 4.5 meters (15 feet) south of center line of Louisiana Railway & Navigation Co. track, and 13 poles east of milepost 142. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 18.410 meters (60.40 feet) from station in azimuth $235^{\circ}15'$.

Due (Avoyelles Parish, L. H. Zeman, 1919).—About 1 mile west of Belledeau, 5.5 meters (18 feet) north of center line of Louisiana Railway & Navigation Co. track, and $19\frac{1}{4}$ telegraph poles west of milepost 144. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 18.595 meters (61.01 feet) from station in azimuth $27^{\circ}04'$.

Bell (Avoyelles Parish, L. H. Zeman, 1919).—About one-fourth mile east of Belledeau, 4.9 meters (16 feet) north of center line of Louisiana Railway & Navigation Co. track, at point of intersection of north rail tangent from west and north rail tangent from east. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 13.938 meters (45.73 feet) from station in azimuth $235^{\circ}30'$.

Frog (Avoyelles Parish, L. H. Zeman, 1919).—About $1\frac{3}{4}$ miles east of Belledeau, 2.8 meters (9 feet) south of center line of track, and 20 poles west of milepost 145. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 23.436 meters (76.89 feet) from station in azimuth $108^{\circ}27'$.

Compree (Avoyelles Parish, L. H. Zeman, 1919).—About 2 miles west of Hessmer alongside the Louisiana Railway & Navigation Co. track, in center of cleared field, at point of intersection of north rail tangent from east and north rail tangent from west, 2 telegraph poles west of milepost 147. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 37.940 meters (124.47 feet) from station in azimuth $191^{\circ}31'$.

Hessmer (Avoyelles Parish, L. H. Zeman, 1919).—In town of Hessmer, 10.55 meters (34.6 feet) west of northeast corner of Louisiana Railway & Navigation Co. depot, and 4.7 meters (15 feet) south of center line of track. Surface and

underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 15.007 meters (49.24 feet) from station in azimuth 159°43'.

Amond (Avoyelles Parish, L. H. Zeman, 1919).—About 1½ miles west of Mansura, 3.8 meters (12 feet) south of center line of Louisiana Railway & Navigation Co. track, and 20½ poles east of milepost 151. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 12.106 meters (39.72 feet) from station in azimuth 8°24'.

Mansura (Avoyelles Parish, L. H. Zeman, 1919; 1920).—About one-half mile west of railway station Mansura, 4.2 meters (14 feet) north of center line of Louisiana Railway & Navigation Co. track, at point of intersection of north rail tangent from west and south rail tangent from east. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 10.741 meters (35.24 feet) from station in azimuth 196°21'.

Omar (Avoyelles Parish, L. H. Zeman, 1919; 1920).—About ¼ miles east of Louisiana Railway & Navigation Co. depot at Mansura, 3.2 meters (10 feet) south of center line of track and 10 telegraph poles east of milepost 154. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 15.660 meters (51.38 feet) from station in azimuth 184°23'.

Rue (Avoyelles Parish, L. H. Zeman, 1919; 1920).—About 1 mile west of Moreauville, 34½ telegraph poles east of milepost 156, 300 meters (984 feet) west of road crossing near steel drawbridge, nearly midway between bridge and trestle next toward west, and 2.8 meters (9 feet) north of center line of railway track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 27.190 meters (89.21 feet) from station in azimuth 60°21'.

Chauson (Avoyelles Parish, L. H. Zeman, 1919; 1930).—About one-half mile east of railroad depot of Moreauville, 4 telegraph poles below milepost 158, in a cultivated field, 121 meters (397 feet) south of center line of Louisiana Railway & Navigation Co. track, near intersection of north rail tangents from west and east, and in edge of dim road which crosses railway into field. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 105.632 meters (346.56 feet) from station in azimuth 161°17'23''. In 1930 an iron pipe was placed beside station to serve as finder.

Will (Avoyelles Parish, L. H. Zeman, 1919).—About 3½ miles from Moreauville, in village of Willard, 3.5 meters (11 feet) north of center line of Louisiana Railway & Navigation Co. track, and 1½ telegraph poles east of mile pole 161. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 17.035 meters (55.89 feet) from station in azimuth 87°17'.

Lon (Avoyelles Parish, L. H. Zeman, 1919).—In Bordelonville, 7.35 meters (24 feet) west of southwest corner of Louisiana Railway & Navigation Co. depot, and 4.25 meters (13.94 feet) north of center line of track on extension of tangent of south rail from west. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 19.640 meters (64.44 feet) from station in azimuth 76°16'.

Ville (Avoyelles Parish, L. H. Zeman, 1919).—About one-fourth mile east of Bordelonville and 8.4 meters (28 feet) north of center line of Louisiana Railway & Navigation Co. track, on prolongation of north rail tangent from east. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 11.320 meters (37.14 feet) from station in azimuth 238°36'.

Heaton (Avoyelles Parish, L. H. Zeman, 1919).—About 2 miles west of Rexamere in edge of dim road crossing, 3.8 meters (12 feet) south of center line of Louisiana Railway & Navigation Co. track and 13½ telegraph poles west of milepost 167. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 18.620 meters (61.09 feet) from station in azimuth 178°40'.

Root (Avoyelles Parish, L. H. Zeman, 1919).—About 2 miles east of Rexamere, at point of intersection of north rail tangents from west and east, in cleared field about 50 meters (164 feet) north of track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard

reference disk in concrete, note 11a, 39.500 meters (129.59 feet) from station in azimuth $355^{\circ}57'$.

De Glaize (Avoyelles Parish, L. H. Zeman, 1919).—About one-fourth mile east of depot at Sarto, 6 telegraph poles west of west end of steel bridge over Bayou De Glaize, $3\frac{1}{2}$ telegraph poles east of mile pole 171, 3.1 meters (10 feet) north of center line of Louisiana Railway & Navigation Co. tracks, and at intersection of north rail tangents from west and east. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 25.980 meters (85.24 feet) from station in azimuth $298^{\circ}16'$.

Incline (Avoyelles Parish, L. H. Zeman, 1919; 1932).—About three-eighths mile west of depot at Naples, 8.9 meters (29 feet) north of center line of main track of Louisiana Railway & Navigation Co., on prolongation of north rail tangent from west, and 5 rail lengths west of first switch in railroad yards. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 22.290 meters (73.13 feet) from station in azimuth $213^{\circ}08'$.

Naples (Avoyelles Parish, L. H. Zeman, 1919).—About one-half mile east of Louisiana Railway & Navigation Co. depot, at Naples, 53.8 meters (177 feet) north of center line of spur track to abandoned sawmill on Atchafalaya River, and about 10 meters (33 feet) from bank of river. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 33.453 meters (109.75 feet) from station in azimuth $80^{\circ}12'$.

Engineer (Pointe Coupee Parish, L. H. Zeman, 1919).—On top of levee almost directly across Atchafalaya River from old abandoned sawmill on Naples side of river, near place where road following levee makes sharp turn to south, 25 meters (82 feet) north of corner of fence around property owned by Mrs. L. B. Coyle, and about 4 telegraph poles west of store belonging to Mrs. Coyle. Marked by iron pipe 6 inches in diameter with cap stamped "U. S. E.". Mark was covered up by topping applied to levee in 1927. Station was not found in 1929 and 1932, but is probably intact some distance below surface.

Engineer base (Pointe Coupee Parish, L. H. Zeman, 1919).—In top of levee on south bank of Atchafalaya River, which is locally called "Old River", about three-eighths mile east of store owned by Mrs. L. B. Coyle, about one-half mile east of junction of Red, Atchafalaya, and Old Rivers, and about 150 meters (492 feet) northwest of cabin rented from George Keller by Jim Morgan (colored). Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a, 39.628 meters (130.01 feet) from station in azimuth $60^{\circ}31'$. In 1929 station was covered by topping applied to levee in 1927, but mark is probably intact some distance below surface. Reference mark reported moved and reset on account of highway construction.

Teller (Pointe Coupee Parish, L. H. Zeman, 1919; 1929).—In top of levee, five-eighths mile east of junction of Atchafalaya, Red, and Old Rivers, and 29 meters (95 feet) north of house owned by George Keller and occupied by Horace Brown (colored), about one-eighth mile west of George Keller's residence. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 29.150 meters (95.64 feet) from station in azimuth $33^{\circ}42'$. In 1929 station was found in good condition, on top of levee, just behind topping, and partially covered by it. Reference mark was found, but it has been moved and reset on account of highway construction.

Royal Oak (Pointe Coupee Parish, L. H. Zeman, 1919; 1930).—In top of levee, about 1 mile north of Torras, about 5 telegraph poles north of Royal Oak Baptist Church (colored), directly in front of cabin owned by George Keller and occupied by Branch Thorton, $3\frac{1}{4}$ meters (11 feet) southeast of prolongation of southeast fence of first cabin northwest of church, and 16.21 meters (55.2 feet) southeast of *Morean* reference mark no. 2. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 28.695 meters (94.14 feet) from station in azimuth $257^{\circ}19'$. In 1930 the station mark was recovered, but the reference mark was not. Station was then reported about 8 inches beneath top of levee at highest part, and at southwest edge of path.

Torras (Pointe Coupee Parish, L. H. Zeman, 1919; 1930).—In top of levee, $3\frac{1}{2}$ telegraph poles east of railway station at Torras, 6.2 meters (20 feet) north of

center line of Texas & Pacific Railway track, and 3 rails east of concrete culvert over wagon road. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 42.96 meters (140.94 feet) from station in azimuth 48°07'. Station *Morean* (see description thereof) is 10.04 meters (32.9 feet) from the station in azimuth 116°26'.

St. Joseph (Pointe Coupee Parish, L. H. Zeman, 1919).—Directly across Mississippi River from Angola, in top of levee, in front of house owned by Ned Phillips, about 1¼ miles east of town of Torras, about 35 meters (115 feet) east of where levee makes sharp turn to southeast, and about 150 meters (492 feet) east of St. Joseph Church. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a, 31.280 meters (102.62 feet) from station in azimuth 88°01'. In 1929, station site was covered by topping about 4 feet in depth applied to levee in 1927. Reference mark has been covered by construction of cotton warehouse and fill around it. Marks not recovered.

Red River (Pointe Coupee Parish, L. H. Zeman, 1919; 1929).—In top of levee about 1 mile southeast from junction of Old River, and Mississippi River, about 2¼ miles east of Torras, opposite lane leaving levee road and going to Lettsworth. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference mark is standard reference disk in concrete, note 11a. 47.250 meters (155.02 feet) from station in azimuth 63°54'. In 1929 marks were recovered somewhat loose, but apparently undisturbed, and the following data were added: Station is opposite third telephone pole north of angle in pole line, where it turns east to cross the river. Lane to Lettsworth has been moved about 300 yards to south, and is now south of angle in pole line. New ferry slip of Louisiana & Arkansas Railway is about one-fourth mile north of station, and lone cypress in west edge of road bears 283° magnetic from station. Reference mark is inside gate posts of old lane, and the arrow is reversed. May have been reset by highway engineers.

Smith (Pointe Coupee Parish, L. H. Zeman, 1919; 1929).—On top of levee in front of house occupied by T. Smith, about 4½ miles east of the town of Torras. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. *B.M. 150/d (M.R.C.)* (see description thereof), is 51.93 meters (170.4 feet) from station in azimuth 84°54'.

Morean (Pointe Coupee Parish, H. W. Hemple, 1929).—In town of Torras, on top of levee, 15.15 meters (49.7 feet) northwest of near rail of Texas & Pacific Railway, 28.9 meters (95 feet) east of highway, and 20.45 meters (67.1 feet) northwest of northwest corner of the intersection of highway and Main Street. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is at southeast corner of intersection of Main Street and through highway, 41 feet southeast of center line of Main Street, 38 feet southwest of center line of highway, 139 feet southeast of southeast corner of railway bridge over highway, 147 feet southeast of near rail of the Texas & Pacific Railway, and 69.5 meters (228 feet) from station in azimuth 341°54'. No. 2 is on top of levee, 0.1 mile north of Royal Oak Baptist Church, opposite first house north of church, 87 feet east of center line of highway, and about 1.5 miles from station in azimuth 135°46'04''. Station *Torras* (see description thereof) is 10.04 meters (32.9 feet) from station in azimuth 296°26'. Station *P.B.M. Torras (U.S.E.)* (see description thereof) is 153.60 meters (503.9 feet) from station in azimuth 57°25'04''.

Lettsworth (Pointe Coupee Parish, H. W. Hemple, 1929).—In village of Lettsworth, a town on Route 30, about 180 paces southeast of railroad station, 20 paces southwest of railroad tracks, and 22 paces northwest of section house yard fence, in open ground, on land claimed by both railroad and plantation to south. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is on north side of tracks opposite station, and 21.59 meters (70.8 feet) from station in azimuth 240°56'. No. 2 is down the tracks about 50 yards east of road leading from highway, and about one fourth mile from station in azimuth 337°34'04''.

Batchelor (Pointe Coupee Parish, H. W. Hemple, 1929).—In village of Batchelor, 15 meters (49 feet) southwest of the second telephone pole west of railroad station, on south side of track, in railroad right-of-way. Surface and underground marks are standard station disks in concrete, notes 1a and 7a. Reference marks are standard reference disks in concrete, note 11a. No. 1 is 14 telephone

poles west of station, on north side of track, just east of dirt road crossing, and two-fifths mile from station in azimuth $152^{\circ}35'48''$. No. 2 is on north side of railroad, opposite station, and 26.48 meters (86.9 feet) from station. Its direction was not recorded.

Supplementary points

Clark A (Natchitoches Parish, C. L. Garner, 1919).—At Derry, 20.9 meters (69 feet) northwest of Texas & Pacific Railway station, and 1.6 meters (5 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a.

Derry A (Natchitoches Parish, C. L. Garner, 1919).—About one fourth mile east of depot at Derry, on Texas & Pacific Railway right-of-way, 20 telegraph poles west of milepost 228, and 2.3 meters (8 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a.

Derry B (Natchitoches Parish, C. L. Garner, 1919).—About three-eighths mile east of depot at Derry, on Texas & Pacific Railway right-of-way, about $3\frac{1}{2}$ telegraph poles east of milepost 228, and 2.3 meters (8 feet) south of center line of main track. Surface and underground marks are standard station disks in concrete, notes 1a and 7a.

P.B.M. A. (M.R.C.) (Harmon (C. & G.S.)) (Pointe Coupee Parish, L. H. Zeman, 1919).—On right bank of Mississippi River, back of Red River Landing, on small ridge, in exterior angle of fences, 7 meters (23 feet) southeast of cabin, on land of M. F. Rodech, 100 meters (328 feet) back of levee, about 400 meters (1,312 feet) back of river bank, and 90 meters (295 feet) back of junction where road from landing crosses levee and joins road back of levee. Station marked by standard mark of Mississippi River Commission, brass cap and steel pipe above, and copper bolt in tile below, as described in note 16.

B.M 150/d (M.R.C.) (Pointe Coupee Parish, L. H. Zeman, 1919; 1930).—On right bank of Mississippi River, about one fourth mile above Smithland Landing, about one-fourth mile from river bank, 250 meters (820 feet) back of levee, in east-and-west wire fence line, 14 meters (46 feet) back of small dry slough, and about 250 meters (820 feet) southwest of cabin near levee. Marked by standard marks of Mississippi River Commission, brass cap on steel pipe above, and copper bolt in tile below, as described in note 16. A blazed 10-inch elm tree is 10.5 meters (34 feet) from station in azimuth 235° . Station *Smith* is 51.93 meters (170.4 feet) from station in azimuth $264^{\circ}54'$.

P.B.M. Torras (M.R.C.) (Pointe Coupee Parish, H. W. Hemple, 1929; 1930).—On left bank of Old River, in northeast corner of field owned by J. T. Phillips and adjoining Torras School, 30.8 meters (101 feet) northwest of northwest corner of school, 53.0 meters (174 feet) down river from center line of railroad, and 1 meter (3 feet) from each fence line. Station mark is tile and pipe, projecting 10 inches. Station *Morean* (see description thereof) is 153.60 meters (503.9 feet) distant in azimuth $237^{\circ}25'01''$.

New Roads west base B (LaBarre B) (Pointe Coupee Parish, H. W. Hemple, 1929).—About 1.4 miles west of station *New Roads west base*, 2.46 meters (8.1 feet) south of south rail of Texas & Pacific Railway and 90.8 meters (298 feet) west of the "X" sign at east end of first curve west of station *New Roads west base*, Station mark is standard disk station mark in concrete, note 1a. Azimuth to station *New Roads west base A*, about 1 mile distant, is $279^{\circ}30'05''$.

New Roads west base A (LaBarre A) (Pointe Coupee Parish, H. W. Hemple, 1929).—About 0.4 mile west of *New Roads west base*, on north side of right-of-way of Texas & Pacific Railway, 7.29 meters (23.9 feet) north of north rail, 16.2 meters (53 feet) south of center line of highway, across road (south) from Harry Melancon's store, and 4.4 meters (14 feet) east of telephone pole on west side of old road crossing. Station mark is standard disk station mark in concrete, note 1a. Azimuth to station *New Roads west base*, about 0.4 mile distant, is $282^{\circ}26'33''$.

For notes in regard to marking of stations see p. 71.

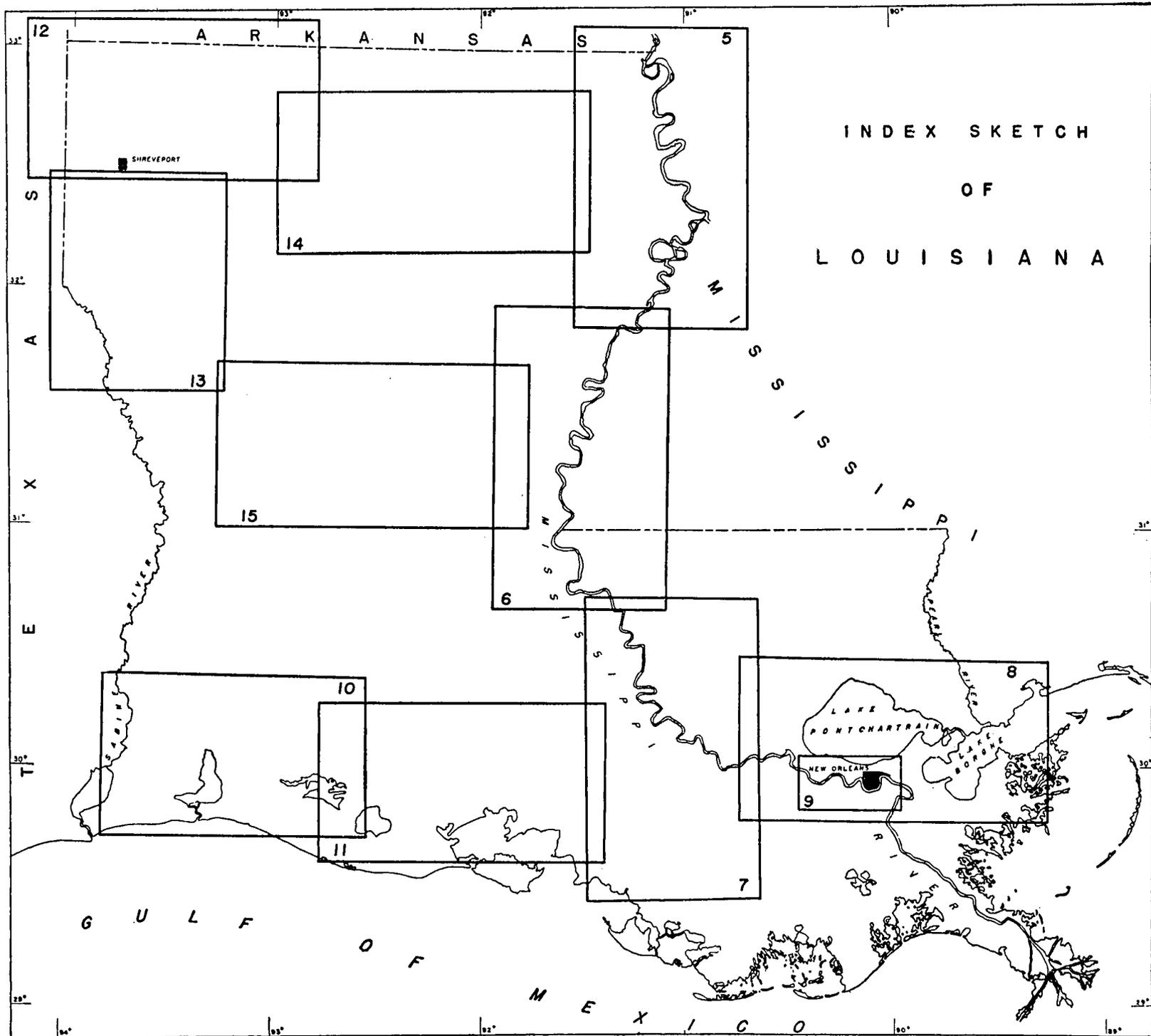


FIGURE 4.- Index map of Louisiana showing areas covered by each of the following sketches, figures 5 to 15.

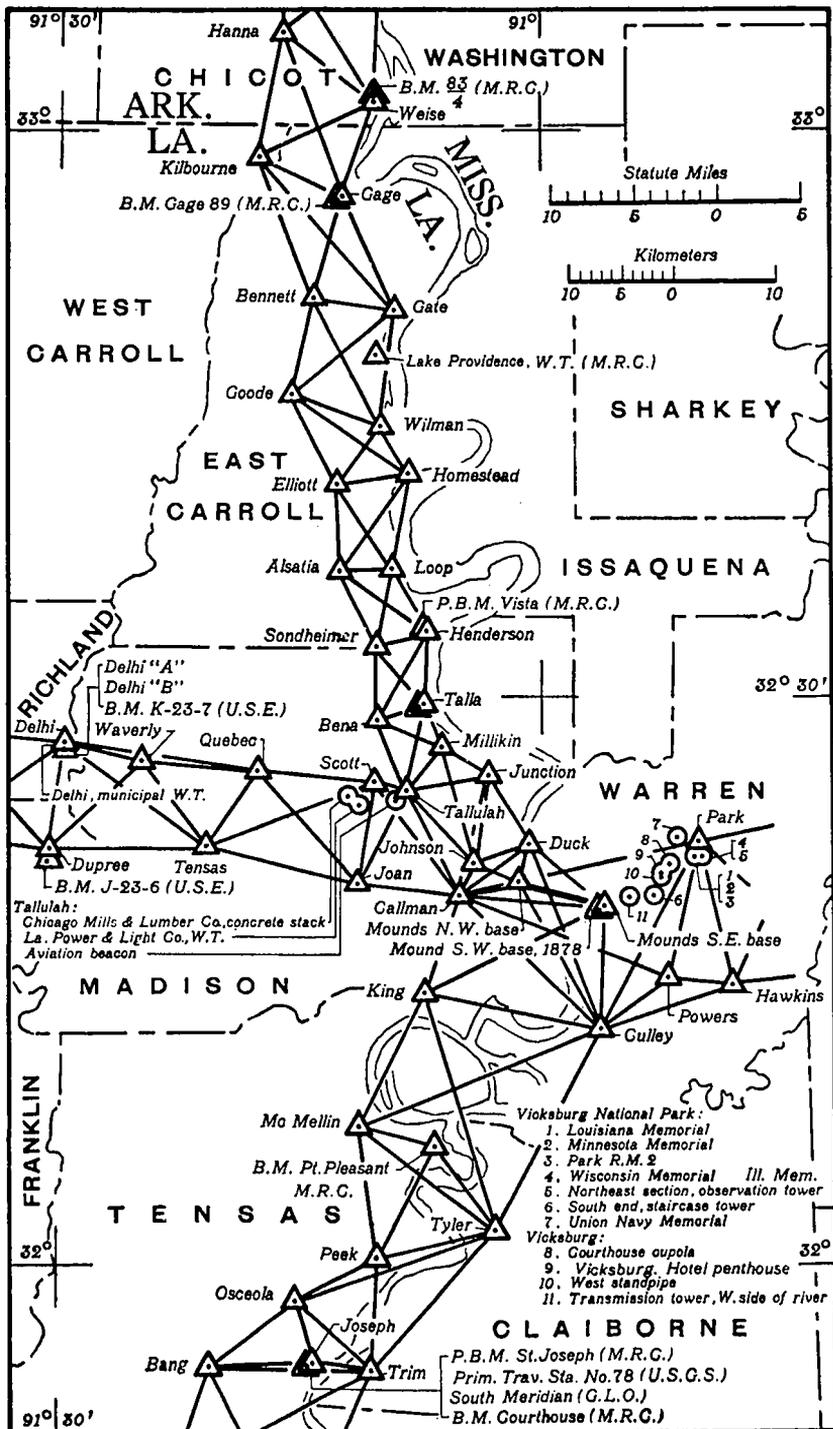


FIGURE 5.—First-order triangulation, Mississippi River arc, Arkansas boundary to St. Joseph.

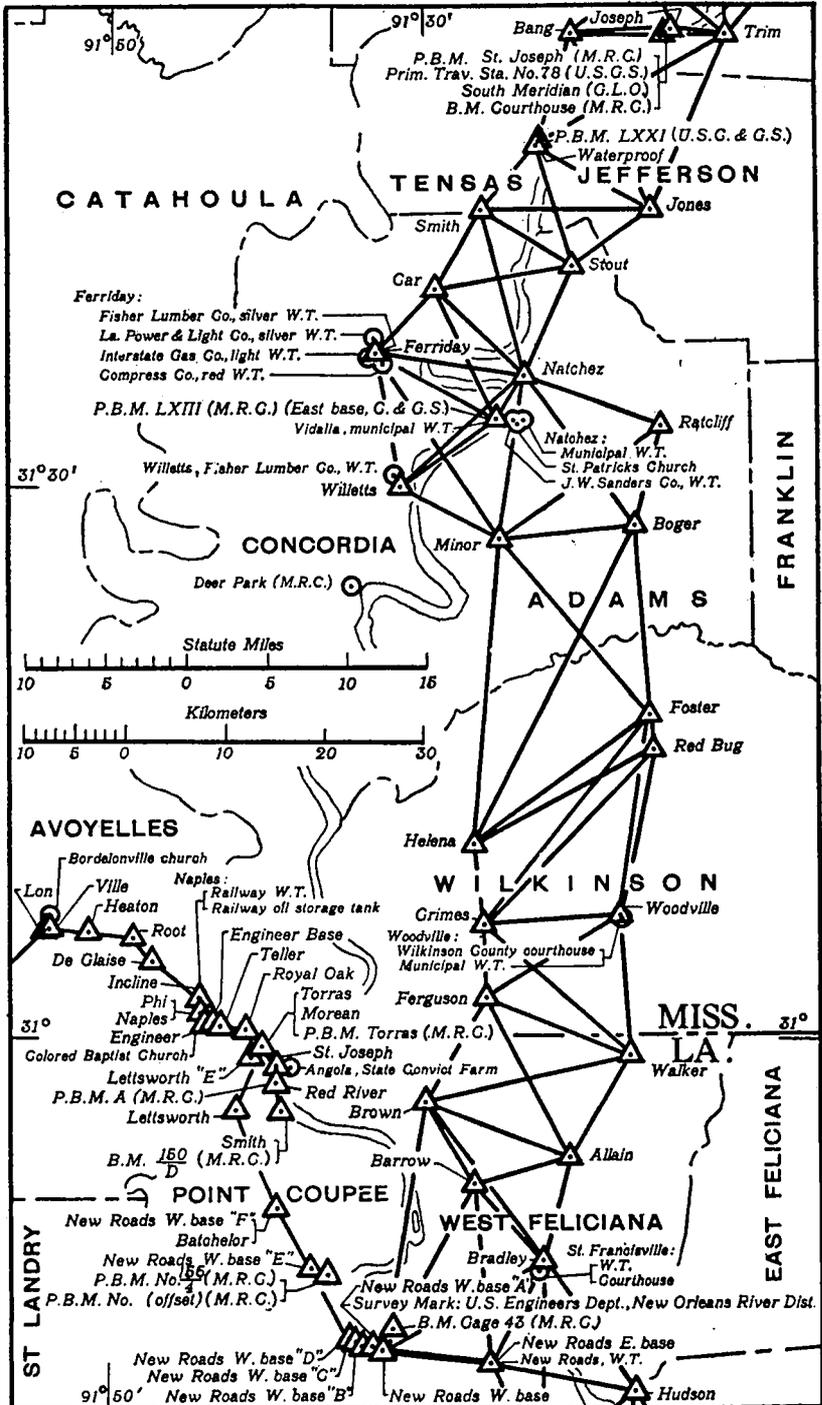


FIGURE 6.—First-order triangulation, Mississippi River arc, St. Joseph to New Roads base, and first-order traverse, Bordeloville to New Roads base.



FIGURE 7.—First-order triangulation, Mississippi River arc, New Roads base to Gramercy base, and Gulf Coast arc, Donaldsonville base to line Oaklawn-Postor.

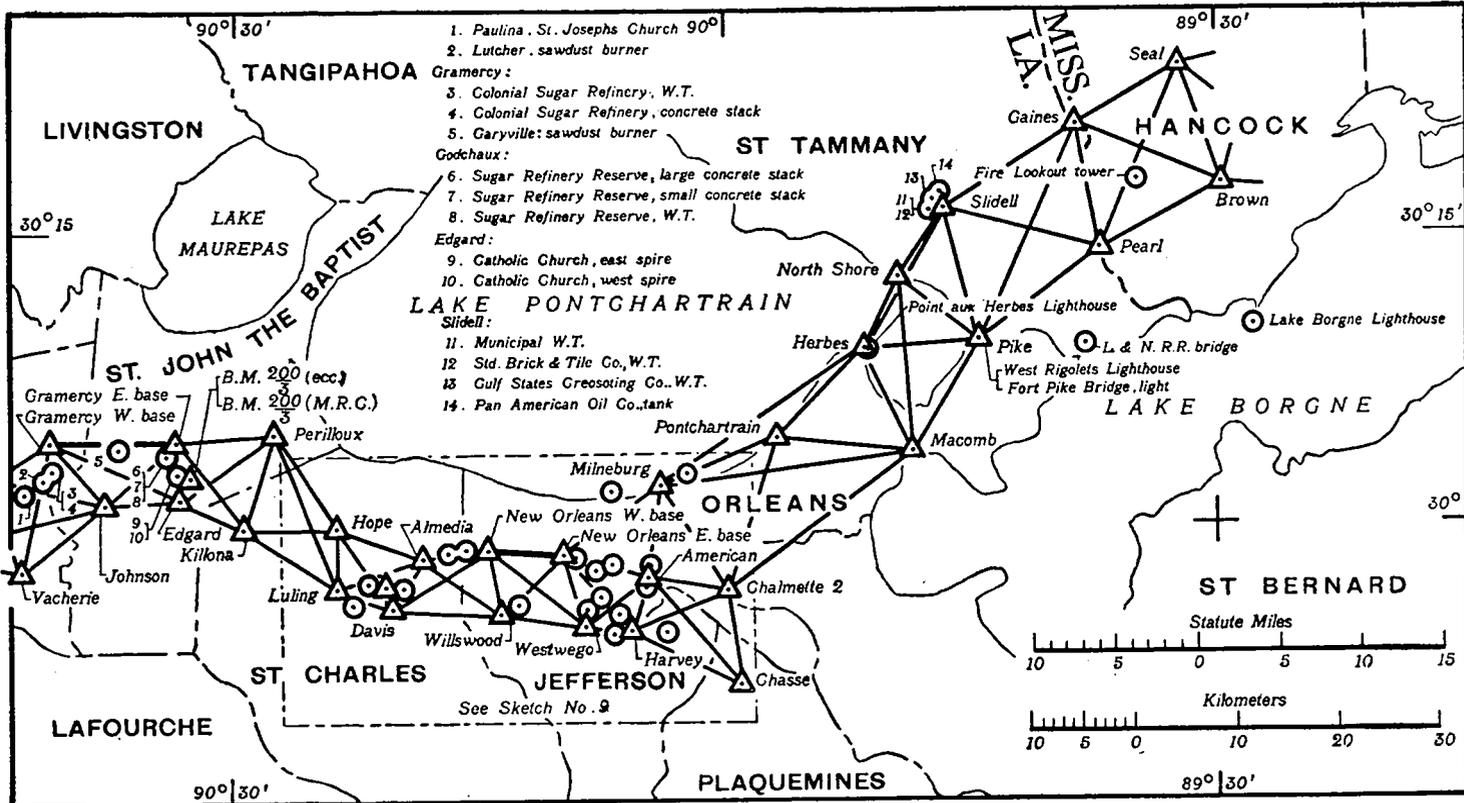


FIGURE 8.—First-order triangulation, Mississippi boundary to New Orleans, and along Mississippi River, New Orleans to Gramercy base.

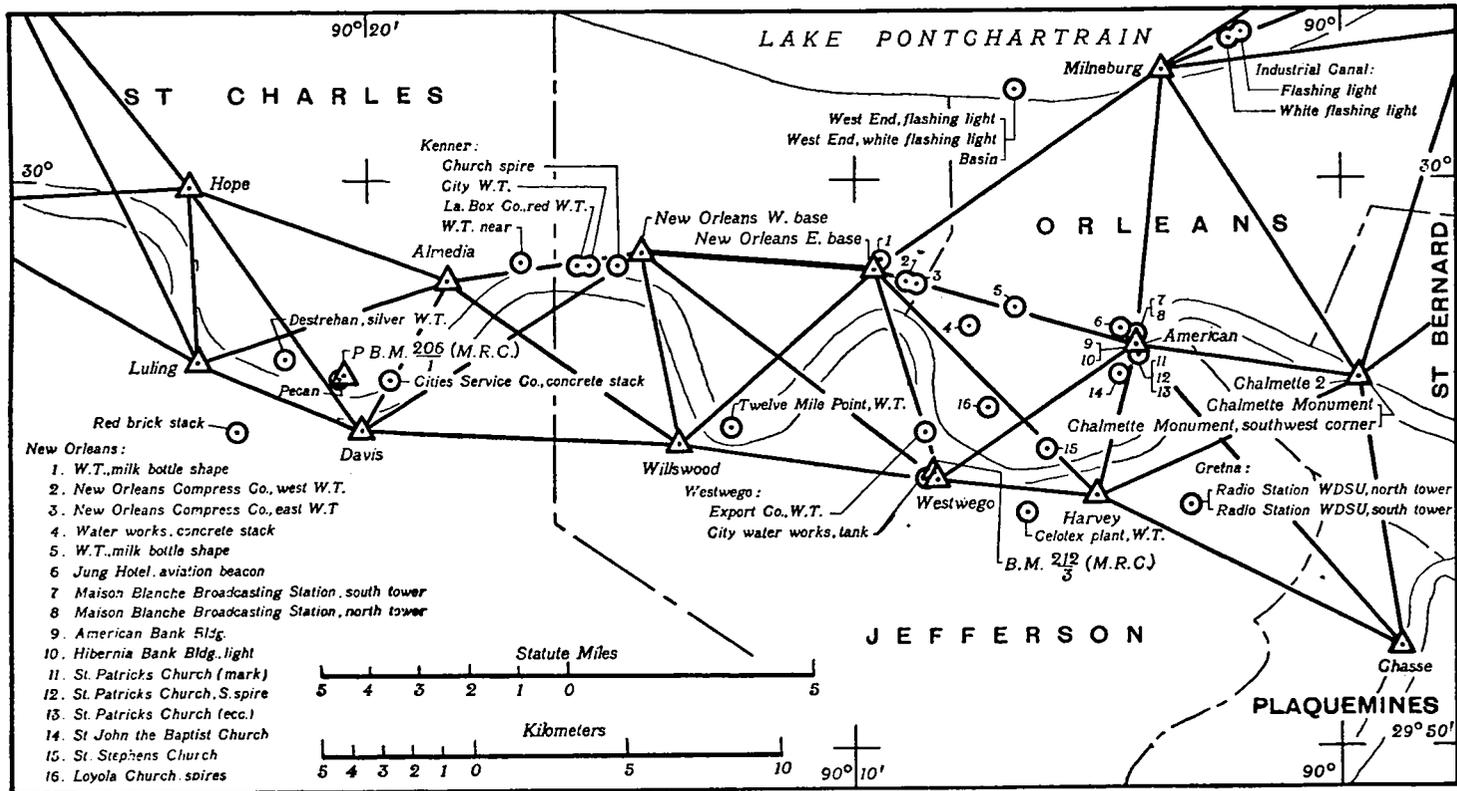


FIGURE 9.—First-order triangulation, vicinity of New Orleans.

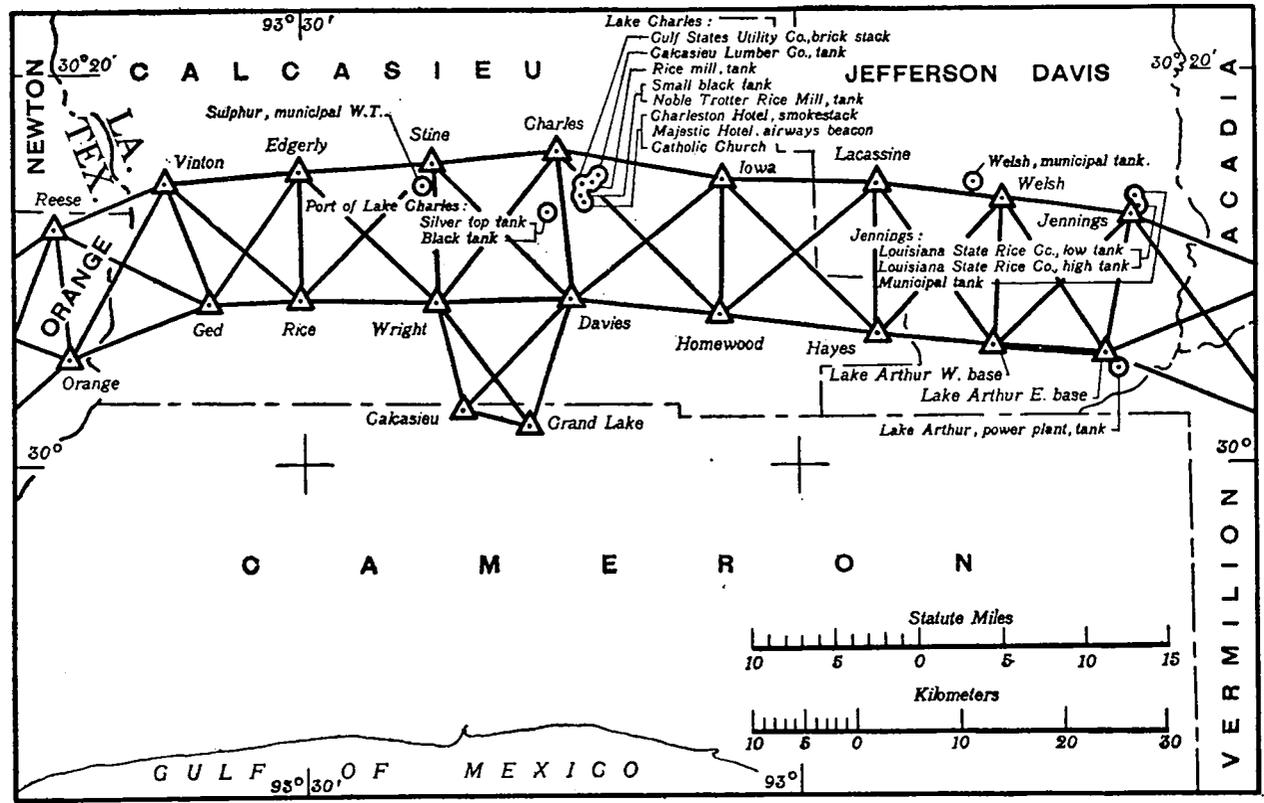


FIGURE 10.—First-order triangulation, Gulf Coast arc, Texas boundary to Lake Arthur.

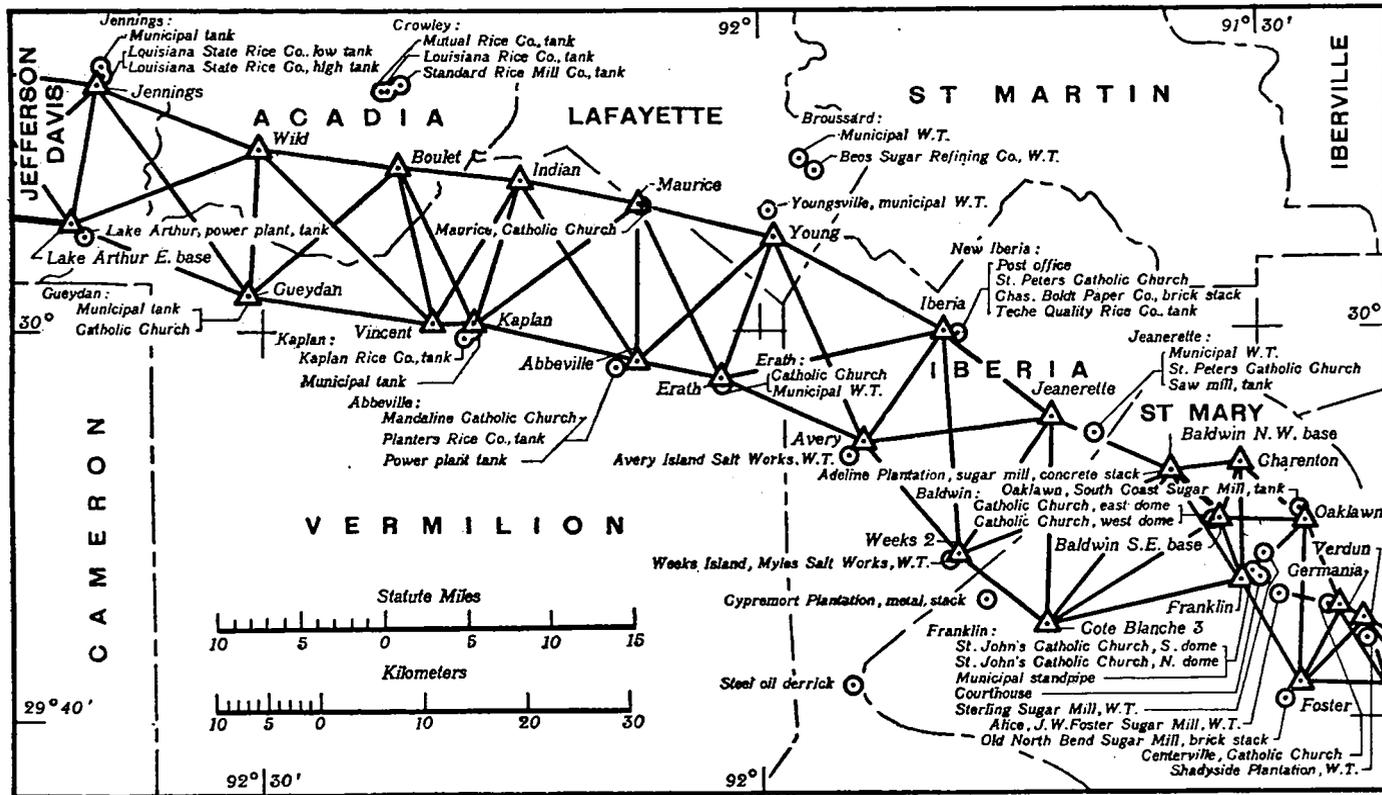


FIGURE 11.—First-order triangulation, Gulf Coast arc, Lake Arthur to line Oaklawn-Foster.

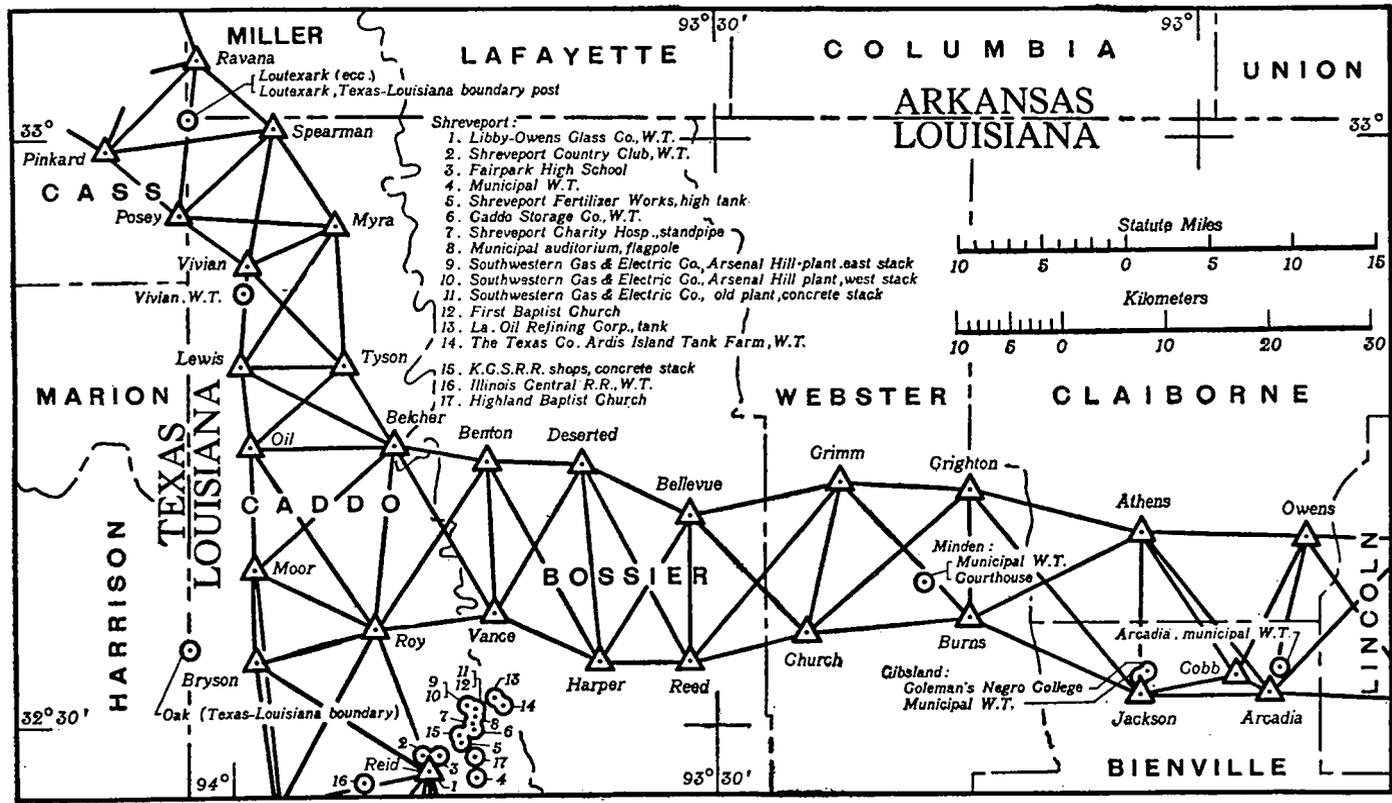


FIGURE 12.—First-order triangulation, ninety-fourth meridian arc, Arkansas boundary to Shreveport, and western section of Shreveport-Vicksburg arc.

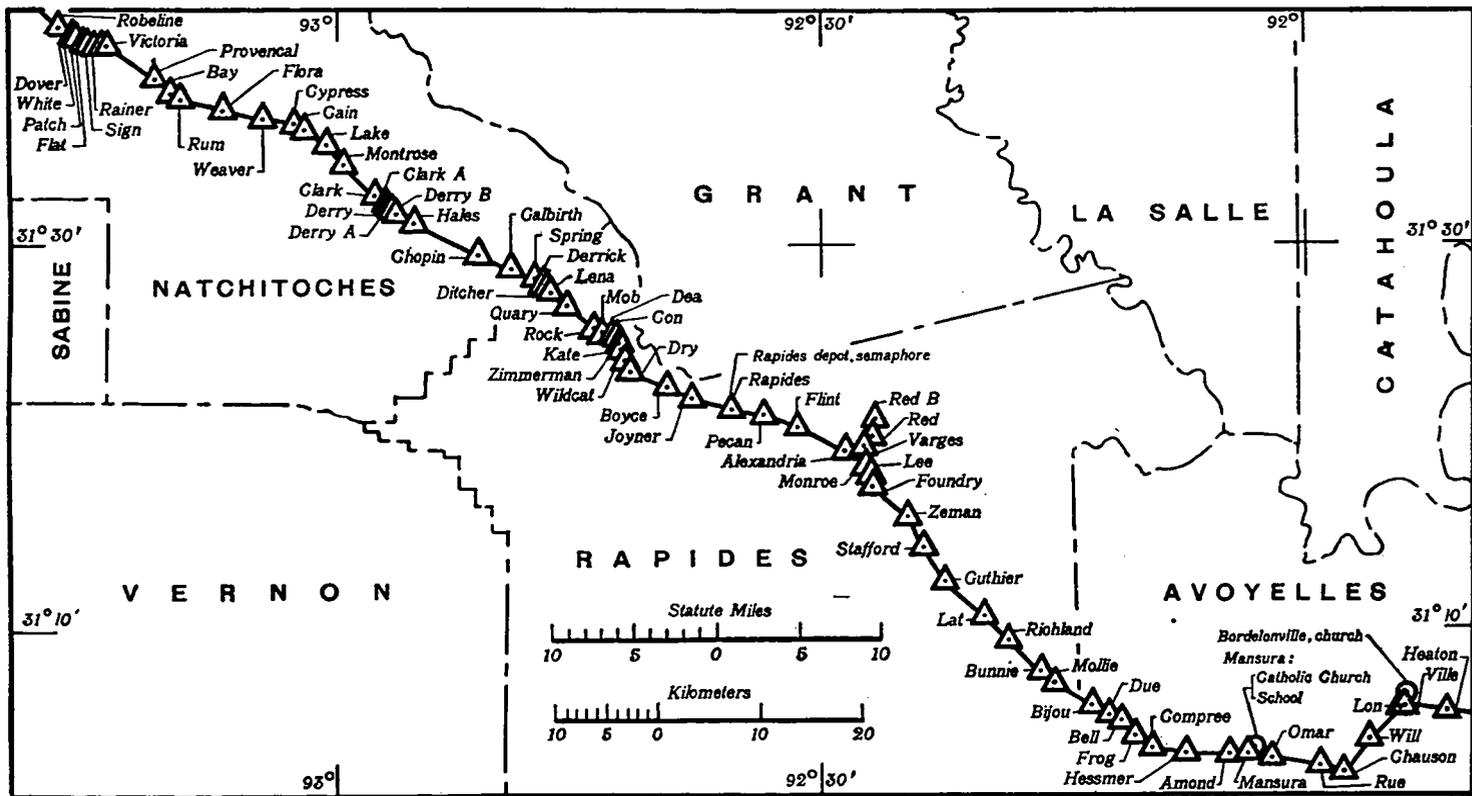


FIGURE 15.—First-order traverse, Victoria to Bordelonville.

Index to positions, descriptions, and sketches

Station	Position	Description	Sketch	Station	Position	Description	Sketch
A, P.B.M. (M.R.C.) (Harmon) (C. & G. S.)	Page 67	Page 147	Figure 6	Barrow	Page 17	Page 83	Figure 6
Abbeville	35	106	11	Barrowza Basin	18	85	7
Abbeville: Mandaline Catholic Church, steeple	45		11	Bat	33	99	9
Planters Rice Co., tank	45		11	Bat. Batchelor	61	187	13
Power plant, tank	46		11	Baton Rouge: Gas & Electric Co., concrete stack	67	146	6
Abo	60	135	13	Istrouma Water Co., tank	24		7
Adams	60	135	13	St. Josephs Catholic Church, spire	23		7
Adeline plantation, sugar mill, concrete stack	44		11	Standpipe	24		7
Airport beacon, Patterson	42		7	Water tank	25		7
Airways beacon, Majestic Hotel, Lake Charles	47		10	Do	25		7
Alexandria	04	141	15	Bay	62	138	15
Alice, J. W. Foster Sugar Mill, water tank	43		7, 11	Belcher	48	120	12
Allain	17	83	6	Bell	65	143	15
Almedia	27	98	8, 9	Belle Isle, salt works, chimney	42		7
Alsatia	14	74	5	Bellevue	53	125	12
American	26	95	8, 9	Bena	14	75	5
American Bank Building, gilt tower, New Orleans	20		9	B.M.: 16 (U.S.E.) stake 2	58		14
Amoud	05	144	15	16 (U.S.E.)	58	134	14
Angola, State convict farm, south end of building nearest Mississippi River	60		6	83/4 (M.R.C.) (Ark)	20	89	5
Arbroth	21	91	7	160/d (M.R.C.)	67	147	6
Arbroth, B.M. (M.R.C.)	21	91	7	194/3 (M.R.C.)	83	99	7
Arcadia	54	127	12, 14	200/3 ecc.	33		8
Arcadia, municipal water tank	57		12, 14	200/3 (M.R.C.)	33	99	8
Arsenaux	37	113	7	212/3 (M.R.C.)	33	100	9
Astronomical pier, Rayville	58		14	Arbroth (M.R.C.)	21	91	7
Atchafalaya River, south base	42	118	7	Courthouse (M.R.C.)	20	90	5, 6
Athens	53	126	12	Donaldsonville (M.R.C.)	21	91	7
Avery	36	107	11	Gage 43 (M.R.C.)	21	90	6
Avery Island, salt works, water tank	44		11	Gage 89 (M.R.C.)	20	89	5
Aviation beacon: Jung Hotel, New Orleans	31		9	I-23-4 (U.S.E.) (Mill-haven)	58	134	14
Tallulah	21		5	J-23-4 (U.S.E.)	58	135	14
Avoca	37	113	7	I-23-6 (U.S.E.)	59	135	5, 14
Avoca Island Drainage Co., brick stack	41		7	K-23-7 (U.S.E.)	59	135	5, 14
Avoca Island, oil derrick	41		7	Point Pleasant (M.R.C.)	15	78	5
B. P. M. Co: Monroe, water tank	57		14	Bennett	13	73	5
West Monroe, northeast stack	57		14	Benton	53	124	12
West Monroe, southwest stack	57		14	Beos Sugar Refining Co., Broussard, water tank	44		11
Babin	19	85	7	Bergeron	38	116	7
Baker	18	85	7	Berwick, Catholic Church, cross	41		7
Baker, Leland Negro College, water tank	23		7	Bijou	65	143	15
Baldwin: Catholic Church, east dome	43		11	Black tank, Port of Lake Charles	47		10
Catholic Church, west dome	43		11	Black water tank, Waterproof	22		
Northwest base	36	108	11	Boger (Miss.)	17	81	6
Southeast base	36	110	11	Bolyne	61	137	13
Ball	04	128	14	Bordelonville, church spire	69		6, 15
Bang	15	79	5, 6	Boulet	35	105	11
Baptist Church: Highland, spire, Shreveport	52		12	Boyce	64	141	15
New Orleans, St. John the Baptist, spire	31		9	Bradley	17	83	6
Shreveport, First, spire	51		12	Brick stack: Avoca Island Drainage Co.	41		7
				Chas. Boldt Paper Co., New Iberia	44		11
				Gulf States Utility Co., Lake Charles	47		10
				Old North Bend Sugar Mill	43		7, 11
				Red	31		9
				Square, ruined	39		7
				Brittain (Tex.)	50	123	13
				Brooks	55	129	14
				Broussard: Beos Sugar Refining Co., water tank	44		11
				Municipal water tank	44		11

Index to positions, descriptions, and sketches—Continued

Station	Position	Description	Sketch	Station	Position	Description	Sketch
	Page	Page	Figure		Page	Page	Figure
Brown	17	83	6	Cities Service Co., concrete stack	31		9
Brown (Miss.)	25	92	8	City waterworks, Westwego, tank	31		9
Brule Guillot	38	114	7	Clark	63	139	15
Brusle	19	86	7	Clark A.	67	147	15
Brusle, water tank	24		7	Cobb	53	127	12, 14
Bryson	49	120	12	Cocke	37	114	7
Bunnle	65	143	15	Cole	55	129	14
Burns	53	126	12	Coleman's Negro College, Gibsland, cupola	57		12
Burtville	19	87	7	College Point, water tank	29		7
Cabin	61	138	13	Colonial Sugar Refinery, Gramercy:			
Caddo Storage Co., Shreveport, water tank	51		12	Concrete stack	32		7, 8
Cain	62	139	15	Water tank	32		7, 8
Calcasieu	39	117	10	Colored Baptist Church, belfry	69		6
Calcasieu Lumber Co., Lake Charles, tank	46		10	Compress	65	143	15
Callman	14	76	5	Compress Co.:			
Car	16	80	6	Ferriday, red water tank	22		6
Carll	54	128	14	New Orleans, east water tank	32		9
Catholic Church:				New Orleans, west water tank	32		9
Abbeville, Mandaline, steeple	45		11	Rayville, stack	58		14
Baldwin, east dome	48		11	Con.	63	140	15
Baldwin, west dome	43		11	Connell	19	86	7
Baton Rouge, St. Josephs, spire	24		7	Convent, oil derrick	30		7
Berwick	41		7	Convent, St. Michaels Catholic Church	31		7
Centerville, spire	42		7, 11	Cote Blanche 3	36	109	11
Convent, St. Michaels, spire	31		7	Country Club, Shreveport, silver water tank	51		12
Donaldsonville, spire	25		7	Courthouse, B.M. (M.R.C.)	20	90	5, 6
Edgard, east spire	32		8	Courthouse cupola, Vicksburg (Miss.)	22		5
Edgard, west spire	32		8	Courthouse dome:			
Erath, steeple	45		11	Franklin, tip of statue	43		11
Franklin, St. Johns, north dome	43		11	Minden	57		12
Franklin, St. Johns, south dome	43		11	Ruston	57		14
Gueydan, steeple	46		11	St. Francisville	23		6
Jeanerette, St. Peters, spire	43		11	Woodville, Wilkinson County (Miss.)	23		6
Labadieville, white spire	40		7	Creosoting Co., Shreveport, water tank	52		13
Lake Charles, cross	47		10	Crew	55	131	14
Mansura, tall white spire	60		15	Crighton	53	126	12
Maurice, spire	45		11	Crowley:			
Napoleonville, cross on dome	39		7	Louisiana Rice Co., tank	45		11
New Iberia, St. Peters, spire	45		11	Mutual Rice Co., tank	45		11
Palmcourtville, spire	39		7	Standard Rice Mill Co., tank	45		11
Patterson, St. Josephs, spire	42		7	Crystal Oil Refining Co., Shreveport, concrete stack	52		13
Thibodaux, St. Josephs, cross, north dome	40		7	Culley (Miss.)	14	75	5
Thibodaux, St. Josephs, south dome	40		7	Cypremort Plantation, metal stack	44		11
Celotex plant, water tank	33		9	Cypress	62	139	15
Centerville, Catholic Church, spire	42		7, 11	Davies	34	102	10
Chacahoula	37	114	7	Davis	27	96	8, 9
Chalmette Monument	30	99	9	De Glaise	66	148	6
Chalmette Monument, southwest corner	29		9	Dea	63	140	15
Chalmette 2	26	94	8, 9	Deer Park (M.R.C.)	21	90	6
Charenton	36	109	11	Deere	55	131	14
Charles	34	102	10	Delni	55	132	5, 14
Chas. Boldt Paper Co., New Iberia, brick stack	44		11	Delhi:			
Charleston Hotel, Lake Charles, smokestack	47		10	A	58		5, 14
Chasse	28	95	8, 9	B	58		5, 14
Chauson	66	144	15	Municipal water tank	59		5, 14
Chenal	18	84	7	Della	39	117	7
Chicago Mill & Lumber Co., Tallulah, concrete stack	21		5	Delta southwest base (C. & G. S.) (P.B.M. 107/3 (M.R.C.))	20	90	5
Chopin	63	140	15	Derrick	63	140	15
Choudrant	54	128	14	Derry	63	139	15
Church	53	126	12	Derry:			
Church, cross	42		7	A	67	147	15
				B	67	147	15

Index to positions, descriptions, and sketches—Continued

Station	Position	Description	Sketch	Station	Position	Description	Sketch
	Page	Page	Figure		Page	Page	Figure
Deserted.....	53	125	12	Franklin:			
Destrehan, higher of two silver water tanks.....	31		9	Courthouse dome, tip of statue.....	43		11
Devall.....	18	85	7	Municipal standpipe.....	43		11
Ditcher.....	63	140	15	St. Johns Catholic Church, north dome.....	43		11
Doggett (Tex.).....	50	124	13	St. Johns Catholic Church, south dome.....	43		11
Donaldsonville.....	19	88	7	Sterling Sugar Mill, water tank.....	43		11
Donaldsonville:				Frog.....	65	143	15
B. M., (M. R. C.).....	21	91	7	Frogmore (no position).....		80	
Catholic Church, spire.....	25		7				
Municipal water tank.....	39		7	Gage.....	13	72	5
Donner:				Gage 43, B. M., (M. R. C.).....	21	90	6
Sawmill, water tank.....	41		7	Gage 89, B. M., (M. R. C.).....	20	89	5
Stack.....	41		7	Gaines (Miss.).....	25	92	8
Dover.....	61		13, 15	Galbirth.....	63	140	15
Dry.....	64	141	15	Garyville, sawdust burner.....	30		8
Duck.....	15	76	5	Gate.....	13	73	5
Due.....	65	143	15	Gas and Electric Co., Baton Rouge, concrete stack.....	24		7
Dupree.....	56	132	5, 14	Ged.....	34	100	10
East base (C. & G. S.) (P. B. M. LXIII (M. R. C.)).....	16	81	6	Geismar.....	19	88	7
East base:				Germania.....	37	110	7, 11
Gramercy.....	27	97	8	Gianelloni.....	19	86	7
Lake Arthur.....	35	104	10, 11	Gianelloni, sugar refinery plant, smokestack.....	24		7
Monroe.....	55	130	14	Gibbsland:			
New Orleans.....	26	95	8, 9	Coleman's Negro College, cupola.....	57		12
New Roads.....	18	84	6, 7	Municipal water tank.....	57		12
Edgard.....	27	97	8	Gibson.....	37	113	7
Edgard:				Gleason.....	60	136	13
Catholic Church, east spire.....	32		8	Godchaux:			
Catholic Church, west spire.....	32		8	Sugar refinery, large concrete stack, Reserve.....	32		8
Edgerly.....	34	101	10	Sugar refinery, small concrete stack, Reserve.....	32		8
Ellendale, lone metal stack.....	40		7	Sugar refinery, water tank, Reserve.....	32		8
Elliott.....	13	74	5	Goods.....	13	73	5
Engineer.....	66	145	6	Gordon.....	60	136	13
Engineer base.....	67	145	6	Gramercy:			
Erath.....	36	107	11	Colonial Sugar Refinery, concrete stack.....	32		7, 8
Erath:				Colonial Sugar Refinery, water tank.....	32		7, 8
Catholic Church, steeple.....	45		11	East base.....	27	97	8
Municipal water tank.....	45		11	West base.....	27	98	7, 8
Export Co., Westwego, water tank.....	33		9	Grand Lake.....	39	118	10
Fairpark High School, Shreveport, spire.....	51		12	Greenwood.....	49	121	13
Ferguson (Miss.).....	17	82	6	Gretna, radio station WDSU:			
Ferriday.....	16	80	6	North tower.....	29		9
Ferriday:				South tower.....	29		9
Compress Co., red water tank.....	22		6	Grimes (Miss.).....	17	82	6
Fisher Lumber Co., silver water tank.....	22		6	Grimm.....	53	126	12
Interstate Gas Co., light water tank.....	22		6	Gueydan.....	35	105	11
Power and Light Co., silver water tank.....	22		6	Gueydan:			
Fertilizer works, Shreveport, high tank.....	51		12	Catholic Church, steeple.....	46		11
Field.....	60	135	13	Municipal tank.....	46		11
Fire lookout tower (Miss.).....	28		8	Gulf Crushing Co., Morgan City, steel derrick.....	41		7
Fisher Lumber Co.:				Gulf States Creosoting Co., Sldell, water tank.....	28		8
Ferriday, silver water tank.....	22		6	Gulf States Utility Co., Lake Charles, brick stack.....	47		10
Willettts, water tank.....	22		6	Guthrie.....	65	143	15
Flat.....	62	138	13, 15	Hales.....	63	139	15
Flint.....	64	141	15	Hanna (Ark.).....	13	72	5
Flora.....	62	139	15	Harmon (C. & G.S.) (P. B. M. A. (M. R. C.)).....	67	147	6
Fogg.....	54	127	14	Harper.....	53	125	12
Ford.....	49	123	13	Harry William's sawmill:			
Forks.....	49	122	13	Sawdust burner.....	42		7
Fort Pike Bridge, center of draw, light.....	29		8	Tank.....	42		7
Foster.....	37	111	7, 11				
Foster (Miss.).....	17	82	6				
Foundry.....	65	142	15				
Franklin.....	30	109	11				

Index to positions, descriptions, and sketches—Continued

Station	Position	Description	Sketch	Station	Position	Description	Sketch
	Page	Page	Figure		Page	Page	Figure
Harvey	26	95	8, 9	Kate	63	140	15
Haslam, standpipe (Tex.)	52			Kenner:			
Hawkins (Miss.)	56	134	5	Church spire	32		9
Hayes	35	103	10	City water tank	33		9
Heaton	60	144	6, 15	Louisiana Box Co., red water tank	33		9
Helena (Miss.)	17	82	6	Water tank near	29		9
Henderson	14	74	5	Kessler	39	117	7
Hendricks	55	129	14	Kickapoo	49	122	13
Herbes	26	93	8	Killbourne	13	72	5
Hessmer	65	143	15	Killona	27	97	8
Hibernia Bank Building, New Orleans, light	31		9	King	14	75	5
Hickory	61	137	13	La Plene Plantation, sugar mill, tank	40		7
Highland Baptist Church, Shreveport, spire	52		12	Labadieville, Catholic Church, white spire	40		7
Himalaya	28	115	7	Lacassine	35	103	10
Himalaya, sugar mill, tank	39		7	Lake	63	139	15
Holly	55	131	14	Lake Arthur:			
Holly, stake no. 2	58		14	East base	35	104	10, 11
Homestead	13	73	5	Power plant, tank	46		10, 11
Homewood	35	103	10	West base	35	104	10
Hooper	18	86	7	Lake Borgne Lighthouse (Miss.)	28		8
Hooper eco.	18		7	Lake Charles:			
Hope (Sabine Parish)	61	136	13	Calcasteu Lumber Co., tank	46		10
Hope (St. Charles Parish)	27	96	8, 9	Catholic Church, cross	47		10
Hudson	18	84	6, 7	Charleston Hotel, smoke-stack	47		10
Hunter	50	124	13	Gulf States Utility Co., brick stack	47		10
Hymel	21	92	7	Majestic Hotel, airways beacon	47		10
Iberia	36	107	11	Noble Trotter Rice Mill, tank	47		10
Idlewild	37	112	7	Rice mill, tall silver tank	46		10
Idlewild Plantation, water tank	41		7	Small black tank	47		10
Illinois Central Railroad, water tank, 1 mile east of White Pine Hospital	52		12, 13	Lake Providence, north base 2	20	89	
Illinois Memorial, dome, Vicksburg National Park (Miss.)	22		5	Lake Providence, water tank (M.R.C.)	20	89	5
Incline	66	145	6	Lambert	61	137	13
Indian	35	108	11	Landry	38	116	7
Industrial Canal, flashing light	32		9	Lat.	65	143	15
Industrial Canal, white flashing light	29		9	Lauderdale, sugar refinery, water tank	25		7
Interstate Gas Co., Ferriday, light water tank	22		6	Laurel	38	115	7
Iowa	34	102	10	Laurel Grove, sugar mill, water tank	39		7
Istrouma Water Co., Baton Rouge, tank	23		7	Lavalle Plantation, sugar mill, tank	40		7
J. W. Sanders Co., Natchez, water tank (Miss.)	23		6	Lee	65	142	15
Jackson	53	126	12	Leighton, sugar mill, tank	40		7
Jeanerette	36	108	11	Leland Negro College, Baker, water tank	23		7
Municipal water tank	43		11	Lens	63	140	15
St. Peters Catholic Church, spire	43		11	Leper colony, water tank	24		7
Sawmill, flat-top tank	43		11	Letsworth	67	146	6
Jennings	35	104	10, 11	Letsworth E.	67		6
Louisiana State Rice Co., high tank	46		10, 11	Lewis	48	120	12
Louisiana State Rice Co., low tank	46		10, 11	Libby-Owens, Glass Co., Shreveport, water tank	51		12, 13
Municipal tank	46		10, 11	Light:			
Joan	56	133	5	Fort Pike bridge, center of draw	29		8
Johnson (Madison Parish)	15	76	5	Industrial Canal, flashing	32		9
Johnson (St. John the Baptist Parish)	27	98	8	Industrial Canal, white, flashing	29		9
Jones (Miss.)	16	79	6	New Orleans, Hibernia Bank Building	31		9
Joseph	15	78	5, 6	West End, flashing	32		9
Joyner	64	141	15	West End, white, flashing	29		9
Junction	15	77	5	Logansport, oil derrick near	52		
Kansas City Southern Railroad, shops, Shreveport, concrete stack	51		12	Lon.	66	144	6, 15
Kaplan	35	106	11	Loop	13	74	5
Kaplan:				Louisiana Box Co., Kenner, red water tank	38		9
Kaplan:				Louisiana Memorial, Vicksburg National Park (Miss.)	59		5
Kaplan Rice Co., tank	45		11				
Municipal tank	45		11				

Index to positions, descriptions, and sketches—Continued

Station	Position	Description	Sketch	Station	Position	Description	Sketch
Louisiana Power & Light Co., Tallulah, water tank	Page 21	Page	Figure 5	Morgan City: Gulf Crushing Co., steel derrick	Page 41	Page	Figure 7
Louisiana Rice Co., Crowley, tank	45		11	Municipal tank	41		7
Louisiana State Rice Co., Jennings: High tank	46		10, 11	Peoples Ice & Storage Co., tank	41		7
Low tank	46		10, 11	Sacred Heart Church, tower, pole	41		7
Louisiana-Texas boundary (see Loutexark and Oak)				Waterworks, metal stack	42		7
Louisville & Nashville Railroad bridge, center of middle span	29		8	Mound	37	111	7
Louisiana State University, memorial campanile	24		7	Mound southwest base, 1878. (see Delta southwest base (C. & G. S.) (P.B.M. 107/3 (M.R.C.))			
Loutexark (Tex.-La. boundary)	50	124	12	Mounds: Northwest base	15	76	5
Loutexark ecc. (Tex.)	50		12	Southeast base	14	76	5
Loyola Church, New Orleans: Northeast spire	31		9	Municipal Auditorium, Shreveport, flagpole	51		12
Northwest spire	30		9	Municipal standpipe:			
Southeast spire	31		9	Franklin	43		11
Southwest spire	30		9	Thibodaux	40		7
Lula	50	123	13	Municipal tank:			
Luling	27	97	8, 9	Gueydan	46		11
Lutcher, sawdust burner	33		7, 8	Jennings	46		10, 11
McCall	19	88	7	Kaplan	45		11
McMellin	15	77	5	Morgan City	41		7
Meacomb	26	94	8	Patterson	41		7
Maison Blanche Broadcasting Station, New Orleans: North tower	29		9	Walsh	46		10
South tower	29		9	Municipal water tank:			
Man	60	135	13	Arcadia	57		12, 14
Mansfield, water tank	52		13	Broussard	44		11
Mansura	65	144	15	Delhi	59		5, 14
Mansura: Catholic Church, tall white spire	69		15	Donaldsonville	39		7
School belfry	69		15	Erath	45		11
Marthaville	61	137	13	Gibbsland	57		12
Marx	55	129	14	Jeanerette	43		11
Mason	60	136	13	Minden	57		12
Maurice	35	106	11	Monroe	58		7
Maurice, Catholic Church, spire	45		11	Napoleonville	39		7
Metal stack: Cypremort Plantation	44		11	Natchez (Miss.)	23		6
Ellendale, lone	40		7	Rayville	58		14
Morgan City, waterworks	42		7	Ruston	57		14
Price Sugar Mill	40		7	Shreveport	52		12, 13
Schriever, sugar mill	40		7	Slidell	23		8
Miles (Ascension Parish)	19	88	7	Sulphur, silver	47		10
Miles (Sabine Parish)	61	136	13	Vidalia	23		6
Millhaven, B.M. 1-23-4 (U.S.E.)	58	134	14	West Monroe	57		14
Millikin	15	77	5	Woodville (Miss.)	23		6
Millneburg	26	94	8, 9	Youngsville	45		11
Minden: Courthouse, dome	57		12	Mutual Rice Co., Crowley, tank	45		11
Municipal water tank	57		12	Myles Salt Works, Weeks Island, water tank	44		11
Minnesota Memorial, Vicksburg National Park (Miss.)	59		5	Myra	48	119	12
Minor (Miss.)	16	81	6	Naples	66	145	6
Mixon	55	132	14	Naples: Railway oil-storage tank, center	69		6
Mob	63	140	16	Railway water tank, center	69		6
Molle	65	143	16	Napoleonville: Catholic Church, cross on dome	39		7
Monroe	64	142	16	Municipal water tank	39		7
Monroe: B.P.M. Co., water tank	57		14	Natchez (Miss.)	16	80	6
East base	55	130	14	Natchez (Miss.): J. W. Sanders Co., water tank	23		6
Municipal water tank	58		14	Municipal water tank	23		6
Ouachita National Bank Building, weather vane	57		14	St. Patricks Church, spire	23		6
West base	55	130	14	National Park, Vicksburg (Miss.): Illinois Memorial, dome	22		5
Montrose	63	139	15	Louisiana Memorial	59		5
Moor	49	120	12	Minnesota Memorial	59		5
Morean	67	146	6	Observation tower	59		5
Morgan	37	112	7	South end, staircase tower	59		5
				Union Navy Memorial	21		5
				Wisconsin Memorial	59		5

Index to positions, descriptions, and sketches—Continued

Station	Position	Description	Sketch	Station	Position	Description	Sketch
	Page	Page	Figure		Page	Page	Figure
Newville (Tex.)	50	123	13	Oil derrick:			
New Iberia:				Avoca Island	41		7
Chas. Boldt Paper Co., brick stack	44		11	Convent	30		7
Post office, steeple	44		11	Oil Refining Corporation, Shreveport, tank	51		12
St. Peters Catholic Church, spire	45		11	Old North Bend Sugar Mill, brick stack	43		7, 11
Teche Quality Rice Co., tank	44		11	Omar	65	144	15
New Orleans:				Orange (Tex.)	34	100	10
American Bank Building, gilt tower	29		9	Osceola	15	78	5
Compress Co., east water tank	32		9	Ouachita National Bank Building, Monroe, weather vane	57		14
Compress Co., west water tank	32		9	Owens	54	127	12, 14
East base	26	95	8, 9	Oxford	60	136	13
Hibernia Bank Building, light	31		9	Pace	49	122	13
Jung Hotel, aviation beacon	31		9	Paincourtville, Catholic Church, spire	39		7
Loyola Church, northeast spire	31		9	Palm	61	137	13
Loyola Church, northwest spire	30		9	Palourde	37	113	7
Loyola Church, southeast spire	31		9	Pan American Oil Co., Slidell, tank	28		8
Loyola Church, southwest spire	30		9	Park (Miss.)	56	133	5
Maison Blanche Broadcasting Station, north tower	29		9	Park, R.M. 2	59		5
Maison Blanche Broadcasting Station, south tower	29		9	Patch	62	138	13, 15
Milk-bottle-shaped water tank	29		9	Patterson			
Milk-bottle-shaped water tank	31		9	Airport beacon	42		7
St. John the Baptist Church, spire	31		9	Municipal tank	41		7
St. Patricks Church, eccentric	30		9	St. Josephs Catholic Church, spire	42		7
St. Patricks Church (mark)	30	99	9	Paulina, St. Josephs Church, spire	33		7, 8
St. Patricks Church, south spire	30		9	Peanut	61	137	13
St. Stephens Church, spire	31		9	Pearl (Miss.)	25	92	8
Waterworks, concrete stack	30		9	Pecan (Rapides Parish)	64	141	15
West base	27	96	8, 9	Pecan (St. Charles Parish)	33	99	9
New River, P.B.M. (M.R.C.)	21	91	7	Peek	15	78	5
New Roads:		84		Pelican	60	136	13
East base	18	84	6, 7	Peoples Ice & Storage Co., Morgan City, tank	41		7
Water tank	23		6, 7	Perilloux	27	97	8
West base	17	84	6	P.B.M.:			
West base A	68	147	6	56 (M.R.C.)	41	118	7
West base B	68	147	6	107/3 (M.R.C.) (Delta southwest base (C. & G. S.))	20	90	5
West base C	68		6	206/1 (M.R.C.)	33	100	9
West base D	68		6	LXIII (M.R.C.) (East base (C. & G. S.))	18	81	6
West base E	68		6	LXXI (O. & G. S.)	20	90	6
West base F	68		6	A (M.R.O.) (Harmon (C. & G. S.))	67	147	6
Noble Trotter Rice Mill, Lake Charles, tank	47		10	New River (M.R.C.)	21	91	7
North base:				No. 156/4 (M.R.C.)	68		6
2, Lake Providence (M.R.C.)	20	89		No. 156/4 (offset) (M.R.C.)	68		6
Schriever	38	114	7	Poplar Grove (M.R.C.)	21	91	7
Shreveport	49	121	13	Poplar Grove ecc. (M.R.C.)	21		7
North Shore	26	93	8	St. Gabriel (M.R.C.)	21	91	7
Northwest base, Mounds	15	76	5	St. Joseph (M.R.C.)	20	90	5, 6
Oak (Tex.-La. boundary)	50	124	12	Torras (M.R.C.)	68	147	6
Oaklawn	37	110	7, 11	Vista (M.R.C.)	20	89	5
Oaklawn, South Coast Sugar Mill, tank	43		7, 11	Phl	66		6
Observation tower, Vicksburg National Park (Miss.)	59		5	Pike	25	93	8
Oil (Caddo Parish)	48	120	12	Pine	61	137	13
Oil (De Soto Parish)	60	135	13	Pinkard (Tex.)	48	118	12
Oil derrick	38		7	Planters Rice Co., Abbeville, tank	45		11
				Plaquemine	19	87	7
				Plaquemine, Red Ball Co., water tank	25		7
				Point aux Herbes Lighthouse	29		8
				Point Pleasant, B.M., (M.R.C.)	15	78	5
				Pontchartrain	26	94	8
				Poplar Grove, P.B.M., (M.R.C.)	21	91	7
				Poplar Grove ecc., P.B.M., (M.R.C.)	21		7

Index to positions, descriptions, and sketches—Continued

Station	Position	Description	Sketch	Station	Position	Description	Sketch
	Page	Page	Figure		Page	Page	Figure
Port Allen, water tank	24		7	Sacred Heart Church, tower,	41		7
Port of Lake Charles:				Morgan City, pole			
Black tank	47		10	St. Francisville:			
Tank, silver top	47		10	Courthouse, dome	23		6
Posey (Tex.)	48	119	12	Water tank	23		6
Power and Light Co., Ferriday,				St. Gabriel	19	87	7
silver water tank	22		6	St. Gabriel, P.B.M., (M.R.C.)	21	91	7
Power Plant:				St. James	28	98	7
Abbeville, tank	45		11	St. John the Baptist Church,			
Lake Arthur, tank	46		10, 11	New Orleans, spire	31		9
Powers (Miss.)	56	134	5	St. Joseph	87	146	6
Price Sugar Mill, metal stack	40		7	St. Joseph, P.B.M., (M.R.C.)	20	90	5, 6
Primary traverse station no. 78				St. Josephs Catholic Church,			
(U.S.G.S.) (see description of				Baton Rouge, spire	24		7
Joseph)	20		5, 6	St. Josephs Church, Paulina,			
Provençal	62	138	15	spire	83		7, 8
Quarry	63	140	15	St. Michael's Catholic Church,			
Quebec	58	133	5	convent	31		7
Radio station:				St. Patrick's Church:			
Gretna, WDSU, north				Natchez, spire (Miss.)	23		6
tower	29		9	New Orleans, eccentric	30		9
Gretna, WDSU, south				New Orleans (mark)	30	99	9
tower	29		9	New Orleans, south spire	30		9
Railway oil storage tank, Nap-				St. Stephens, New Orleans,			
les, center	69		6	church spire	31		9
Railway water tank, Naples,				Salt works, Avery Island, water			
center	69		6	tank	44		11
Rainer	62	138	13, 15	Samuel	18	85	7
Rapides	64	141	15	Sawdust burner:			
Rapides depot, semaphore	68		15	Garyville	80		8
Ratcliff (Miss.)	17	81	6	Harry William's sawmill	42		7
Ravana (Ark.)	48	118	12	Lutcher	33		7, 8
Rayville	55	131	14	Sawmill:			
Rayville:				Donner, water tank	41		7
Astronomical pier	58		14	Jeanerette, flat-top tank	43		11
B.M. 16 (U.S.E.)	58	134	14	Schriever:			
Compress Co., stack	58		14	North base	38	114	7
Municipal water tank	58		14	South base	38	115	7
Red	64	142	15	Sugar Mill, metal stack	40		7
Red B	64	142	15	Scott (East Baton Rouge Pa-			
Red Ball Co., Plaquemine,				rish)	18	85	7
water tank	25		7	Scott (Madison Parish)	56	133	5
Red brick stack	31		9	Scott, water tank near station			
Red Bug (Miss.)	17	82	6	(East Baton Rouge Parish)	24		7
Red River	67	146	6	Scotts Bluff, water tank	23		7
Reed	53	125	12	Seal (Miss.)	25	92	8
Reese (Tex.)	34	100	10	Samaphore, Rapides, depot	68		18
Reid	49	121	12, 13	Shadyside Plantation, water			
Remy	27	98	7	tank	42		7, 11
Reserve, Godchaux, sugar re-				Shreveport:			
finery:				Caddo Storage Co., water			
Large concrete stack	32		8	tank	51		12
Small concrete stack	32		8	Charity Hospital, stand-			
Water tank	32		8	pipe	51		12
Rhymes	55	131	14	Country Club, silver water			
Rice	34	101	10	tank	51		12
Rice mill, Lake Charles, tall				Creosoting Co., water tank	52		13
silver tank	46		10	Crystal Oil Refining Co.,			
Richland	65	143	16	concrete stack	52		13
Road	61	136	13	Fairpark High School, spire	51		12
Robeline	61	138	13, 15	Fertilizer works, high tank	51		12
Robichaux	38	116	7	First Baptist Church, spire	51		12
Robichaux, sugar mill, tank	39		7	Highland Baptist Church,			
Rock	63	140	16	spire	52		12
Roof	90	144	8	Kansas City Southern Rail-			
Rose	38	116	7	road shops, concrete stack	51		12
Roy	49	120	12	Libby-Owens Glass Co.,			
Royal Oak	67	145	6	water tank	51		12, 13
Rudy (U.S.E.)	57	134	14	Municipal Auditorium,			
Rue	66	144	15	flagpole	51		12
Rum	62	138	15	Municipal water tank	52		12, 13
Ruston:				North base	49	121	13
Courthouse dome	57		14	Oil Refining Corporation,			
Municipal water tank	57		14	tank	51		12
				South base	49	122	13
				Southwestern Gas & Elec-			
				tric Co., Arsenal Hill			
				plant, east stack	51		12

Index to positions, descriptions, and sketches—Continued

Station	Position	Description	Sketch	Station	Position	Description	Sketch
Shreveport—Continued.				Sugar mill—Continued.			
Southwestern Gas & Electric Co., Arsenal Hill plant, west stack	Page 51	Page	Figure 12	Oaklawn, South Coast, tank	Page 43	Page	Figure 7, 11
Southwestern Gas & Electric Co., old plant, concrete stack	50		12	Robichaux, tank	39		7
The Texas Co., Ardis Island tank farm, small high water tank	51		12	Sugar refinery: Lauderdale, water tank	25		7
Sibley	54	128	14	Wall, stack	23		7
Sicard	55	130	14	Sugar refinery plant, Gianelloni, smokestack	24		7
Sign	62	138	13, 15	Sugar refinery, Reserve, Godchaux, water tank	32		8
Simpson	54	128	14	Sulphur, municipal silver water tank	47		10
Simsboro	54	127	14	Survey mark: "U.S. Engineers Dept., New Orleans River Dist."	68		6
Sildell	25	93	8	Swamp	55	130	14
Sildell: Gulf States Creosoting Co., water tank	28		8	Talla	14	75	5
Municipal water tank	28		8	Tallulah	15	77	5
Pan American Oil Co., tank	28		8	Tallulah: Aviation beacon	21		5
Standard Brick & Tile Co., water tank	28		8	Chicago Mill & Lumber Co., concrete stack	21		5
Smith (Concordia Parish)	16	79	6	Louisiana Power & Light Co., water tank	21		5
Smith (Point Coupee Parish)	67	146	6	Tan	61	137	13
Sodus	61	136	13	Tank	61	137	13
Sondheimer	14	75	5	Teche	37	111	7
Soto	60	136	13	Teche Quality Rice Co., New Iberia, tank	44		11
South	60	135	13	Teller	67	145	6
South base:				Tensas	56	133	5
Atchafalaya River	42	118	7	Texas Co., The, Ardis Island tank farm, Shreveport, small water tank	51		12
Schriever	38	115	7	Texas-Louisiana boundary (see Loutexark and Oak)			
Shreveport	49	122	13	Texas Oil Co., shooikmill water tank	41		7
South end, staircase tower, Vicksburg National Park (Miss.)	59		5	Thibodaux	38	115	7
South Meridian (G.L.O.)	20	90	5, 6	Thibodaux: Municipal standpipe	40		7
Southeast base, Mounds	14	76	5	St. Josephs Catholic Church, north dome, cross	40		7
Southwest base, Delta (C. & G. S.) (P.B.M. 107/3 (M.R.C.))	20	90	5	St. Josephs Catholic Church, south dome, cross	40		7
Southwestern Gas & Electric Co., Shreveport:				Torras	67	145	6
Arsenal Hill plant, east stack	51		12	Torras, P.B.M., (M.R.C.)	68	147	6
Arsenal Hill plant, west stack	51		12	Transmission tower, Vicksburg, west side of river (Miss.)	22		5
Old Plant, concrete stack	50		12	Trim (Miss.)	15	78	5, 6
Spearman	48	119	12	Twelve Mile Point, silver water tank	31		9
Spring (Caddo Parish)	49	121	13	Tyler (Miss.)	15	77	5
Spring (Natchitoches Parish)	63	140	15	Tyson	48	119	12
Stafford	65	142	15	Union Navy Memorial, Vicksburg National Park (Miss.)	21		5
Standard Brick & Tile Co., Sildell, water tank	28		8	Vacherle	28	98	7, 8
Standard Rice Mill Co., Crowley, tank	45		11	Vance	53	125	12
Standpipe:				Varges	64	142	15
Baton Rouge	25		7	Verdun	37	111	7, 11
Shreveport, Charity Hospital	51		12	Vicksburg (Miss.): Courthouse cupola	22		5
State convict farm, south end of building nearest Mississippi River, Angola	69		6	Transmission tower, west side of river	22		5
Steel derrick, Gulf Crushing Co., Morgan City	41		7	Vicksburg Hotel, penthouse	22		5
Steel oil derrick	44		11	West standpipe	21		5
Sterling Sugar Mill, Franklin, water tank	43		11	Vicksburg National Park (Miss.): Illinois Memorial, dome	22		5
Stine	34	101	10	Louisiana Memorial	59		5
Stonewall	49	122	13	Minnesota Memorial	59		5
Stout (Miss.)	16	79	6	Observation tower	59		5
Sugar mill:				South end, staircase tower	59		5
Adeline Plantation, concrete stack	44		11	Union Navy Memorial	21		5
Alice, J. W. Foster, water tank	43		7, 11	Wisconsin Memorial	59		5
Himalaya, tank	39		7				
La Plene Plantation, tank	40		7				
Laurel Grove, water tank	39		7				
Levalle Plantation, tank	40		7				
Leighton, tank	40		7				

Index to positions, descriptions, and sketches—Continued

Station	Position	Description	Sketch	Station	Position	Description	Sketch
	Page	Page	Figure		Page	Page	Figure
Victoria.....	62	138	13, 15	West End, flashing light.....	32	-----	9
Vidalla, municipal water tank.....	23	-----	6	West End, white flashing light.....	29	-----	9
Village.....	54	129	14	West Monroe:			
Ville.....	66	144	6, 15	B. P. M. Co., northeast			
Vincent.....	35	105	11	stack.....	57	-----	14
Vinton.....	34	100	10	B. P. M. Co., southwest			
Vista, F. B. M. (M. R. C.).....	20	89	5	stack.....	57	-----	14
Vivian.....	43	119	12	Municipal water tank.....	57	-----	14
Vivian, water tank.....	60	-----	12	West Rigolets Lighthouse.....	29	-----	8
Walker.....	17	83	6	West standpipe, Vicksburg			
Wall, sugar refinery, stack.....	23	-----	7	(Miss.).....	21	-----	5
Water tank, Lake Providence				Westwego.....	27	95	8, 9
(M. R. C.).....	20	89	5	City waterworks, tank.....	31	-----	9
Water tank, near station Scott				Export Co., water tank.....	33	-----	9
(East Baton Rouge Parish).....	24	-----	7	White.....	61	138	13, 15
Waterworks, New Orleans,				Whitecastle.....	19	87	7
concrete stack.....	30	-----	9	Whitecastle, water tank.....	24	-----	7
Waterproof.....	16	79	6	Wild.....	35	105	11
Waterproof:				Wildcat.....	64	141	15
Black water tank.....	22	-----	-----	Will.....	66	144	15
Silver water tank.....	22	-----	-----	Willets.....	16	81	6
Waverly.....	56	132	5	Willets, Fisher Lumber Co.,			
Wax.....	37	112	7	water tank.....	22	-----	6
Weaver.....	62	139	15	Willwood.....	27	96	8, 9
Weeks 2.....	36	108	11	Willman.....	13	73	5
Weeks Island, Myles Salt				Wilton.....	19	88	7
Works, water tank.....	44	-----	11	Winchester.....	19	87	7
Welse (Ark.).....	13	72	5	Wisconsin Memorial, Vicks-			
Welsh.....	35	104	10	burg National Park (Miss.).....	59	-----	5
Welsh, municipal tank.....	46	-----	10	Woodville (Miss.).....	17	82	6
West base:				Woodville (Miss.):			
Gramercy.....	27	98	7, 8	Municipal water tank.....	23	-----	6
Lake Arthur.....	35	104	10	Wilkinson County Court-			
Monroe.....	55	130	14	house, dome.....	23	-----	6
New Orleans.....	27	96	8, 9	Wright.....	34	102	10
New Roads.....	17	84	6	Young.....	36	107	11
New Roads, A.....	68	147	6	Youngsville, municipal water			
New Roads, B.....	68	147	6	tank.....	45	-----	11
New Roads, C.....	68	-----	6	Zeman.....	65	142	15
New Roads, D.....	68	-----	6	Zimmerman.....	63	141	15
New Roads, E.....	68	-----	6				
New Roads, F.....	68	-----	6				

PUBLICATION NOTICES

To make immediately available the results of its various activities to those interested, the Coast and Geodetic Survey maintains mailing lists of persons and firms desiring to receive notice of the issuance of charts, Coast Pilots, maps, and other publications.

Should you desire to receive such notices, you may use the form given below, checking the lists covering the subjects in which you are interested.

(Date).....

DIRECTOR, U.S. COAST AND GEODETIC SURVEY,
Washington, D.C.

DEAR SIR: I desire that my name be placed on the mailing lists indicated by check below, to receive notification of the issuance of publications referring to the subject indicated:

- 109. Astronomical work.
- 109-A. Base lines.
- 109-B. Coast Pilots.
- 109-C. Currents.
- 109-D. Geodesy.
- 109-E. Gravity.
- 109-F. Hydrography.
- 109-G. Leveling.
- 109-H. Nautical Charts.
- 109-I. Oceanography.
- 109-J. Traverse.
- 109-K. Seismology.
- 109-L. Terrestrial magnetism.
- 109-M. Tides.
- 109-N. Topography.
- 109-O. Triangulation.
- 109-P. Cartography.
- 109-R. Airway maps.

(Name).....

(Address).....

A catalog of the publications issued by all bureaus of the Department of Commerce may be had upon application to the Chief, Division of Publications, Department of Commerce, Washington, D.C. It also contains a list of libraries located in various cities throughout the United States, designated by Congress as public depositories, where all publications printed by the Government for public distribution may be consulted.



(CUT ON THIS LINE)